

Live and Kicking: Digital Live Broadcasting Technologies, Participating Strangers and News Mobility

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This study investigates the interconnections between digital live broadcasting technologies and participating strangers in the news context, from a sociotechnical perspective. This is done by focusing on the LiveU Solo device, designed for live broadcasting by producers on social media. Based on a thematic analysis of users' comments on three leading video gadgets' reviews of the Solo device on YouTube and on data gathered through semistructured in-depth interviews with a LiveU manager and several "prodnewsters" (news media producers), findings point to financial and technical considerations as the main factors that propel the assessment of innovative digital live broadcast technologies by users. In so doing, they illustrate a particular form of actor participation in the news.

Keywords: live broadcasting, digital news media, news mobility, media participation, news technology

In the first decade of the 21st century, a second generation of various Web 2.0 applications, alongside several social network platforms, such as Facebook and Twitter, emerged. These have resulted in changes in the media ecosystem that, essentially, enabled sharing, tagging, and participatory content creation in ways that have profoundly reshaped the relationship between producers and consumers: In many ways, it is because of these changes that the former distinctions between the creation, circulation, and consumption of media have become more fluid than ever before (Lewis, 2012; see, e.g., Bruns, 2008; Deuze, 2006; Jenkins, 2006; Karaganis, 2007).

Such transformations in the dynamics of media production, circulation, and use in the digital scape have also affected the news that, since then, has become more mobile. Various portable and personal interactive communication and information technologies are used today to produce the news, thereby influencing the very news-making routine (see, e.g., Cameron, 2011; Duffy, Ling, Kim, Tandoc, & Westlund, 2020; Westlund, 2013). Similarly, social media and search engines are used by users as the main platforms from which to access the news (García-Perdomo, 2020; see also Nelson & Lei, 2018; Shearer, 2018; Shearer & Gottfried, 2017). And nowadays, news-related content is produced by multiple actors (e.g., bloggers and activists) and is made available in various spaces beyond the traditional newsroom, thus allowing audiences to contribute greatly to the making of news, perhaps even to the overall shaping of the epistemologies of journalism at large (Kligler-Vilenchik & Tenenboim, 2020). As a result, today, it is becoming harder to

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Date submitted: 2021-08-15

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capture the entire array of diverse actors, the technologies and activities among them, and their overall implications for the production and distribution of news in the digital media scape.

This study sets out to explore these complex—and, at times, hidden—relations by investigating the interconnections between digital live broadcast technologies and participating strangers in the news context. This is based on the presupposition that there are certain nonprofessional, and perhaps less privileged, actors who participate in the production of media content and who also contribute to the decision-making process, “where all are (or could be) involved” (Carpentier, 2011, p. 355).

This is done by focusing, from a sociotechnical perspective, on the particular case of a widely used digital live-news technology that was designed by LiveU, a leading private company in live broadcast technology, and particularly its LiveU Solo device, which has been designed for live broadcasting on social media. The research is based on a thematic analysis of users’ comments on three leading video gadgets’ reviews of the Solo device on YouTube, and on data gathered from semistructured, in-depth interviews that were conducted with a LiveU manager and five live broadcast “prodnewsters” (i.e., nonprofessional cocreators participating in both news and other live broadcasting activities). Findings point to financial and technical considerations as being the main factors that propel the assessment of innovative digital live broadcast technologies by users. In so doing, they illustrate a particular form of actor participation in the news.

The Era of the Prosumer

In questioning the market system and its role in our everyday lives in the modern era, it was Toffler’s conceptualization of the *prosumer* that first illustrated the beginnings of a fundamental shift—the dissolution of the line between producer and consumer, and the recording of a much closer consumer involvement in production (Toffler, 1981).

Yet, notwithstanding his visionary attempt, Toffler’s notion seemed not to envisage a true shift in the producer/consumer balance. Instead, it was more connected to a rather basic consumption model, in which production and distribution are still driven by corporate interests, and, hence, was very much rooted in traditional approaches that emphasized the more passive elements of media consumption (Napoli, 2011). Of course, the idea of the prosumer was also conceived long before the emergence of networked media and, with it, the vast accessibility of informational goods and services. Among other things, this resulted, for example, in various many-to-many bidirectional forms of exchange that could no longer be defined within the limits of a basic unidirectional producer-distributor-consumer equation (Brown & Quan-Haase, 2012; Bruns, 2008; Cohen, 2008; Livingstone, 2003; Ritzer & Jurgenson, 2010).

In the digital era, media audiences are thus seen to possess unprecedented control over media consumption processes, with the help of innovative technologies. Yet, at the same time, they also have substantial opportunities to generate and distribute content (see, e.g., Berman, Abraham, Battinu, Shipnuck, & Neus, 2007; Spurgeon, 2008; Svoen, 2007; Zayani, 2021). Now, active participation is not a phenomenon that should be attributed only to the emergence of digital media. Television audiences were never defined as passive spectators, for example, and there is a long tradition of recipients’ active

engagement with various forms of cultural content (see, e.g., Van Dijck, 2009). Yet, what sets apart this extraordinary contemporary media moment, Lewis (2012) points out, is “the ease with which individuals may participate in the creation and distribution of media, on a scale and with a reach unimaginable in earlier times” (p. 546), and this is mainly because of the Internet. This shift in the dynamics of media consumption, alongside the evolution of audiences, illustrates what Napoli (2011) describes as a form of *audience autonomy*. This thus points to the blurring of the traditional divide between content providers and their audiences, with the latter being transformed, in many ways, into a form of “active” participation (Livingstone, 2003, p. 338).

Networked Media and the Sweet and Sour Taste of Producersage

Web 2.0 has certainly brought about significant changes to the old industrial models of exchange, which, to an extent, stem from two contested vantage points. From a somewhat positive standpoint, the Internet was seen by some to be more social, participatory, and democratic (see, e.g., the notion of Web 2.0 as a platform for cooperation in Fuchs, 2010): The emergence of Web 2.0 allowed access to informational goods on a pull basis. It made the means for the production and distribution of informational services available to many. Its technological infrastructure allowed users to directly engage with, and to distribute content to, other users. And, of course, its digital form provided the means to easily share and modify informational content. What these changes had in common is that they have all contributed to the rise of communities of active users, and hence to a decline in the number of traditional, passive consumers.

From this perspective, these communities’ users are seen to be constantly engaged in the formation of a participatory culture that is less controlled by media producers and business organizations as a whole, and more by the media consumers (Jenkins, 2006; Ritzer & Jurgenson, 2010), in a somewhat dialectic usage/construction process of information and knowledge. To that end, Benkler (2006) points out that the emergence of the user thus serves as a “new category of relationship to information production and exchange” (p. 138). “Users,” he continues, “are individuals who are sometimes consumers and sometimes producers. They are substantially more engaged participants, both in defining the terms of their productive activity and in defining what they consume and how they consume it” (Benkler, 2006, p. 138; see also the shift from audiences to users in Livingstone, 2003).

Such active communities, which are formed by producer/user participants, exemplify the hybrid role of *producersage* (Bruns, 2008), in which the motivation for participation is propelled by the notion of contributing to shared, communal purposes. This form of communality is also powerful, as Bimber, Flanagin, and Stohl (2005) suggest, since, essentially, neither side in the relations of exchange are known to benefit in advance. It also helps, among other things, to provide valuable information and expertise that has been gained by others, thereby eliminating the need to experience phenomena firsthand.

The main concern of the critics, however, lies in the premise that, essentially, these communities acquire their powers via various interactive participant-based online media; that is, user-generated content-based websites that gain value from information sharing among participants. Unlike the traditional mass media models, the existence of Web 2.0 social networking websites and others is entirely dependent on the participation of user-producers: They provide content that, in turn, is used to generate traffic that is

eventually translated into advertising sales. Yet, instead of employing those very content providers, these Web companies are, in fact, profiting from free labor, which creates traffic, thereby helping to put the digital economy in motion (Brown & Quan-Haase, 2012; Cohen, 2008; Fuchs, 2011).

In the networked era, this form of free labor—paralleling what Lazzarato (1996) had coined *immaterial labor*, and to Coté and Pybus's (2007) updated version—*immaterial labor 2.0*—has resulted in yet another sophisticated mechanism through which Web 2.0 corporations make a profit “on the back” of user/producers. Fuchs (2011), for example, discusses how, in the new media economy, various Web 2.0 companies, such as Google, Facebook, and others, are also constantly occupied in a form of surveillance. This is achieved by gathering data about their users' everyday activities so that their services will support their daily needs, thereby luring them to spend more time on their platforms. In this way, they can easily analyze their behavior and eventually sell this data to advertising clients, who provide users with highly targeted advertising.

So asymmetrical power relations are in play here, as these Web 2.0 platforms are performing a powerful and sophisticated exploitation strategy: They are entirely dependent on the constant, yet unpaid for, engagement in the production of user-generated content by the users/producers, who, in fact, produce surplus value that, in turn, is appropriated and turned into profit (i.e., a process whereby “immaterial” online labor is strategically used by corporations). This is done by accumulating many users/producers (e.g., by providing them with free access to services and platforms), who are eventually sold as commodities (prosumer commodities) to third-party advertisers and private organizations (Fuchs, 2011).

Participating Strangers, Live-News Technologies, and News Mobility

In the wake of the Information Age, the emerging producers of the first decade of the 21st century have also become more involved in the construction and dissemination of news materials, with participatory journalism beginning to be seen as an influential force in the very processes of professional news-work (see, e.g., Ahva, 2017; Domingo et al., 2008; Hermida, Fletcher, Korell, & Logan, 2012; Kligler-Vilenchick & Tenenboim, 2020; Westlund, 2013; Zayani, 2021).

Examining the use and appreciation of these interactive features by visitors on Swedish newspaper websites, for instance, Larsson (2011) presents a typology of five different visitor types. These include, for example, the *prosumer* who regularly contributes, chats, and comments on the site, or the *critic*—an opinionated visitor who appreciates various opportunities for visitor input and influence on the site. One particularly intriguing type, in Larsson's typology, is the *filter* and her/his role in sharing site content with friends, via e-mail or social network sites. Filters' ability to take part in the interaction of sharing the news was thus quickly found useful by news organizations that were striving to attract large numbers of hits. At the same time, however, these nonjournalists have influenced the very practice of professional journalists by their simple ability to feed information directly into the public arena. This instrumental role of sharing in the news was pointed out as being one of the most important developments of this decade (Olmstead, Mitchell, & Rosenstiel, 2011), and was even considered a possibly significant new news value in its own right (see, e.g., Harcup & O'Neill, 2017).

The growing new sharing phenomena in the news have also affected the traditional role of professional news' gatekeeping processes by blurring the very line that separates these from the audience (Hermida et al., 2012; Vu, 2014). One particularly important example, in that respect, lies in the fact that journalists and news organizations are thus encouraged to cater more for the preferences of their audiences who, in turn, influence the very selection and production of news (see, e.g., Kligler-Vilenchick & Tenenboim, 2020; Olmstead et al., 2011). This has resulted in news organizations being forced to shift toward a more market-based model, because of the increasing competition and a decrease in sales and advertising incomes. But since they can also easily record and study the audiences' news consumption practices and preferences with the help of various technologies (e.g., by keeping track of click numbers, the amounts of viewing time, the number of shares, etc.; see, e.g., Napoli, 2011).

Welbers, Van Atteveldt, Kleinnijenhuis, Ruigrok, and Schaper (2016), for instance, studied how the five largest national newspapers in the Netherlands monitor audience clicks on their websites (i.e., how many times their news Web pages were viewed), and the ways in which this affects their news selection choices. They found that the storylines of the most viewed articles were more likely to receive attention in subsequent reporting, thereby indicating that audience clicks affect the very gatekeeping processes of news making. And Vu (2014) investigated the influence of online audience metrics on editorial decision making. Her findings suggest that editors are willing, to a certain extent, to adjust their editorial decision-making processes based on audience metrics. This illustrates well how the news is moving "from being mostly journalist-centered [. . .] to also being increasingly audience-centered [. . .]" (Boczkowski, 2004, p. 183).

Little more than a decade ago, Domingo et al. (2008) pointed out, in their conclusion, how their analytical model is successful in describing "the reluctance to open up most of the news production process to the active involvement of citizens" (p. 339). Since then, however, the digital news-scape has changed considerably, as its new forms of mobility affect both its production routine and its consumption practices alike (see Cameron, 2011; Duffy et al., 2020; García-Perdomo, 2020; Kligler-Vilenchick & Tenenboim, 2020; Newman, 2017; Shearer, 2018; Westlund, 2013; Zayani, 2021).

Such changes have also resulted in the emergence of a multitude of actors in journalism, such as mobile app designers, programmers, Web analytics managers, etc. Holton and Belair-Gagnon (2018) describe these new actors as journalistic strangers, categorizing them as being either explicit or implicit *interlopers* (depending on whether their alignment with journalism is more or less clear, respectively, they point to actors who are not working on the periphery of the journalistic profession), or *intralopers* (i.e., working from within news organizations, yet without journalism-oriented titles). In their view, these relatively new players in the digital news arena have introduced innovations in the news production process while challenging the traditional definitions of the journalistic profession, and even the relevance and sustainability of journalism at large.

Ahva (2017), however, focuses on those actors who operate between the traditional positions (which she describes as the "in-betweeners" of journalistic culture); that is, participants who play an important role in the journalistic process and yet are not considered to be professional journalists or mere receivers. Focusing on the participatory practices of such actors in three different European journalism outlets, she differentiates between two central orientations of journalistic participation: participation *in*

journalism (i.e., those moments in which citizens are performing as producers, thereby providing User Generated Content [UGC]); and participation *through* journalism (i.e., those moments in which the actors are performing as social and political agents and may become part of the public sphere through the opportunities offered by journalism for public debate).

These phenomena are partly the result of various innovative technologies. "Heavy" audiovisual files, for example, are nowadays taken by high-resolution cameras that are installed on easy-to-operate and relatively cheap mobile devices. These devices, on which our dependence is said to be growing, now enable the processing of communication and information through text, graphics, animation, audio, and video (Newman, 2018; Westlund, 2013). And these materials can easily and swiftly travel over 4G/5G networks' capacities, and through highly stable social network platforms and messaging applications from these aforementioned actors, who have become a significant and productive mobile force in news making. As a result, the traditional news organizations are becoming more dependent on their daily supply of news items (see, e.g., Cameron, 2011; David, 2010; Quinn, 2015; Westlund, 2013).

Technology and audiences thus play an increasingly important role in decisions about what makes the news (Domingo et al., 2008; Harcup & O'Neill, 2017). And what was seen only a few years ago as being the less immediately accessible formats of news (television, radio, print) are now part and parcel of the realm of online journalistic forms of participation through advanced digital technologies and the relevant technological support (Bruns, 2008; Westlund, 2013). One of the more intriguing examples of this is in the growth around live-news video online (that is mostly driven by technology, platforms, and publishers, but that has also significantly increased during big breaking news stories), and the ways in which the new journalistic participators are able to help by contributing to that arena. Various social video live broadcasting tools, such as Facebook Live and Instagram Live, are thus said to be putting a lot of pressure on the traditional TV industry (García-Perdomo, 2020). In today's news-scape, similarly, live-news video is highly desirable, since advertisers prefer their advertisements to be associated with video. But since it is also considered an excellent component in the capturing of the public's attention (Newman, 2017; Quinn, 2015).

From this standpoint, many news organizations are thus said to be "nervous" about the significant investment that is required by them to incorporate video into their news-making processes and the subsequent uncertain path to a commercial return (Kalogeropoulos, Cherubini, & Newman, 2016). Furthermore, practically, many of these organizations have had to build video capacity and skills from scratch, thereby finding it highly challenging to produce video news effectively, and to fund it. This has resulted in their becoming dependent on powerful platforms, headed by Facebook, on which their video content is mostly consumed (Kalogeropoulos et al., 2016). At the same time, however, social platforms, such as Instagram and Facebook, are now allowing both professional journalists and online users to mix pictures and to create live-video stories, while better cameras and improved software are said to enhance the user's mobile ability to create high-quality content (Newman, 2018; Westlund, 2013). Yet research on the interconnections between such innovative digital live-news technologies, the different forms and degrees of participation, and their impact on today's digital news-scape remains scarce.

This study aims to provide fresh insights into the intersection of live-video news production and participating strangers, from a sociotechnical standpoint (Lewis & Westlund, 2015). Based on a thematic

analysis of users' comments in three popular video gadgets' reviews of the popular LiveU Solo device on YouTube, and on data gathered through in-depth interviews with a LiveU manager and five live broadcast "prodnewsters," the findings point to financial and technical considerations as the main factors that propel the assessment of innovative digital live broadcasting technologies by users. In doing so, they demonstrate some of the perhaps less privileged actors who are part of the different communities of the news networks (Domingo, Masip, & Costera Meijer, 2015; Zayani, 2021) and illustrate a particular form of actor participation in the news.

RQ1: In what ways do users' comments on online video reviews of the live broadcast LiveU Solo technology illustrate a form of participation in the news?

Methodology

In this research, a combined methodological approach was applied, having the subsequent analysis derived from a two-step methodological process. In the first step, three popular video-guide YouTube channels, in which the LiveU Solo device was reviewed, were selected for analysis: (1) *Gaming Careers* (54,300 views, 153 comments; see *Gaming Careers*, 2016), run by Pete Wilkins, an Electronic and Communications graduate from the United Kingdom. Interested in setting up livestreams, Wilkins eventually turned his side project—a livestream guide channel—into a full-time occupation (Moloney, 2019). (2) *Think Media* (47,871 views, 95 comments; see *Think Media*, 2010), run by Sean Cannell, a popular American YouTuber who "helps entrepreneurs build their influence and income with online video" (see Cannell, 2022). (3) *The Tech Buzz* (13,156 views, 21 comments; see *The Tech Buzz*, 2008), run by Stephen Heywood, an American broadcast engineer specializing in online video production, who produces the shows from his home studio. All three were selected for their high viewing numbers, when compared to other video reviews, but also because the operators of these YouTube channels did not receive any financial support from LiveU.

In the second step, a thematic analysis, based on the viewers' comments in those videos, was conducted. The initial analysis yielded several themes: *an expensive hobby*, *source of income*, *easy-to-use*, *connectivity*, and *versatility*. These eventually came down to two major significant patterns that were discovered through the identification of recurrent and contrasting elements (Braun & Clarke, 2006; Collier, 2001): *affordability* and *reliability*.

In addition, in-depth semistructured interviews were conducted with a LiveU manager and five live broadcast "prodnewsters": Prodnewser I (Israel) runs a small business offering live coverage and broadcasting of various virtual and other domestic events. Prodnewser II (United Kingdom) is part of a small live broadcasting business that is involved in the live coverage of various activities, particularly certain sports news events, and streaming these via Facebook. Prodnewser III (Hong Kong) works as a video journalist for a small-time independent news organization, where he has been helping to provide text news reports and livestreams on the organization's YouTube channel and Facebook page. Occasionally, he also does various freelance work for news and other organizations, and streams these via YouTube and Facebook. Prodnewser IV (Thailand) is an American freelance videographer who owns a small signage company providing content for still and video corporate clients, while occasionally also taking freelance assignments

within the Southeast Asia region. Prodnewser V (United States of America), has been covering an annual, famous, antique motorcycling journey live for social media as of 2018. She also takes on freelance live news and other video work for corporate and small businesses alike.

The interviewees were traced and contacted via the private Facebook groups "Stream Like a Pro: LiveU Solo Users and Fans" (2021) and "Live Streaming Producers' Forum" (2021). All interviews were conducted through video conferencing and lasted between 45 and 90 minutes each.

Findings and Discussion

Going LiveU, Solo

A company that sees itself as driving the live-video revolution, LiveU sets out to allow the transmission of high-quality live-video streaming for TV, mobile, online, and social media. This is done via LiveU's portable video-over-cellular-based technology, which is designed for any camera and for use through various Web-based portals. Founded in 2006, the company has been serving about 3,000 organizations from more than 130 countries and about 2,000 professional clients/consumers, and it is currently dominating the global live broadcasting technology market (followed by the American TVU and the French AVIWEST). LiveU's clients are mostly in the media business—the international news agencies, local and international leading TV stations and networks, or various sports channels and organizations, among others (see Ilan, 2021; Levy & Vidal, 2016).

The Solo device is considered one of LiveU's more popular products, and it appeals mostly to nonprofessional users. For even though it is described by LiveU as a professional-grade wireless video encoder, it is primarily designed to offer one-touch streaming to various popular social media platforms, such as YouTube, Twitter, Facebook Live, and Twitch. According to LiveU, there are three main features that are encapsulated in its Solo device, and that are meant to optimize the going live experience of users: (1) It is *simple* to use: to go live, users are required only to connect the device to a camera and to log into a preferred Web-based Solo portal, so as to select their streaming destination. (2) It is considered to be highly *reliable*. The users are thus able to go live from "anywhere." The device thus combines up to four connections (i.e., WiFi, Ethernet, and two cellular modems) so that bandwidth consistency is allowed even when one source becomes unstable, thereby providing the delivery of high-quality content in "practically every scenario" (LiveU, 2022, p. 2). (3) It is said to be *versatile*, so as to enrich the live content; it allows the livestreaming of video in full HD ("beyond smartphone quality") and can be connected to any professional camera with either SDI or HDMI options. Finally, according to LiveU, the device is also considered to be relatively cheap and easy to purchase. It costs about \$1,000, with an extra \$45 per month/\$450 per year bonding fee for LRT service (added to this are the data carriers' fees), and it can be purchased either from the main Web stores or directly from various resellers worldwide (see LiveU, 2022).

Users Commenting on the LiveU Solo Reviews: An Analysis

Affordability: An "Expensive Hobby," or a Cheap "Money Maker"?

In the past few years, news has witnessed a considerable shift in its sources of income. Print revenue has been shrinking. At the same time, advertising money also barely "reaches the pockets" of news publishers nowadays, even though such money has been increasing fast online. This is because of powerful platforms, such as Google and Facebook, which have been more efficient in targeting audiences on a greater scale, while also offering lower rates. The main result of these changes is that publishers are now focusing primarily on building, or strengthening, their businesses around subscription and/or donation (Newman, 2019).

A similar shift, in which the end user is taken more seriously as part of commercial strategies, is also evident in the emergence of news video materials on the Web. Publishers are thus witnessing how off-site news video consumption is growing fast, and they are getting used to the idea that consumers are expecting to see video content on their news feeds, particularly when big, breaking news stories erupt. As a result, various publishers are continually searching for ways to capture viewers' attention (e.g., by beginning to use services such as Facebook Live as their preferred options on which to broadcast big, breaking news events), in the hope that online videos will eventually help to make them a profit (Kalogeropoulos et al., 2016). In fact, this direction, taken by the publishers, is also evident in their commercial considerations about which live broadcast technologies to purchase. One prodnewser thus pointed out during an interview how, in his view, LiveU made a mistake with its Solo device, for example, which, technically, was not designed for TV broadcasting at all:

They've been marketing the Solo for internet use and for live streaming and social uses, and they've made it really affordable for people to use. And now all these news agencies that are trying to save money are searching for ways to make it work, so that they only have to pay \$1000 for the Solo, instead of \$3000 for the LU200, or even more. (Prodnewser IV, personal communication, April 15, 2020)

The analysis of users' comments about the Solo device demonstrated interesting findings about the commercial considerations, with a particularly repeating motif concerning the Solo's relatively high price. In the *Gaming Careers* (2016) video, for example, TheFinalMapler (2020) comments sarcastically: "Oh for sure, I'll casually dish out 1000 dollars for a liveU streaming box. No problemo." In the *Think Media* (2010) video, for instance, SS (2018) comments: "Wow, waaaaaaaaaay out of my price range," and continues in a reply: "Yeah, if I was making money on Livestreams sure, I could get down with that. But at this point it seems more like a vanity purchase." Other users were less concerned with the price of the device itself and more with the added monthly/annual fees that are required, either for the LiveU's LRT service or for the different data carriers, or both. "Great Video, thank you," Alexeytheinterpreter (2019) compliments the *Gaming Careers* video in his comment, for instance, but immediately continues: "You failed to mention, though, that the connection bonding feature of the LiveU Solo is a paid subscription-based service. The hardware itself is not self-sufficient." "Can i just purchase the Live U for \$1500 without the cloud system, which is \$45 a month?" Cyvidal10 (2017) comments on the *Think Media* (2010) video, "i don't think i can still afford it after buying the device." And a bit further on, Midnight-Voice Creative (2019) also shares her/his thoughts:

So, in addition to the \$45 a month service you have to pay for TWO 4G Mobile GSM USB aircard accounts, preferably VERIZON and AT&T, or whoever. And pay those monthly services on top of LiveU's \$45 a month service. That's one expensive hobby.

To an extent, what is rendered visible here are the clearly asymmetrical relations between the producers/distributors and the audience of consumers. LiveU, on its side, is well aware that its Solo device is a favorable technology in the market of livestreaming and that its audience of consumers is very much dependent on it. As a result, it markets its Solo device for a relatively reasonable price to private customers, yet can force an additional monthly/annual fee on its customers for its LRT services. At the same time, however, the comments on the video reviews reflect not a passive audience of consumers but rather a community of engaged participants who perform as both users and producers (Benkler, 2006; Livingstone, 2003). This form of communality is illustrated, for example, in how the users are unafraid to share their discontent at the Solo's high price, together with its additional fees to LiveU and the data carriers, and even to criticize the reviewers for not putting sufficient emphasis on the extra costs involved. And when others explicitly discuss how the Solo device can, in fact, serve as an investment to be used to make profits in the future (note, e.g., how SS [2018] mentions the possibility of "making money" out of livestreaming), a transformation is made manifest, in which the users are acting as both users and producers.

However, the powerful communal connections are also made visible here in the ways in which the various users are, in fact, sharing their thoughts on how to reduce costs. Thus, when SS (2018) comments on the *Think Media* (2010) video that the price is way beyond his range, for example, Joe_at_AlphaCreative (2020) replies: "Have you tried bonding signals with your laptop or, in my case, a mini pc? I pay \$71 a year vs \$45/mo for this, and the \$995 equipment charge." And when JAEKH (2018) declares that she likes to watch only the video reviews and, unfortunately, does not have the necessary resources to purchase "these awesome devices," Joe_at_AlphaCreative (2020) tries to help her out as well by simply stating how she should try "bonding in software from a computer to get started," since "it is far cheaper." Users like Joe_at_AlphaCreative (2020) demonstrate the activity of those who Larsson (2011) describes as the *Prosumer* type, who regularly contribute, chat, and comment. Furthermore, this unique form of sharing valuable information and expertise among the different users, which is seen here in the way "experienced" users are allowing their informational comments to be visible to all of the other users, and in certain comments' replies, exemplifies one of the main benefits of produsage and of the formation of communality (Bimber et al., 2005; Bruns, 2008).

Reliability: Strong and "Steady" or Weak and "Shaky"?

Recent developments in communication and information technology have fundamentally changed the nature of news production and consumption (Lee & Tandoc, 2017), perhaps even to the extent that they have been challenging the very boundaries of journalism's professional paradigm (Lewis, 2012).

Today, news is produced on portable and personal interactive information and communication devices that strengthen its forms of mobility (see, e.g., Cameron, 2011; Duffy et al., 2020; Ilan, 2021; Westlund, 2013). However, these changes in news mobility have also influenced the ways in which news is

consumed, accessed, and carried. For example, about 72% of Americans are said to receive news on a mobile device (Nelson & Lei, 2018; see also Shearer, 2018). Furthermore, online users are now more likely to access news through mobile devices than through desktop or laptop computers: According to a 2019 Pew report, for instance, roughly 6 in 10 U.S. adults (57%) often access news via mobile devices, compared to 30% who often do so on a desktop or laptop computer (see Shearer & Gottfried, 2017). This results in citizens today who not only have more sources from which to select their information but who are, in fact, also becoming information sources themselves (Domingo et al., 2015). This notion was also pointed out during an interview with a LiveU Sales Manager, who had previously worked in a news agency:

When I started [. . .] I remember I used to go to the scenes of events and looked for people out there who happened to shoot stuff with their own video gear and offered to purchase the materials from them [. . .] Nowadays, if I am at an event, then there are 20 people out there who have already produced their own UGC, covered the event from different angles, and put it on Facebook. (A LiveU Sales Manager, personal communication, December 22, 2018)

In a similar way, live broadcasting and televisual consumption practices were changed by various streaming and downloading technologies (see, e.g., David, 2010; Fechey-Lippens, 2010). In the news context, various news publishers today are focusing more on live-news video (Newman, 2017; Quinn, 2015). And traditional TV news providers are forced to find innovative technological solutions, now with the advent of live broadcast tools in social media (García-Perdomo, 2020).

The emergence of the Solo device, and particularly its potential traits to help news and other users in producing high-quality live-video content on various social media platforms, is clearly the result of such transformations in the current digital media environment. In many ways, the comments that were made by the different users about the live broadcast technology provide a glimpse into the ways these transformations, in the era of news mobility, are, in fact, perceived by the audience of users.

Overall, the users seem quite satisfied with the Solo's reliability for their livestreaming usage. On the *Gaming Careers* (2016) video, for example, *ImpartialGeek* (n.d.) comments:

Great video! We did a 13 hour live stream with that battery + the solo. Pretty amazing. We have 3 of those batteries, so we could almost stream forever [. . .] We did an event (VidSummit) last year, and we streamed 24 hours for 5 days straight. It was insane, but fun.

Sinbad13 (2018) also highly recommends it and does not forget to compliment Sean, the reviewer for *Think Media* (2010), on his video: "My son and I jumped on the LiveU solo train and picked up a couple units. We have been streaming backstage at shows, in airports, in hotels, in the car [. . .] you name it." He continues: "I love your videos and recommend them to people trying to get a handle on all this tech [. . .]" (Sinbad13, 2018). These views parallel almost perfectly the ways in which the Solo is assessed by a prodnewser during an interview, who pointed out that whenever the Solo is used to go live on social media, then "it's great!":

If you're gonna do that, you can be a reporter with a camera [. . .] you can just go to any location and pop out your camera and you can simply stream straight into your TV station's Facebook page and go live. (Prodnewser IV, personal communication, April 15, 2020)

What is rendered visible here is the sheer enjoyment of the users participating in cocreation and in sharing information on the Solo device. This parallels a more complex notion of user-led cocreation practices (Banks & Deuze, 2009) that are seen to perform not simply as a source of unpaid and exploited labor, but as a more dynamic mechanism for coordination and change; that is, "an 'innovation agency' that engineers transformations of business and consumer practices towards open innovation networks" (Banks & Humphreys, 2008, p. 403).

Here, also, some users use the comments platform to acquire some useful information as to how reliable the Solo device is: "Hi Stephen, thanks for the unboxing and review, really helpful," KPP (2019) comments on the *Tech Buzz* (2008) video, "My question is: Do this unit gets hot in use? Do you think it needs additional cooling, maybe blast it from a portable USB fan?" He is then replied to by The Tech Buzz (2019) himself: "KPP it gets warm, but not warm enough to warrant extra cooling." Juxtaposed to the former comments, different levels of participation comprised in what Van Dijck (2009) describes as a user agency, particularly the "creator" level, are made manifest, with some users performing more as "heavier-creators." This also parallels the observation on how not all participants are created equal, since, eventually, some consumers have greater abilities to participate than others (Jenkins, 2006).

Some users, however, have used the comments platform to share their disappointment about the product, thereby performing more as the *Critic* type (Larsson, 2011). "I've worked in ENG [electronic news gathering] in extreme weather situations," ZB (2019) comments for the *Gaming Careers* (2016) video, for example:

and I can honestly say that LiveU is shaky, as far as reliability. Ymmv [satisfaction level might be different for every person] as far as irl in populated areas with strong cell signal, but even in unaffected areas before and after the storms it was hit or miss as far as connectivity.

The issue of the Solo's weak connectivity was also illustrated during one of the interviews. In the first few days after the story broke worldwide about the 12 Thai boys who were trapped inside a cave underneath a mountain in Thailand in 2018, a prodnewser pointed out how cellular reception was thus incredibly weak and, aside from the bigger field units, all the other devices, including the Solo, were useless. However, these became operational when all the big phone companies, mobile, and Internet networks had brought in a few mobile trucks with cellular towers on them, which immediately improved the cellular reception at the scene.

The users' ability to share valuable information on the technical reliability of the Solo device through an inherently incomplete, open, comments' platform illustrates the constantly evolving dynamics of produsage. In this process, different layers of knowledge, which are contributed by equal participants with varying skills, are built one on top of the other, and eventually evolve into a powerful process of exchange serving current and future livestream users alike (Brown & Quan-Haase, 2012; Bruns, 2008). At the same time, such an information

exchange also illustrates the bottom-up forms of influence in convergence culture, whereby users are "learning how to master these different media technologies [social networks] to bring the flow of media more fully under their control and to interact (and cocreate) with other users" (Jenkins & Deuze, 2008, p. 6).

Conclusion

This study has addressed the reception of media technologies by examining the ways by which users' comments on online video reviews of the popular live broadcast LiveU Solo technology illustrate a form of participation in the news.

Findings have yielded two main, repeating themes: Financially, the users mostly described their concerns with the way in which the Solo is considered a highly expensive device to purchase and use daily, even though the device is essentially designed for the audience of users to go live on social media. Technically, however, users mostly showed their support in terms of the device's reliability, pointing out how, for example, it can be used to go live in various locations, providing a strong and a steady signal.

What is illustrated here, essentially, is a collective of users performing as participating strangers in the news; that is, actors who are not professionally involved in journalistic practice and yet are making a contribution to the world of journalism. Based on their comments as they assess a popular live broadcast technology, designed primarily to go live on social networks, these actors are contributing either to producers who are aspiring to pursue live broadcasting in the news context, or, perhaps, even to established news organizations that are setting their eyes on innovative cheap and reliable live broadcasting technologies.

In doing this, this study contributes to a broader understanding of news making that goes beyond the "walls" of the newsroom (Anderson, 2011), and perhaps more as part of what Domingo and colleagues (2015) describe as the "news networks"; that is, where the traditional newsroom is not taken simply at the center of specific news networks, "but just one of the places where it is reasonable to start tracing how news is collectively used" (p. 56). This notion also parallels the idea of journalism as a shared process rather than as a product, and the conceptual shift from its closed professional exclusivity toward an open form of information exchange (Lewis, 2012). To that end, this work connects to a scholarly focus in digital journalism studies on the entire ensemble of technological devices, human actors and the activities that essentially enable the construction of news from a holistic sociotechnical point of view. It also sheds light on the influence of participating strangers on the currently unstable mobile news context, thereby illustrating how participation "occurs (or can occur) in a variety of societal realms, which generate a multitude of interconnections of discursive and material practices" (Carpentier, 2011, p. 355).

Finally, and perhaps more generally, the findings also illustrate a vital community of engaged participants (Benkler, 2006), many of whom are expressing their enjoyment in the process of sharing, thereby illustrating the dynamic nature of user-led cocreation practices (Banks & Deuze, 2009). And they are performing at different levels of participation (e.g., shifting between the critic and the prosumer types; see Larsson, 2011), sharing important information on how to reduce costs or improve performance between them; in other words, "seeking the wisdom of the crowd" (Lewis, 2012, p. 851).

Future work might concentrate on forums of participating strangers for innovative live broadcast technological devices that may be used in the news context on social media. Similarly, comparative work can be focused on the ways in which the same technological live broadcast devices are considered by professional news workers and by nonprofessional cocreators. Eventually, these paths will help to trace those “interconnected, yet reasonably autonomous” (Domingo et al., 2015, p. 63) news networks, some of which perhaps have very little to do with news per se, and allow a broader, more profound understanding of journalism and its new boundaries and forms of participation in today’s digital media scape.

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