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Ploughing digital landscapes: How Facebook influences the evolution of live video streaming

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Abstract
In this article, we discuss Facebook's strategy to influence the development of a new communication format known as live video streaming. We take this case study as an example of the ways in which Web platforms operate to harness media innovations and their social uses. The case of *Facebook Live* illustrates exemplary how, far from developing spontaneously, media landscapes are actively shaped by the technological and financial initiatives of their more influential players. In this article, we describe how Facebook's technical infrastructure and partnership scheme influence the editorial organisation as well as the storytelling of live video streaming.

Keywords
Facebook, live video streaming, media ecologies, media system, social media platforms, walled gardens

Introduction

It is common when discussing the development of media to employ notions such as 'information ecosystem' or 'media ecology'. According to Scopus, the former expression is contained within the title, keywords or abstract of about 150 scientific publications, the latter in almost 300. The second expression has also come to define a distinctive, albeit heterogeneous, approach to the study of media. One excellent review of the different branches of this approach can be found in Strate (2004).

These expressions, and the theories that come with them, have the advantage of drawing our attention to the complex networks of interactions that connect human and technological actors within the media system: the 'massive and dynamic interrelation of processes and objects, beings and things, patterns and matter' characteristic of human communication (Fuller, 2005). They also encourage us to reflect upon the way in which media constitutes a sort of secondary environment and how the 'balance' of such environments influences the quality of collective life (Postman, 2000). Finally, they have the merit of refusing linear and deterministic media histories and replacing them with a richer evolutionary approach, according to which 'the evolution of media cannot be understood outside the relationships that the media "species" establish within an ecology' (Scolari, 2012, 2013: 1434).

Using a biological metaphor to highlight the complexity and interrelation of the media system (Logan, 2007), however, comes with a distinctive drawback. Often against the intention of media ecologists, these metaphors end up *naturalising* communication technologies and presenting their development as an *organic* evolution *emerging spontaneously* from the interactions of a multitude of actors. Such ecological framing is particularly common when describing digital media, since the rapid and often unexpected transformations seem to defeat all centralised planning and offer the best example of undirected evolution.

But the decentralised nature of digital media should not blind us to the fact that their development is in no way natural or artless. Surely, the media system comprises a large number of actors, but some of them are more powerful than others and their strategies affect heavily the directions in which the system transforms. The world of digital media systems resembles less a pristine ecosystem evolving freely under the invisible hand of society or the market, rather more a cultivated landscape in which natural tendencies interact with the initiatives of a large *but not indefinite* number of influential 'gardeners' or 'farmers'. Among these powerful actors are, of course, the so-called social media platforms.

Concepts such as media industries (Havens and Lotz, 2012; Hesmondhalgh, 2002) and communication power (Castells, 2009) are not new, nor is the observation that large media conglomerates can play a crucial role in influencing the public sphere. Firsfarit observed in broadcasting media that such influence has

become more and more evident in digital media with the rise of the so-called 'platform economy' (Kenney and Zysman, 2016) or the 'platform capitalism' (Langley and Leyshon, 2016; Srnicek, 2017). Colonising growing shares of Internet communications, platforms such as Facebook, Twitter and YouTube have progressively disciplined the initial spontaneity of online exchanges (Taylor, 2014; Wu, 2010).

Far from being neutral mediators, such platforms bring with them a distinctive 'media logic' (Van Dijck and Poell, 2013), which promote certain economic and social arrangements over others (Gillespie, 2010). Adopting a critical stance, observers have studied how platform infrastructures encourage users to produce and share contents (Boyd, 2014; Jenkins et al., 2013), but also keep these contents within well organised 'walled garden' where they can be captured and monetised (Fuchs, 2014; Mandiberg, 2012; Van Dijck, 2013).

In this article, we will provide an illustration of these 'gardening' (or rather ploughing) initiatives by discussing the strategy deployed by Facebook to harness the development of a new communications technology known as 'video live-streaming' or 'social streaming'. We chose this specific case study because it concerns one of the most promising innovations in the current media landscape (from a commercial viewpoint, at least) and because Facebook is pursuing a particularly aggressive strategy around it. Since the introduction of its *Facebook Live* feature, the platform has vigorously pushed the new service through its technical and commercial infrastructures, even going as far as to tweak its newsfeed algorithms to favour live video. What's more, the platform initiated an ambitious programme of partnerships with top-tier news producers, and for the first time in its history, offered direct financing in exchange for steady production of content for its *Live* feature.

After providing a quick overview of social live-streaming, we will present our methodology based on the analysis of press experts and of interviews with Facebook's media partners, as well as with companies involved in Facebook's *Media Solutions* programme. Drawing on such sources, we will describe how news publishers (both traditional and 'pure-players') are affected by Facebook's strategy to influence the emerging uses of social streaming. Although it may be early to assess the long-term success of such a strategy, it certainly does not fall short of technical and financial means. While its effects may be temporary, they are already very tangible.

Social video streaming, the state of the market

Live video streaming can be described as 'the ability to broadcast video to a remote audience in the instant that it is captured' (Juhlin et al., 2010). While applications for real-time video transmission over the Internet are not new (desktop video conferencing has been around for years), live video as a social medium is a more recent phenomenon. The earliest social live-streaming platforms were introduced about 10 years ago – with ComVu Pocket Caster launching in 2005, followed by Bambuser and Ustream (Juhlin et al., 2010). Platforms typically offer the possibility to capture video from mobile devices and share them with an online community, allowing 'people browse through live broadcasts, access archived clips, and follow and interact with individual users' (Juhlin et al., 2010). Such interactions occur mainly through text-based chats coupled with live streams, where viewers can communicate with the streamer and with other viewers.

The combination of real-time video and chat promotes high levels of engagement and constitutes a key characteristic of social live-streaming. Drawing on McLuhan's (1964) theory of fidelity and participation, Hamilton et al. (2014) hypothesise that the 'hot' and 'high fidelity' media component (the video) allows users to share a rich experience, while the 'cool', 'low-fidelity' media component (the chat) facilitates the interaction. Viewers connect through unexpected events and feel 'part of a unique group of people that saw something special as it happened' (Hamilton et al., 2014). The chat intensifies this connection by encouraging streamers to adjust their broadcast to the interventions from the audience (Figure 1).

Despite its potential, social video streaming proved challenging for providers: although users enjoy watching live video streams, most of them do not become regular streamers. Ben Rubin, CEO of the live-streaming app Meerkat, thinks that both the unfamiliarity with live video and the 'high emotional cost of being entertaining in a live format' are the main obstacles (D'Onfro, 2016b). Tech magazine *Recode* quotes Rubin in an e-mail to his investors:

> Before Instagram, people already knew what constituted a beautiful photo and tried to take them. With live video, no one really knows what 'good' live video they can create is. (Rubin in Wagner, 2016a)

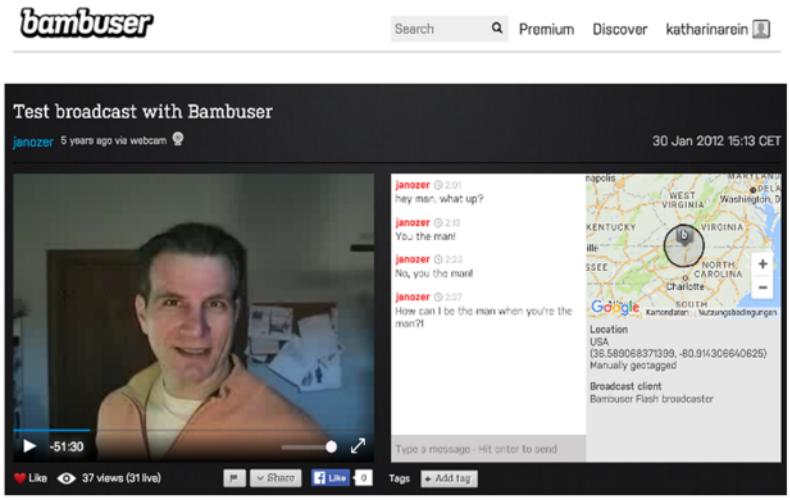

Figure 1. Screenshot of a Bambuser Live Broadcast (Bambuser, 2016).

According to Juhlin et al. (2010), 'many users struggle with both the technology and the concept' and end up producing 'uneventful' videos that display low quality in terms of video production and camera use. Consequently, although some videos fall into categories such as 'video logs', 'tours' and 'social events, groups, and family', much of user-generated content consists of 'tests and demonstrations'. Left to its own spontaneous development, social live-streaming seemed unable to generate a sufficient base of active broadcasters, which contributed to the failure of many social live video services (including Meerkat), the business models of which were aimed at consumers. As publishing activity remained relatively low, numerous providers could not generate sufficient revenues from subscriptions and advertising to become profitable (Wagner, 2016a).

Providers that did manage to become economically sustainable either optimised their platforms to the needs of commercial clients and adopted '*freemium*' models or encouraged the emergence of new niche markets (Kharif, 2015). The examples of Ustream, Bambuser and Twitch illustrate this development.

Ustream offers a broad variety of services targeted at corporations, including professional video production services, data analysis and strategic consultancy (Zimmerman, 2016). Though the platform remained free for users, Ustream now charges monthly fees from more than 5300 companies including Sony and LinkedIn (Kharif, 2015). In a recent press release, IBM announced that it had acquired the company and plans to integrate its services into a new cloud-video unit (Zimmerman, 2016).

Bambuser, which commenced as a project dedicated to citizen journalism, found its business model in collaboration with media companies. Since its launch in 2008, Bambuser made a name for itself as a source for eye-witness videos of political events, such as the uprisings of the Arab Spring. In 2013, the news organisation Associated Press invested in the platform, explaining that

> through Bambuser, AP can source UGC video news live from the scene from eyewitnesses exclusively for its broadcast and online publisher customers. This not only ensures that the AP remains the foremost global provider of live video news, but also helps its customers overcome their own UGC challenges. (Lunden, 2013)

Twitch, on the other hand, became profitable by entering the niche of online gaming. While watching is free for all viewers, fans can buy monthly subscriptions to get more privileges, such as exclusive access to the chats of their favourite streamers. With this concept, Twitch built a base of 12,000 professional game broadcasters. Via its 'partnership program', these streamers get a share of the 'advertising, subscription, and merchandising revenue Twitch can generate from their channel' (Gillette and Soper, 2015). Meanwhile, Twitch also profits from collaborations with video game and console producers.

It was not until 2015, however, that two new apps – Meerkat and Periscope – sparked a boom in the industry. The new market entrants were well received because they were constructed to integrate smoothly with Twitter, allowing users to stream to their followers, search Twitter's user base and promote their streams via Twitter's push notifications (Morrison, 2015; Wagner, 2015). In an interview with *AdWeek*, Brad Hunstable, CEO of Ustream, claimed the exponential growth of the mobile video market was another reason for the sudden success of the apps (Morrison, 2015; Statista, 2016). Digital video is predicted to be one of the fastest growing revenue sources in the global media market, with the video advertising marketplace showing expected growth rates of 18.75% per annum in (Statista, 2015). The importance of

video streaming in this regard is already evident. In 2014, Twitch was the fourth-largest peak-Internet traffic source in the United States, surpassing even Facebook (Popper, 2014).

Given this potential, it is not surprising that companies such as Twitter, Google, Amazon and Facebook soon entered the social streaming market as powerful competitors. Meerkat, for example, suffered a blow when Twitter, which had bought its competitor *Periscope*, announced it would 'remove Meerkat's access to their social graph in favour of [...] Periscope' (Bacheller, 2015). Although Periscope remains an independent app, its live content is now fully integrated into the main Twitter app. Videos shared from Periscope to Twitter appear in users' Twitter feeds in the same way as Twitter's native video (Wagner, 2016b).

Meanwhile, in 2015, Google launched *YouTube Gaming* in direct competition to Twitch. *Chromecast*, a device and app that enables users to stream content from Netflix and other providers to TV screens, and a new premium subscription service called *Youtube Red,* which is currently available in the United States, Australia, New Zealand, Mexico and South Korea, rumoured to roll-out in the United Kingdom in 2017 (Ingram, 2016; Titcomb, 2016). *Youtube Red*, an ad-free version of Youtube, competes with music and video streaming services alike: Not only does it offer exclusive new TV-style shows featuring Youtube stars such as PewDiePew, as well as a range of independent movies, it also gives subscribers access to *Google Play* Music, Google's music streaming service, and enables subscribers to download and consume content offline (Titcomb, 2016). More importantly, Google plans to update its YouTube app with a live-streaming feature (Martin, 2016). The firm has been active in live video for a while, with its *Google Hangouts On Air* and live-streaming via the *Creator Studio* dashboard on YouTube, but the new app feature will make live video streaming more accessible, as explained by YouTube product manager Kurt Wilms:

> Because it's built right into the YouTube app, mobile live streaming will have all the features your regular videos have – you'll be able to search for them, find them through recommendations and playlists and protect them from unauthorized uses. (Wilms in Martin, 2016)

As for Amazon, beside buying Twitch in 2015 for US$970m (Kharif, 2015), the e-commerce giant introduced a *Prime* service for movie streaming and recently announced the launch of *Amazon Direct Video*, a platform similar to YouTube (Ingram, 2016b).

Finally, Facebook, whose users already consume around 100 million hours of video per day, is also investing heavily into live-streaming (D'Onfro, 2015). In 2015, the social network started to offer video embedding, allowing 'Facebook videos to move around the web' (a service previously only provided by YouTube), and improved its video advertising services, allowing customisation and targeting by gender, age and location (Rosenbaum, 2015). Recently, Facebook implemented 'Twitter-like' features such as verified accounts for celebrities, trending topics and hash-tags, to draw more professionally generated content (Kafka, 2013). However, with the increase in professional content, Facebook has experienced a '21% decline in "original sharing," or personal updates' (Griffith, 2016). The new live-streaming feature, *Facebook Live* (Figure 2), could benefit both content forms as the network claims people watch live video three times longer and comment 10 times more often in comparison to on-demand videos (D'Onfro, 2016a; Facebook, 2016a).

Figure 2. Facebook Live application for iPhone (Lavrusik and Tran, 2015).

First released for celebrities and verified pages in 2015, *Facebook Live* was fully launched in April 2016 (Cohen, 2016). From the beginning, the new service was actively supported by Facebook. In an effort to boost user-generated live video content production, Facebook ran an extensive ad campaign in the United States and the United Kingdom. TV and Facebook video ads depicted snippets of real user-generated live videos to raise awareness for the new feature, and educational out-of-home ads showed users how to use Live (Nudd, 2016). The social network also put considerable effort into integrating social live-streaming into its technical infrastructure and promoting it through a change of its ranking algorithm (Constine, 2016a). Recognising the existing difficulty for publishers to build sustainable economic models for live-streaming, Facebook decided to subsidise the production of content. According to the *Wall Street Journal*, Facebook invested US$50m in live partnerships with 140 media companies (Perlberg and Seetharaman, 2016; Figure 3). While YouTube has been working with a shared ad revenue and subscription model for years, Facebook has yet to find a way for publishers to generate revenue from their content. Facebook is thus using the partnership programme to keep publishers interested in the feature until it finds a sustainable way to monetise their efforts. In addition, the partnerships allow Facebook to gather a significant amount of data to improve its feature and outperform rivals. Even though the exact terms of the deals are secret, the Wall Street Journal claims that 'contract values are based on publishers' popularity on Facebook and the number of broadcasts they are willing to stream' (Perlberg and Seetharaman, 2016).

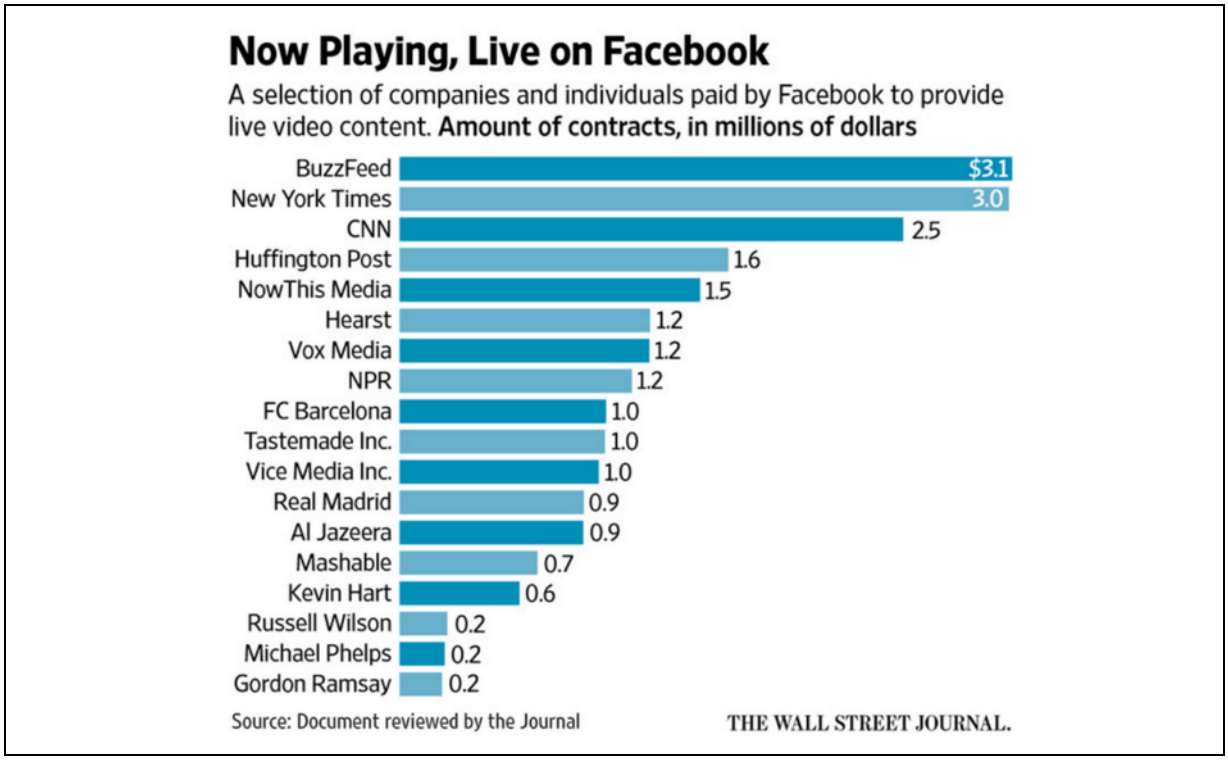

Figure 3. Facebook Live media deals (Perlberg and Seetharaman, 2016).

Methodology

To describe Facebook's efforts to influence the development of social live-streaming, this article draws on a series of conversations with companies involved in the production of video for Facebook Live. A corpus of interviews and declarations was extracted from publications specialised in technology, marketing and business, then complemented by 10 semi-structured interviews realised specifically for this study. Five of them were conducted with senior employees of organisations that

1. Are paid by Facebook to use its Live feature and considered frontrunners in the quality and quantity of the published streams,
2. Vary, from traditional news producers to digital pure players, focused on tech and entertainment, and
3. Do not operate traditional TV networks (as their experiences, resources and objectives differ from those of newer video publishers).

To prepare the investigation, two preliminary interviews were carried out with recognised experts in the field: Professor Oskar Juhlin from the University of Stockholm, and Kurt Wagner, senior editor at the technology magazine *Recode*. Finally, to shed light on trends in the market and expose potential bias in publishers' responses, two interviews were conducted with service providers of Facebook's 'Media Solutions' programme. *Grabyo* provides tools to distribute, manage and monetise video assets, facilitating the editing and simultaneous distribution of live streams to various social media platforms. *Telescope* developed 'Live Studio' – an audience engagement tool for Facebook Live that enables the display of viewer comments on-stream and allows publishers to conduct polls as on-screen graphics. All participants were interviewed via video chat and telephone with interviews typically lasting between 35 and 60 minutes (Table 1).

Table 1. Original interviews realised for this research.

	Organisation	Informant	Position	Date and duration
Pre-interviews	Recode	Kurt Wagner	Senior editor	4 April 2016 – 21 minutes
	Stockholm University	Oskar Juhlin	Researcher	8 April 2016 – 43 minutes
Publishers	NowThis	Interviewee asked to be only partially identified	Senior video producer	8 June 2016 – 34 minutes
	The New York Times	Alan Haburchak	Senior video journalist	21 June 2016 – 60 minutes

	The Verge	Helen Havlak	Engage editor	24 June 2016 – 32 minutes
	Mashable	Eric Korsh	Mashable studio director	8 July 2016 – 27 minutes
	Mashable	Eric Korsh	Mashable studio director	25 July 2016 – 32 minutes
	The Washington Post	Micah Gelman	Editorial video director	9 August 2016 – 35 minutes
Live media partners	Grabyo	Gareth Capon	CEO	17 June 2016 – 54 minutes
	Telescope	Jason George	CEO	18 June 2016 – 39 minutes

Co-producing news streams with Facebook

In the contemporary media landscape, publishers have to cope with fast technological innovations, changing consumption habits and an increasing variety of competitors. Social media, in particular, have assumed a growing importance as sources for news and entertainment, especially for young audiences. Worldwide, more than 25% of consumers aged 18–24 years claim their main news sources are social networks, with Facebook being the most cited platform (Newman, 2016b). To survive in the crowded digital market, publishers need new partnerships, as the production of the new digital offerings requires skills and resources that traditional organisations cannot easily supply (Lindskow, 2016). Suppliers in this co-production process include companies such as Google and Facebook, which can offer a bundle of specialised products including 'editorial tools (e.g. social widgets), measurement tools (e.g. web analytical tools), and advertising services' (Lindskow, 2016).

Emily Bell (2016), Director at the *Tow Centre for Digital Journalism* at Columbia University, described the future of digital news journalism as follows:

> It seems most likely that the next wave of news media companies will be fashioned around a studio model of managing different stories, talents, and products across a vast range of devices and platforms. As this shift happens, posting journalism directly to Facebook or other platforms will become the rule rather than the exception. Even maintaining a website could be abandoned in favour of hyper-distribution. The distinction between platforms and publishers will melt completely.

Some of Bell's predictions have already been observed: the news media start-up *NowThis* has shut down its website and now purely operates on social media. A less extreme example of such 'social-only' content dissemination strategies is Buzzfeed's food channel, *Tasty*, which built up a fan base of 54.6 million followers on Facebook alone (Griffith, 2016b).

The developments described above offer news publishers the chance to enter markets previously dominated by traditional television. However, the power of the new media partnerships often lay with telecommunications providers, who serve as the new intermediaries in digital publishing (Simon and Bogdanowicz, 2012). Publishers depend on their infrastructure and can hardly influence the conditions under which they operate. One common problem is that while platforms want to keep users within their 'walled gardens', publishers need to drive traffic to their websites to generate ad revenue. In the case of news video streaming, such asymmetry is particularly manifested as 'the growth around online video news seems to be largely driven by technology, platforms, and publishers rather than by strong consumer demand' (Kalogeropoulos et al., 2016). While most publishers increase the number of videos posted on Facebook, they struggle to persuade users to consume videos on their own platforms. Publishers are thus forced to invest in technology and staff to remain relevant, but are uncertain about their return-on-investment, as social networks dictate how video content can be monetised.

As the publishers in our sample were paid media partners for Facebook Live, it is not surprising that, while some of them had experimented with live video on other platforms, they all declared it was the launch of Facebook Live that kick-started a more extensive engagement with social live-streaming. Even though the network's financial incentives and enormous audience size played important roles too, several publishers admitted that the choice to use Facebook's service was due to their dependence on the platform and its aggressive strategies to push the new feature:

> When Facebook tells us something is gonna be the new thing we listen, because you know we want to keep that good relationship and *generally they tend to dictate what becomes the new trend on their own platform*. So, it became clear to us that we should start building a team and start trying it out. (NowThis personal correspondent, 2016, emphasis added)

Informants feared that by failing to adapt, their offers could be sanctioned by the platform's algorithm, as in Mashable and *The Verge's* statements:

> If they favour their algorithm to promote Live, you move in that direction [...] *It's very easy for them to convince you*, because they just take their platform and say 'here's what we're gonna favour to get into the feed!' (Korsh, personal correspondence, 2016, emphasis added)

> Facebook has already given Live more prominence in the newsfeed ... We're going after that audience with what we think is right for that medium and native to that medium. (Havlak, 2016, personal correspondence)

As shown in Table 2, Facebook Live is not the only social streaming service used by the interviewed organisations. Most publishers tend to rely on a variety of different platforms, both as strategy to decrease their dependency on a single provider and in accordance with previous choices (e.g. The Verge adopted YouTube's live feature several years ago, as they have a large following on the platform; for Mashable, Periscope was the natural choice because that organisation is among the top publishers on Twitter.). However, in contrast with Facebook Live, publishers adopted other platforms gradually, dedicating less resource to them and producing smaller output. Facebook's paid partnerships dictate, on the contrary, that publishers must produce a certain amount of live videos. For NowThis, the number varies between 90 and 100 monthly streams (Scott, 2016), whereas *The New York Times* (NYT) produces about 120 live videos per month (Spayd, 2016). Such high numbers encourage publishers to build specialised Facebook Live teams and jump into a format for which they have little experience. This created understandable voices of concern, for example in Mashable's interview:

> Unless you have a piece of content that you feel is really breakthrough, in a way you're not that interested in too many people seeing it, because it could have negative effects. *It's so experimental that we're not pushing it out in a dramatic way*. I'd like to get to that place ...

> They're paying many publishers, and so everybody is doing their experimenting or piloting for them at a pretty low cost. And you know, us included, you're seeing some mediocre activity. [...] The problem is, you have to hit a certain volume to get the money from them. [...] So it puts you on a treadmill that makes it really hard to make something more conceptual. You really need to devote resources if you're gonna (sic) be good at it. (Korsh, 2016, personal communication)

These concerns reveal the unprecedented influence reached by Facebook on the production of online news. For the first time in its history, the social network left its role of a mere content transporter and decided to pay chosen news outlets to use its features. Such a strategy increases the dependency of publishers on Facebook and augments rivalry on both providers' and publishers' sides. As the publishers are obliged to produce higher amounts of videos for Facebook, they dedicate less resource to other platforms, which renders their diversification strategy relatively ineffective. Even publishers excluded from these 'special deals' are pressed to adopt Facebook Live to keep up with their paid competitors (who are the leaders of their respective news sector). In turn, this encourages providers such as Periscope and YouTube to find new ways to increase their value for publishers. In a recent interview with the Guardian, Periscope founder and CEO Kayvon Beykpour said,

Table 2. Platform choices for live video streaming.

	Facebook Live	Periscope	Youtube Live	On-site streaming
The Washington Post	X	X	X	X
The New York Times	X		X	X
The Verge	X		X	
Mashable	X	X	X	
NowThis	X			

> I think that [for Facebook], it's an effective and aggressive way to play catch-up, for sure. [...] It's important to make sure we're incentivising creators. And you already see Twitter experimenting with this: we have a whole division called Niche that works with creators to help pair them with brands that want to sponsor content and help them make a living. (Beykpour in Hern, 2016)

In addition to strengthening its relationships with content providers while effectively forcing them to focus on competing services less, Facebook's strategy serves another important purpose. Funding publishers and releasing an open application programming interface (API), which allows both software and hardware developers to integrate existing technology and create new solutions for Facebook Live, also allows Facebook to collect vast amounts of data – data that can be used not only to improve its service but also to practicably crowd-source ideas for new business models around live video. One example is

Facebook's competitor, Livestream. Despite the fact that they operate their own social live-streaming platform, they integrated and adapted their multi-angle camera Mevo to Facebook's platform after user feedback suggested that people wished to stream to the broader audience of the social media giant (Ha, 2016). Facebook now benefits from the product itself, the benefits it provides for Facebook Live users, and from the data around the use of said product by monitoring how publishers utilise it. Ultimately, that makes it very easy for the network to develop new, improved hardware similar to Mevo, without investing too many resources in a long trial-and-error development phase.

Adapting news storytelling to Facebook

The dependency on platforms such as Facebook is reinforced by the failure of earlier attempts to integrate live video into publishers' strategies. A few years ago, both The NYT and The Post invested in TV-style on-site live-streaming but had to change their strategies when viewer numbers fell short of their expectations. In 2013, The NYT abandoned its *TimesCast* shows, which featured breaking news and glimpses into the newsroom (Bunz, 2010). In 2015, The Post re-launched its unsuccessful *PostTV* under the moniker *Washington Post Video*, replacing the lengthy daily live shows with 'shorter-form original videos' (Raudenbush, 2015):

> PostTV had a strategy of trying to be the ESPN of politics. They would do shows all day long. [...] I think that was a fundamental misreading of the audience and how people watch online. (Gelman, 2016, personal communication)

The failures of PostTV and TimesCast are no exception. *The Wall Street Journal*, *Financial Times*, *The Huffington Post* and several other news publishers all tried to produce on-site live programming but ended up scaling down their initiatives (Welsh, 2015). Most of these initiatives tried to establish their independence by avoiding drawing on an external provider for live videos. The drawback of this strategy, however, was that it prevented publishers from benefitting from the network effects of social media platforms. Consequently, partnership with Facebook offers publishers such as The Post and The NYT an opportunity to re-enter the live domain with a new strategy and a larger audience. Despite said, poor results with live video, all publishers profited, having already expanded their strategic focus on video products a while back. Earlier experiences left publishers with fully equipped studios and skilled video teams to be reinvested in the new Facebook partnership. The Post, for example, steadily increased its investments in video since 2013, when Jeff Bezos, founder and CEO of Amazon, bought the company (Ciobanu, 2015; Kennedy, 2016). Embedded into different newsroom divisions, the Post's video team comprises 40 people, and the outlet operates three professional TV studios (Raudenbush, 2015). In an interview for *Digital Content Next*, Micah Gelman, The Post's Director of Editorial Video, explained as follows:

> We want to change the perception of The Washington Post as a legacy newspaper with video, to a video-first enterprise, essentially re-imagining The Washington Post as a video destination, not only on Facebook Live, YouTube and other social media sites, but also over the top via Apple TV, Roku, and Fire TV. (Gelman in Ozer, 2017)

Mashable, whose focus on video has always been strong, recently made an even more drastic shift towards moving images, dismissing 30 (mostly editorial) staff members and announcing that it will 'pivot from hard-news coverage' and 'focus on producing lots more video about "digital culture"' (Kulwin, 2016). In a public memo, Greg Gittrich, Mashable's new Chief Content Officer, explained the decision as follows:

> We're expanding the real-time team and adding video and visual storytelling capabilities across all core areas of coverage. [...] Our young, social audience is increasingly getting information by watching video, whether that's on our site or on platforms such as Snapchat, Facebook, YouTube, OTT, Instagram or television. (Gittrich, 2016)

Other publishers in the sample reported similar strategic adjustments. All interviewees deemed the dissemination of videos across a variety of platforms and devices as vital, and all reported investments specifically targeted to Facebook Live, for example, acquiring products such as *Mevo*, the 'first camera to stream directly on Facebook Live' (Haot, 2016) and multi-angle set-ups connected with Facebook's API for higher-quality videos.

Interestingly, publishers stated they installed teams dedicated specifically to the production of social streams, rather than delegating live video to their regular video teams. The Post, for example, built a team of six, 'including the editor, producers, and hosts' (Ciobanu, 2016). The NYT runs a team of equal size, while both The Verge and NowThis currently employ teams of three. These relatively small teams can produce a large number of videos by sourcing additional talent from the rest of the newsroom. This was specifically important for The NYT, which uses its Facebook Live initiative as a tool to advance its ongoing transition

towards digital. In a recent interview for the podcast series *It's All Journalism*, Louise Story, the Times' Facebook Live team lead explained as follows:

> A lot of times when you see fancy things happening in the digital space, they're being done by people who know how to code, or with a lot of fancy equipment and a lot of skill. That's exciting too, but this can be done by anyone. You shoot this with your cell phone [...] I know a lot of reporters want a way they can get involved in innovation, experimentation, reaching out to our audiences more closely. This allows for that. (Story in O'Connell, 2016)

Though the size of these teams may seem small, one should take into consideration that most publishers run teams of equal or greater size for each specific social media platform (Kalogeropoulos et al., 2016). The choice to set up a specialised team dedicated to producing content for Facebook Live is thus explained by the need to adapt content, not only to the format of video streaming but also to the peculiar style of Facebook's platform mechanisms and user behaviour.

As for the requirements related to video streaming, most publishers affirmed that, to foster engagement, content must be visually exciting and suitable for interaction, in line with Hamilton et al.'s (2014) findings about the 'hot' and 'cool' components of live-streaming. Contents must also have some 'freshness' to justify live transmission. The Verge, for example, mentioned using video streaming to present technological gadgets as soon as they are released, while The NYT stated,

> The most viewed live videos that we've done have been around the Orlando shooting and the reporting that we were doing there. That's because ultimately while Facebook is a publishing platform, it still has that social element to it. So the success of every video depends on the social currency that that story has in a given moment. [...] We had a live video with somebody who had been shot in that shooting [...] and it was the first time that anybody really got to hear from somebody who'd experienced that breaking news event. (Haburchak, 2016, personal communication)

Even though there was much general agreement on these criteria, some publishers seemed to interpret them more strictly than others. The Post, for example, pointed out that many live streams were 'uninteresting' because they gave a 'sense of emergency to things that didn't necessarily require it' (Gelman, 2016, personal correspondence). Specifically, the informant referred to so-called 'talking-heads' formats, in which reporters discuss news topics with the audience. By contrast, NowThis found this format particularly interesting because it allowed audiences to directly engage with reporters:

> We had one of our producers the other day just doing a Q&A with the audience about Ramadan, just answering general audience questions. We got such good engagement, so many people watching. (NowThis, 2016, personal communication)

Publishers have also experimented with airing pre-recorded footage. While Facebook does not advocate this practice, nothing prevents publishers from live-streaming their regular web shows to increase their reach and exploit the changes in Facebook's algorithm to favour live over on-demand videos (Marshall and Perlberg, 2016).

Producing successful streaming content is particularly challenging because of the specific nature of storytelling on Facebook. Embedded in the newsfeed of Facebook or Twitter, videos compete with other content. Users checking their social media accounts do not generally look for specific videos, but discover them through the platform – often thanks to auto-play features. The consumption conditions privilege with shorter videos, lasting usually around 90 seconds, offering clear rewards for watching (Newman, 2016a). However, because of the way content discovery works on Facebook, streaming video cannot rely on such short formats. Unlike Twitter, Facebook is not constructed for real-time content, and prioritises articles and status updates based on parameters such as popularity and individual users' behaviour rather than displaying recent content first (Constine, 2016a). The social network has made three changes to help the discovery of live content: It has tweaked its algorithm, enabled users to subscribe to live notifications and launched a 'live map' of on-air streams. Still, most users will usually discover live videos after they have started. Hence, Facebook recommends streaming for at least 10 minutes, to give audiences time to build up (Facebook, 2016). Live video on Facebook is therefore subject to contradictory constraints, as Gareth Capon from Grabyo explained:

> If you're social live streaming you need to capture the audience attention quickly, because they need to know what the content is and they need to know why they should bother to stop scrolling and watch – you have to be quite creative. It's like a heartbeat of interesting moments spread through the live event [...] because viewers could be jumping into that stream at any time. You want these heartbeats of interesting moments going through your content so you can drive spikes in activity. (Capon, 2016, personal communication)

In contrast to linear television, where the climax is built up slowly, live streams must keep a level of tension throughout the entire video with various climaxes. While capturing the attention of viewers arriving on the streaming at any time, publishers must yet try to not give away too much of their story before the audience reaches its peak after about 10–15 minutes. A few participants mentioned a Buzzfeed production as an example for a live video that found the perfect balance between surprise, tension and reward. Buzzfeed conducted an experiment where they put rubber bands around a watermelon to see how many it would take to make the fruit burst. With more than 10.9 million views, the live video is among the most watched on Facebook (Buzzfeed, 2016). Viewers knew what the climax of the video was going to be but could still watch in excited anticipation, making bets in the comment section about how many more bands it would take for the melon to explode.

The length inherent to Facebook Live video poses another problem. Streams are not removed after their completion and, according to the social network, two-thirds of their consumption happens in this on-demand form. This change of consumption setting is problematic, as what was engaging in a live format can become boring for completed videos. To address this issue, Facebook has launched a so-called 'engagement graph': using its new 'live reactions' feature, which enables viewers to send various emoji throughout the broadcast, the provider created 'a visualized timeline of when a Live video receives the most engagement' (Constine, 2016b). This timeline allows latter viewers to skip to the parts of the video that caused the strongest reactions.

The way publishers re-purpose live content is also interesting. For one thing, it reflects the increasing shift of news publishers' strategies from 'purpose-building' (the tailoring of content to specific social media platforms) to 'only-building' (the creation of content that only exists on social media). With the exception of the The Post (which avoids 'orphan videos' not connected to other content), most publishers do not re-distribute their Facebook Live videos on their websites or other social media. Unlike on-demand videos, live streams are generally not re-distributed simply because they achieve the best effects on social media. For The NYT, the practice of 'only-building' is first, as the publisher previously refrained from producing 'social-only' content not connected to other pieces of reporting:

> A new move for the Times has been producing segments and stories only for Facebook Live. So, I actually just got back from a meeting with a reporter doing an interview for Facebook Live that wasn't gonna exist in any other format (sic). There wasn't a story being written about it, there wasn't gonna be a produced video going on nytimes.com [...] We've been doing more and more of that. (Haburchak, 2016, personal communication)

However, there were two cases where publishers did experiment – by connecting social streams to other formats – that were most remarkable in our corpus of study. The Times streamed a 3-hour live video from its newsroom, following Editor Carolyn Ryan's coverage of the New York presidential primary (Insider Staff, 2016). The piece is an example of how video streaming may increase transparency on reporting processes, and it is interesting because after the live stream was over, a link to the finished article on nytimes.com was added to the original Facebook post. This illustrates a way in which social live video can be used to direct people back to the main publisher's website – a tactic that could potentially balance the increased dependency on providers such as Facebook. The Post's coverage of the eighth Democratic Primary Debate (2016) provides an even richer example of connecting live content across different channels.

The publisher co-hosted the event with Univision News (the most watched Spanish-language US television network) as part of an extensive partnership 'to offer deep, authoritative coverage of Hispanic voters during 2016 presidential campaign' (WashPost PR Blog, 2015). In addition to Univision, CNN and Fusion aired live broadcasts of the debate on television, while The Post streamed the event via its website and its Apple TV app. The publisher simultaneously used Facebook Live to reach audiences interested in further in-depth political analysis. In over 10 streams, The Post delivered 'live behind-the-scenes coverage, analysis from debate moderators in advance of and directly after the event, as well as real-time observations from Post reporters through the broadcast' (Patel, 2015). In an interview with Digiday, Micah Gelman explained as follows:

> It's a great opportunity to show what goes on behind the scenes. People are interested in that part of the political process, and Facebook Live allows us to really dive deep in a way that we couldn't in a traditional streaming opportunity. (Gelman in Patel, 2016)

Conclusion

The future and even the present of social life-streaming are far from written. At the time of this study, providers regularly announced new features and proposed solutions to some of the common issues encountered by publishers. After all data were collected, Facebook announced their first tests for 'mid-roll'

ads in Live videos (Sloane, 2016). Moreover, the network introduced 'waiting rooms and pre-scheduled broadcasts', which might decrease the problem publishers voiced with deferred storytelling. Publishers can now 'pre-schedule the time they are going live, which will allow Facebook to send users a notification before the stream starts so they can be waiting when you go live' (Tepper, 2016).

For the moment, however, none of these changes call the general findings of our research into question. By shifting news consumption off-site, publishers become more and more dependent on social media platforms, subject to their influence. Our case study illustrates how Facebook can shape profitability and storytelling of social live-streaming, both indirectly (by tweaking its feed algorithm) and directly (by sponsoring specific uses of its tools). Live-streaming may well be the current 'next big thing', but it did not evolve naturally from consumer demand or product developments. Instead, live-streaming has been carefully nurtured and cultivated by the direct manipulation of technology providers.

This does not mean that Facebook will be the *only* actor shaping the evolution of live-streaming, to be sure. While we underline the power of the corporate influence, we should also be attentive to not reifying 'The Social Network'. As insightfully observed by Henry Jenkins and Mark Deuze in their introduction to a special issue on 'Convergence Culture', digital media are now the theatre of contradictory trends:

> These shifts in the communication infrastructure bring about contradictory pulls and tugs within our culture. On the one hand, this 'democratisation' of media use signals a broadening of opportunities for individuals and grassroots communities to tell stories and access stories others are telling, to present arguments and listen to arguments made elsewhere, to share information and learn more about the world from a multitude of other perspectives. On the other hand, the media companies seek to extend their reach by merging, co-opting, converging and synergizing their brands and intellectual properties across all of these channels. In some ways, this has concentrated the power of traditional gatekeepers and agenda setters and in other ways, it has disintegrated their tight control over our culture. (Jenkins and Deuze, 2008: 6)

Our study of Facebook's campaign to steer the development of live video streaming, however, has revealed yet another way in which digital gardeners can affect digital communication. Beside influencing end users through the artful setting of their algorithms and interfaces (Cardon, 2015), platforms can establish direct partnerships with leading content producers, with the hope that their example will establish a model for other users to follow. The implications of such findings are both reassuring and worrying. Reassuring because they suggest that for all their might, digital platforms cannot impose by themselves how communication technologies will be used and worrying because they reveal the growing financial and technological leverage of telecommunications providers.

In the case of live video streaming, Facebook's influence is particularly manifested. Through its partnership programmes, this social network has made it difficult for traditional publishers to implement their own strategies for diversification and power-balancing. While Facebook's partnerships give publishers the financial freedom to try out an innovative format, their contractual clause dictating the high quantities of live monthly videos make this market experiment risky in itself. In a Sunday column for The NYT entitled 'Too Much, Too Soon', Editor Liz Spayd reviewed the outlet's own efforts with social live-streaming and concluded as follows:

> These videos represent a potentially transformational form of journalism because they let stories unfold organically, live, and with the audience able to change the experience ... But here's the problem. After watching countless hours of live video in the past few weeks, I have hit upon many that are either plagued by technical malfunctions, feel contrived, drone on too long, ignore audience questions or are simply boring, by I imagine most anyone's standards ... If you're not experimenting in the digital age, you won't survive. But this experiment veers significantly from The Times' past approach to new journalism forms. The newsroom has shown that innovation doesn't have to equate with poor quality ... This time, that's not the case. It's as if we passed over beta and went straight to bulk. (Spayd, 2016)

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