

Determining the Ethical Dimensions of Live Streaming: An Explorative Delphi Study

Research in Progress

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Abstract

Live streaming services like Facebook Live or Periscope allow their users to broadcast whatever and whenever they want on social media. This recently developed type of real-time broadcasting evokes a number of ethical concerns ranging from privacy, surveillance to intellectual property issues. Yet, despite its growing importance in contemporary society, there has been limited research on the ethical dimensions of live streaming. To close this gap, this study seeks to address the research question: What ethical aspects have to be considered for live streaming? To be able to derive holistic ethical norms, which are not limited to specific agents or contexts, this paper presents the design for an Online Delphi study with international experts from seven different fields: ethics, politics, law, journalism, software engineering, platform operators and users. The exploratory stage of the Delphi study has been conducted, including the development of the questionnaire and the recruitment of experts. The collection and analysis of ethical norms related to live streaming do not only allow the development of a Code of Ethics and an ethical theory but can also serve as a guideline for the design and improvement of live streaming services by Information Systems experts.

Keywords: live streaming, ethics, morality, social media.

1 Introduction

On March 22, 2016, two bombs detonated at the airport of Brussels, Belgium (Clarke et al. 2016). Heavy fumes hampered the view, fatalities, and casualties lay on the floor, people were crying. Even before emergency agencies and media reached the site, the Twitter community followed the event live on Periscope, uncut and from different angles. Crisis situations are shaped by ambiguity and information scarcity, wherein society looks for information, which facilitates the sense-making process (Oh et al. 2013; Mirbabaie & Zapatka 2017; Stieglitz et al. 2018). Although the live streaming of the Brussels Bombing met the public need for quick and authentic information it evoked ethical concerns such as the harm of personal rights or a potential hazard of ongoing investigations. This ethical dilemma is especially relevant for live streaming as real-time broadcasting unites the act of information collection and information dissemination, turning ethical infractions into an immediate event (Stewart & Littau 2016).

While ethical boundaries for journalistic broadcasting do exist in form of codes of conduct, e.g. the Code of Ethics by the Society of Professional Journalists (SPJ), live streaming services like Periscope or Facebook Live do lack a profound normative evaluation (SPJ 2014; Faklaris et al. 2016). As every social media user with a stable Internet connection on a mobile device can stream events, an affiliation to a media house is no longer needed to become a video newsmaker (Lee 2015). Live streaming videos range from scheduled events, breaking news to private images (Hutchins & Sanderson 2017; Fichet et al. 2016; Bründl & Hess 2016). The majority of live stream producers and users are adolescents between 13 and 25 years, who want to chat and share information to fight their boredom, to socialize and to reach specific target groups (Friedländer 2017). As the main user group of live streams is quite young, the protection of adolescents should be considered in an ethical evaluation. The main online risks adolescents face are information breaches, harassment, sexual solicitations and the exposure to explicit content (Wisniewski et al. 2015). If information systems experts and software engineers are aware of ethical problems that can be caused by live streaming, they can use their expertise to design or improve targeted solutions, e.g. in form of digital nudges (Pinter et al. 2017). While currently live streaming services are mainly used on smartphones, the emerging technology of augmented reality glasses and other forms of wearable cameras can raise further ethical concerns e.g. in form of privacy, surveillance or intellectual property issues (Denning et al. 2014). Scientific publications which evaluate live streaming from an ethical angle are limited, wherefore the development of an ethical theory is not possible yet. To close this research gap, it is important to collect, understand and combine the moral positions concerning live streaming from different perspectives. Thus, this study aims at answering the following research question:

What ethical aspects have to be considered for live streaming?

To be able to derive holistic ethical norms, which are not limited to specific agents or contexts, the Delphi method is chosen, which is a kind of discourse ethical approach. Discourse ethics have been identified as especially useful in the information systems context (Mingers & Walsham 2010). Delphi studies create a safe and anonymous space for discourse between all parties which might be affected by the norms, regardless of their individual preconditions. The study will include experts from seven areas: ethics, politics, law, journalism, software engineering, platform operators and users. To cover all areas equally, at least two participants will be included per field. The Delphi study aims to reach consensus by several questionnaire rounds and iterative feedback loops. This will allow the universalization of the live streaming norms. According to Stahl (2012), this study approaches a question of explicit morality, as it wants to answer what can be considered as ethical in the context of live streaming. This descriptive step is vital to be able to develop an ethical theory and philosophically discuss the derived code.

The next section will present the state of the art concerning live streaming with respect to ethical questions. Besides IS literature, journalistic publications will be considered, as the discipline has expertise in the ethical evaluation of live broadcasts. Afterwards, the research design of the Delphi study will be described and visualized. The paper concludes with a reflection of its scientific and practical implications. A collection and analysis of ethical norms related to live streaming does not only allow the development of codes of ethics and the development of an ethical theory, but it can also be used as a guideline for the design and development of the applications. Furthermore, those norms, based on the consensus of such a diverse group of experts, can be an orientation for policy and lawmakers.

2 Status quo

2.1 Live streaming on social media and its main actors

Although live streaming technologies have already been developed in the last decade, only the introduction of greater bandwidth capacities, an increased usability of platforms and applications such as a strong market penetration of mobile devices, enabled its success (Bründl & Hess 2016; Stewart & Littau 2016). According to Scheibe et al. (2016), social live streaming services do include five main characteristics, which distinguish them from other broadcasting and video services: synchrony, real-time broadcasting of self-recorded material, the use of private mobile devices, the interaction with the audience such as a reward system for the streamers. While platforms like YouNow and Ustream have offered live streaming

for several years, the established social networks Facebook, Twitter and Instagram also introduced live streaming options in 2015 and 2016 (Facebook 2015; Instagram 2016; Ustream 2017). Besides general live streaming services, which do not follow any thematic limitation, there are as well topic specific live streaming services (Scheibe et al. 2016). One of the most successful topic specific live streaming platforms is Twitch, which focusses exclusively on the niche of video games and e-sports, attracting more than 15 million active users per day (Twitch Interactive 2017; Smith et al. 2013).

All live streaming services have in common that their main user group are adolescents in the age group of 13-25 years (Friedländer 2017). The main motivational factors to live stream are boredom, the need to socialize and the aim to reach a specific target group (Friedländer 2017). Depending on the platform there are slight differences in the motivational factors. While e.g. YouNow and Ustream are hardly used for monetary reasons, especially Twitch streamers consider financial incentives as a key driver (Bründl & Hess 2016; Friedländer 2017). Successful influencers on Twitch were able to monetize their streams to such an extent that they turned their hobby into their main source of income (Johnson & Woodcock 2017). Live stream influencers do also draw the attention of the industry, as they are considered as interesting partners for innovative marketing campaigns (Chen et al. 2017). The reason why the audience watches live streams is a high degree of identification with the broadcaster or the group he represents, resulting in high loyalty and enjoyment of the parasocial interaction with the streamer (Hu et al. 2017).

Another important producer group of live streams are journalists, who use it as a reporting tool (Fichet et al. 2016). A lot of journalists, who use live streaming do often practice mobile journalism which describes the work of television or multi-media journalists, who are in charge of the entire news process ranging from the writing to the shooting, editing and uploading of their stories (Blankenship 2016). For this study, we define journalism which focuses on the synchronized distribution of truly live, neither pre-recorded nor edited news content to social media users as *live streaming journalism*. As the access to news making technologies including recording devices, microphones and editing programs has become easier and publishing has moved online, defining who is a journalist becomes increasingly challenging. Terms like citizen journalism and participation journalism have become buzzwords but are often used in a contradictory manner by different authors (Nip 2006; Paulussen et al. 2007; Blaagaard 2013). In the context of live video streaming and its ethical evaluation, definitions are needed that consider the degree of participation in the news process and especially publishing responsibilities. Nip's (2006) definitions of the following models of journalism involving citizens are helpful in this sense.

Interactive journalism uses the Web as a platform for interactivity and discussion, but news content is still produced and published only by professionals. In *participatory journalism* citizens can contribute actively to the process of news gathering, selection, publication, commentary and public discussion, within a frame designed by professional journalists. Nip (2006, p.14) speaks of *citizen journalism* when citizens are "responsible for gathering content, visioning, producing and publishing the news product". Since live streams are published in real-time and by the person recording, we consider according to Nip's definition both professional journalists and citizen journalists, as equally ethically responsible actors as both are in control of the news making process and therefore responsible for published content. Categorizing private streamers and journalists as producers of live streams and adolescents as users of live streams can be a viable description of the three most important actors in the context of live streaming services.

2.2 Ethics and live streaming

Ethics are a highly complex domain which is based on more than two thousand years of philosophical discourse. Therefore, the focus will be only those aspects, which contribute directly to the research question. Stahl (2008, p.3) underlines: "the literature on philosophical ethics is too extensive to allow anyone a comprehensive understanding". This does, however, not excuse scientists from the obligation to gain an understanding about philosophical concepts and ethical schools of thought, as without this foundation no elaboration will exceed the level of moral intuitions based on the moral codes the scientist is influenced by. Throughout history ethicists have established distinct philosophical streams to guide and evaluate human behavior e.g. based on virtue, duty, utility, rights and love (Christians et al. 2016).

Consequentialism, the idea that actions should be judged by their results (e.g. J.S. Mill), or deontological ethics (e.g. I. Kant), the idea that actions are good or bad omitting the consequences, are just the two most prominent schools of thought. Although ethics offers a wide range of theories and ideas, Christians et al. (2016) describe a gap between these theoretical considerations and daily media practice. Bell and Adam (2004) underline a similar need for practicality in the information systems context.

Journalists usually work under constant pressure to find stories and deliver the latest news. While they are constrained by deadlines and loyalty to their employer, they also have moral obligations to their readers. This encompasses stories to be accurate, truthful and gathered fairly (Frost 2016). Journalists have established their own professional ethics, which reflect their daily dilemmas. One widely respected Code of Ethics has been developed by the ethics committee of the SPJ (SPJ 2014). Its four principles are representative for many similar codes: The first principle is *Seek Truth and Report it*. It emphasizes accuracy in reporting, which entails practices like verifying information, identifying sources and allowing subjects to respond to allegations, while also holding those in power accountable. Undercover reporting should be avoided unless needed for vital information. The second principle *Minimize Harm* focuses on the journalist's task to balance the public's need to know and potential harm. The code urge journalists to show compassion, differentiate between public and private figures' right to privacy and consider long-term implications. The third principle *Act Independently* involves avoiding conflicts of interest, refusing bribes and distinguishing news from advertisement. Lastly, the principle *Be Accountable and Transparent* urges journalists to explain their ethical decisions, respond to questions about accuracy, clarity and fairness, acknowledge their own mistakes and expose unethical conduct of others.

At first glance, this Code of Ethics seems universal, but the immediacy, fragmentation, and permanency of media in the age of social media cause constant ethical challenges (Bowen 2013). An example which highlights this dilemma is the following: Should a journalist report about an incident, even if it is still insufficiently verified? Or should he not report about it, risking that fake news outlets will determine the debate, spreading rumors, which will diffuse and remain in social media. Is it worth to violate the principle of truth-seeking, to eventually obey the principle to minimize harm? The real-time characteristic of live streams even intensifies this dilemma, as the time for moral evaluations is reduced to a minimal.

Although the SPJ Code of Ethics is partly applicable to live streaming, e.g. undercover reporting, privacy and long-term implications are points that are highly significant, the unique characteristics of live streaming could not be considered in 2014, as the most popular apps Twitter's Periscope and Facebook Live have just been introduced in 2015 (Facebook 2016; Twitter 2015). Like its big brother television broadcasting, live streaming is live and audio-visual. As a social media feature it is interactive and has a network character (Scheibe et al. 2016). Additionally, Mackay (1995) underlines the power of the video format and demands specific ethical considerations. By seeming "real", videos can influence people in ways other media cannot. Furthermore, privacy violations are possible, especially when recording without permission. This is particularly relevant for live streaming if technologies like augmented reality glasses, wearables or drones are used, which facilitate hidden surveillance (Denning et al. 2014).

Ethical Codes in broadcast journalism, live streaming's predecessor, use the principle of truthfulness to guide reporting. According to Hall (1978) it is ethical to show a person negatively, as long as it is truthful. Journalists should nevertheless contact the person portrayed, provide a transcript and allow time to respond. Though those rules are not applicable to live streaming as recording and broadcasting are synchronized. News reporters began using videophones to broadcast live from remote locations at the end of the 1990s (Livingston & Bennett 2003). However, in television there is always an intermediate at the studio, who can cut off a live report. In contrast to that live streamers need to decide for themselves whether to stream a scene or not. No editorial control includes the risk of jeopardizing ongoing investigations (Hain, 2016), but on the other hand it can be a benefit for the audience as it allows authentic and quick broadcasts. Topicality is the most important reason to stream live. Press conferences, demonstrations or celebrations are typical examples. Very sensitive or complex topics may not be suitable for live streaming, as most of the experts agree that funerals, accidents and trials should not be streamed and that copyright and privacy need to be protected (Degen et al. 2017). However, recent studies about law infringements by streamers reveal regular violations of copy- and personal rights (Zimmer et al. 2017).

Although citizens who irregularly film or stream news events are not bound to professional ethics, they can function as society's watchdog, whenever news media fail (Antony & Thomas 2010). An analysis of comments on citizen videos showing cases of police violence underlines the appreciation of the cameraman's courage. Thus, ethical concerns like the shock to "witness" a person's death, or the passivity of the bystanders arise as well (Antony & Thomas 2010). Andén-Papadopoulos (2013), who analyzed reactions to citizen footage of the death of Libyan dictator Gaddafi discovered a high sense of presence and participation. Factors like hypermobility, suboptimal video quality, non-narrativity and raw audio are seen as reasons for this effect (Andén-Papadopoulos, 2013). While some citizens may only become video news makers once they are presented with a situation that they aim to share with the public, others have taken it upon themselves to provide first-hand accounts of movements and ongoing issues they see to be underreported or falsely portrayed in professional media. Some examples are the Occupy Wall Street movement and the NYC stop-and-frisk policy (Lenzner 2013). Citizen journalists like Tim Pool or Christina Gonzalez are often faced with danger and the dilemma of wanting to do a service to society, while the mistreated person may not want to be filmed, fearing this will make matters worse for them. The presented ethical conflicts and concepts from the field of journalism do offer numerous insights in the ethics of video broadcasting, which might play a role in social media live streaming, too.

3 Research design

This study has two aims: First it aims for a consensus about the ethical norms for live streaming in social media. Secondly it will discuss the derived codes of ethics for live streaming in social media in the context of ethical theories. As quantitative empirical methods do not allow to uncover the ethical facets of live streaming in detail, the Delphi method will be applied.

3.1 The Delphi method

The Delphi method is a versatile approach used to structure opinions of a group of experts and to obtain a reliable consensus (Dalkey & Helmer 1963). With this organized group discourse, complex problems are elaborated from diverse angles. Iterative feedback loops lead to exchange and adjustments (Linstone & Turoff 1975). In the end, commonalities and differences of the expert's positions are integrated. In the IS field the Delphi method is used for complex research scenarios, which are dominated by theoretical blank spots and subjective knowledge (Skinner et al. 2015). Due to its iterative, dialogue-centered approach, which ensures an exchange of opinions by diverse experts, the Delphi method fits to capture a comprehensive image of the topic with respect to all stakeholders. To assure the quality of the study the four main attributes of the Delphi method are considered: anonymity of the panelists, controlled feedback, the iterative process and the statistical aggregation of the data (Strasser 2016).

The Delphi method includes three main stages: The exploratory stage, the distillation stage and the utilization stage (Skinner et al. 2015). In the first stage, all preparatory steps are taken e.g. the operationalization of the of the general question or problem to derive specific criteria for the experts' survey. Furthermore, the experts are identified and chosen. In the second stage, the distillation phase, the final questionnaire will be developed and transmitted to the panelists. The researchers analyze the given answers and summarize them. The original questionnaire is sent again to the experts, together with the summary of the previous results. The experts are asked to answer again, with respect to the summary, to increase the collective confidence of the evaluation and to reduce the variance. In an iterative process the steps are repeated until there is no change in the experts' opinion. This is followed by the last stage, the utilization stage, where the findings are prepared for publication (Skinner et al. 2015).

3.2 Application of the Delphi method to ethical live streaming

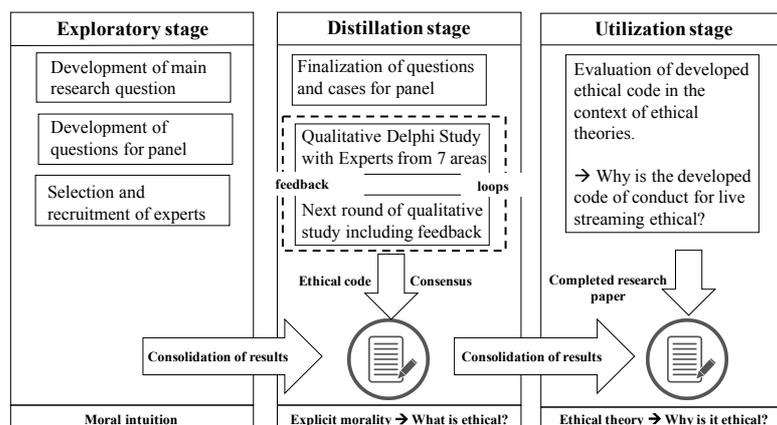


Figure 1. Visualization of the live streaming ethics Online Delphi study

The proposed Delphi study includes all three necessary stages: exploratory, distillation and utilization. For a better understanding of the study design a visualization can be found in Figure 1. The exploratory stage is essential for the preparation of the study. In this first stage, the main research question needs to be developed, the questionnaire gets prepared and the selection and recruitment of experts takes place. Currently, this Delphi study is in its exploratory stage. The main research question has been developed: *What ethical aspects have to be considered for live streaming?* and the selection and recruitment of experts has been started. To gain a holistic picture about the ethical factors of live streaming, international experts from seven fields are chosen. The goal is to gain at least two experts per group. The experts have been identified with a combination of a web search, the contacting of expert networks (e.g. the AoIR) and recommendations by recruited experts. Through preliminary talks it was assured that everyone is fully acquainted with live streaming technologies, which is the most important prerequisite of all experts. Knowledge about ethics is beneficial, but not mandatory to be able to evaluate the cases by the own moral intuition. The study will be assessed by the ethical committee of the university to ensure its harmlessness. All collected personal data of the experts will be handled with care and will be anonymized in the resulting paper. Table 1 lists the expert groups and the recruitment status.

Expert Group	Explanation	Status of recruitment
Ethics	Ethical scholars, who focus on the evaluation and discussion of media and IT related questions.	International scholars have been contacted.
Politics	Politicians and governmental institutions monitor the media landscape. In several countries, they have a control and regulation function.	Media councils will be contacted. A politician has been recruited.
Law	Ethical misuse of live streaming is closely linked to legal infringements, therefore lawyers specialized in media and IT law will be included in the study.	A lawyer specialized in IT and privacy has been recruited. More international experts are needed.
Journalism	Professional / citizen journalists who have experience with the use of video, television- and multimedia journalism.	Two professional video journalists have already been recruited.
Software engineering	As the design of live streaming services influences the user behaviour, software engineers who work on its development will be included. IS experts belong to this group, too.	Three software engineers have been recruited.
Platform operators	The platform operators have great influence on regulation and development of the live streaming services, therefore they will be recruited for the study.	All platform operators, which offer live streaming will be contacted.
Users	The group users will include both streamers and people who are consuming live streams.	Four users of different apps have been recruited.

Table 1. Expert groups and their recruitment status

The next step of the exploratory stage is to finalize the questionnaire. To operationalize all possible factors which can influence the ethical evaluation of live streaming, the process has been broken down into its main aspects. If one of these aspects changes, the ethical evaluation might be influenced. These aspects form the basis of the questionnaire and are explained in the following paragraph.

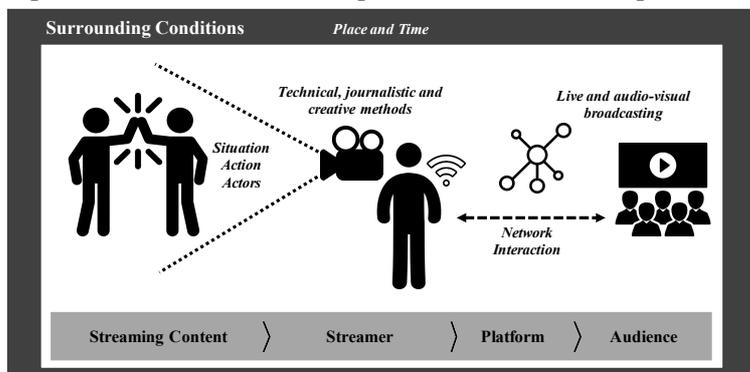


Figure 2. Aspects of the live streaming environment, which influence the morality to stream

The first aspect of the live streaming environment are the surrounding conditions, which are given by place (e.g. a school, a church) and time (e.g. midnight, a public holiday). They can influence what kind of content is acceptable. The streaming content itself is another aspect, which consists of the specific situation, the actors and the action. The streamer may be part of the scene or remain behind the camera. Streamers can be citizens or journalists. All streamers are equally responsible for the technical, journalistic and creative methods used. Technical aspects that can influence streaming are audio and video quality and characteristics of the used tools and apps. For example, a stream captured with augmented reality glasses could be perceived less staged but can also be used secretly. When choosing journalistic or creative methods streamers always need to decide between undercover or open streaming and being observing or involved. The platform on which content is streamed also needs to be considered. Channel properties and rules, as well as diffusion aspects might influence streaming. The platform facilitates live audio-visual broadcasting und interaction with the audience. Positive or negative comments, requests or questions can be seen by other members of the audience and usually the streamer herself and thereby influence streaming content and reception. Descriptive aspects of the audience, like age, gender and vulnerability may also determine whether or not streaming is ethical (e.g. while adults won't be traumatized by watching a martial arts fight, children should not be confronted with such violent footage).

To make it more feasible for experts to interpret the different aspects of live streaming, case studies which contain photos and videos will be prepared. Topics will be *copy right frauds* by the example of music (Zimmer et al. 2017), *sensitive situations* by the example of accidents (Degen et al. 2017), *extreme events* by the example of terror attacks (Stieglitz et al. 2018), *reporting* by the example of demonstrations (Andén-Papadopoulos 2013; Lenzner 2013), *advertising* by the example of marketing (Chen et al. 2017) and *privacy issues* by the example of an everyday situation (Degen et al. 2017). The cases will be extended based on the experts' feedback. Every case will be prepared in different versions. In each version a specific aspect will be isolated and changed, while all other aspects are kept constant. This will allow to derive reliable information, which aspect of the live streaming process has ethical implications. To illustrate the procedure, we will specify it for the factor *filmed subject*, more specifically *the actor*, in the case study of everyday situations. Relevant aspects might be the actor's *age*, *position in society* (e.g. celebrity, politician, private person etc.) and the *awareness to be part of the stream*. First of all, the experts are asked to name further relevant aspects concerning the actor, to add them in the next round. Each aspect is linked to a set of questions, which can be extended in the following rounds. For the actor's *age* the e.g. those questions are prepared:

*Is the filmed subject's age relevant for the decision to stream or not to stream? No - Yes - It depends?
If yes, what is the limiting age? If it depends, on which additional factor(s) does it depend?*

The stimuli material for the live streaming aspect *actor's age* will include images and videos that show the same situation with actors of different age groups.

The distillation phase will begin after the collection of all participation agreements of the experts. As Delphi studies require several feedback rounds until a consensus is reached, it is necessary to assure that the experts do not drop out. Before the study, the questionnaire will be finalized and an online forum will be set up. Thus, according to Keeney (2010) this study can be defined as an Online-Delphi. The panelist will be anonymized to assure that they speak up freely. It can be expected that due to the different backgrounds of the experts a primarily controversial discussion about the ethical codes for live streaming will arise. As a quantitative elaboration of ethics is not conducive, the answers of the experts will be evaluated on a qualitative basis. With help of a content analysis, using the method of inductive category building, the answers of the experts will be evaluated. As soon as no new categories are added and a mutual understanding of the categories has been created, the consensus has been reached. At the end of the distillation phase a final Code of Ethics for live streaming can be compiled.

In the last stage, the utilization stage, the results are collected, analyzed and prepared for publication. It will be important to critically report and evaluate the issues which arose in the different feedback rounds, such as discussing the strength of support of each aspect and to present in a statistically valid way how the consensus was measured and how arising biases have been approached (Skinner et al. 2015). The final outcome of this Online-Delphi study will be a completed research paper which discusses the derived ethical code of conduct in the context of ethical theories in order to step from the level of explicit morality to the level of ethical theory. This research paper will not only offer a universal Code of Ethics displaying the opinion of a heterogeneous group of experts in live streaming but does also contribute to the philosophical and ethical theory in the field of digital information and communication technologies.

4 Conclusion

Live streaming has its own set of characteristics, as video format and social media are combined to form a live, audio-visual, interactive and connected channel, which obliges journalists and streamers to evaluate ethics in real-time. Research on ethical principles for this recent information and communication technology is limited. Findings and discussions from the field of journalism ethics have been analyzed to identify similarities. However, the development of an ethical theory which explains and discusses the normativity of live streaming is not possible as long as the diverse moral positions remain unclear. This Online-Delphi study aims at closing this research gap by evaluating the morally critical aspects of the live streaming process with a heterogeneous group of experts from seven distinct areas. The use of a scientific method like the Delphi study will allow the mediation between diverse moral positions, which might be incompatible in an open discussion. Due to its clear methodological framework, the Delphi study will achieve a consensus through several feedback loops and constant evaluation. The first stage of the Delphi study, the exploratory stage, is almost finished. The research question has been developed, the recruitment of the experts has started, and the first version of the questionnaire has been produced. Thus, the distillation stage will begin as soon as the last experts confirm their participation.

Although the study design has a lot of benefits, it has also some limitations. The main limitation will be that only a limited group of experts form part of the panel. Although a broad number of experts will be involved, they do only represent a small fraction of society, wherefore it needs to be discussed if developed Code of Ethics is generalizable. From a philosophical and scientific perspective, this study forms the essential basis for the theoretical development of live streaming ethics. Practically the developed Code of Ethics will be a valuable contribution as they can be a guidance for journalists, streamers and platform providers. Furthermore, they can form an inspiration for the ethical design of further developments of live streaming services and applications and give useful insights for law and policy makers.

References

- Andén-Papadopoulos, K., 2013. Media witnessing and the ‘crowd-sourced video revolution.’ *Visual Communication*, 12(3), pp.341–357.
- Antony, M.G. & Thomas, R.J., 2010. ‘This is citizen journalism at its finest’: YouTube and the public sphere in the Oscar Grant shooting incident. *New Media & Society*, 12(8), pp.1280–1296.
- Bell, F. & Adam, A., 2004. The Problem of Integrating Ethics into IS Practice. In *ECIS Proceedings*. pp. 1–11.
- Blaagaard, B.B., 2013. Shifting boundaries: Objectivity, citizen journalism and tomorrow’s journalists. *Journalism: Theory, Practice & Criticism*, 14(8), pp.1076–1090.
- Blankenship, J.C., 2016. LOSING THEIR “MOJO”? Mobile journalism and the deprofessionalization of television news work. *Journalism Practice*, 10(8), pp.1055–1071.
- Bowen, S.A., 2013. Using Classic Social Media Cases to Distill Ethical Guidelines for Digital Engagement. *Journal of Mass Media Ethics*, 28(2), pp.119–133.
- Bründl, S. & Hess, T., 2016. Why Do Users Broadcast? Examining Individual Motives and Social Capital on Social Live Streaming Platforms. *PACIS 2016 Proceedings*, p.Paper 332.
- Chen, Z., Benbasat, I. & Cenfetelli, R., 2017. "Grassroots Internet Celebrity Live Streaming" Activating IT-Mediated Lifestyle Marketing Services at e-Commerce Websites. In *Thirty-eighth International Conference on Information Systems*. Seoul, pp. 1–12.
- Christians, C.G. et al., 2016. *Media ethics: Cases and moral reasoning 9.*, London, New York: Routledge.
- Clarke, S. et al., 2016. Timeline of the Brussels attacks. *The Guardian*. Available at: <https://www.theguardian.com/world/ng-interactive/2016/mar/22/where-the-brussels-attackers-struck> [Accessed November 3, 2017].
- Dalkey, N. & Helmer, O., 1963. An Experimental Application of the DELPHI Method to the Use of Experts. *Management Science*, 9(3), pp.458–467.
- Degen, M., Köhler, A. & Spiller, R., 2017. Streaming-Journalismus: Nutzung, Inhalte und Potenziale. In G. Hooffacker & C. Wolf, eds. *Technische Innovationen - Medieninnovationen: Herausforderungen für Kommunikatoren, Konzepte und Nutzerforschung*. Wiesbaden: Springer, pp. 163–176.
- Denning, T., Dehlawi, Z. & Kohno, T., 2014. In situ with bystanders of augmented reality glasses. In *Proceedings of the 32nd annual ACM conference on Human factors in computing systems - CHI '14*. New York, New York, USA: ACM Press, pp. 2377–2386.
- Facebook, 2015. Facebook Live. Available at: <https://newsroom.fb.com/news/2015/12/introducing-live-video-and-collages/> [Accessed November 7, 2017].
- Facebook, 2016. Introducing New Ways to Create, Share and Discover Live Video on Facebook. Available at: <https://newsroom.fb.com/news/2016/04/introducing-new-ways-to-create-share-and-discover-live-video-on-facebook/> [Accessed October 12, 2017].
- Faklaris, C. et al., 2016. Legal and ethical implications of mobile live-streaming video apps. In *Proceedings of the 18th International Conference on Human-Computer Interaction with Mobile Devices and Services Adjunct - MobileHCI '16*. pp. 722–729.
- Fichet, E. et al., 2016. Eyes on the ground: Emerging practices in periscope use during crisis events. In *ISCRAM 2016. Information Systems for Crisis Response and Management*, ISCRAM.
- Friedländer, M.B., 2017. Streamer Motives and User-Generated Content on Social Live-Streaming Services. *Journal of Information Science Theory and Practice*, 51(1), pp.65–84.
- Frost, C., 2016. *Journalism Ethics and Regulation* 4th ed., New York: Routledge.
- Hall, M.W., 1978. *Broadcast Journalism: An Introduction to News Writing*, New York: Hasting House.
- Hu, M., Zhang, M. & Wang, Y., 2017. Why do audiences choose to keep watching on live video streaming platforms? An explanation of dual identification framework. *Computers in Human Behavior*, 75, pp.594–606.
- Hutchins, B. & Sanderson, J., 2017. The primacy of sports television: Olympic media, social networking services, and multi-screen viewing during the Rio 2016 games. *Media International Australia*, 164(1), pp.32–43.

- Instagram, 2016. New Ways to Share in the Moment. Available at: <http://blog.instagram.com/post/153474421572/161121-launches> [Accessed November 23, 2017].
- Johnson, M.R. & Woodcock, J., 2017. 'It's like the gold rush': the lives and careers of professional video game streamers on Twitch.tv. *Information, Communication & Society*, 0(0), pp.1–16.
- Keeney, S., 2010. The Delphi Technique. In *The Delphi Technique in Nursing and Health Research*. Oxford, UK: Wiley-Blackwell, pp. 1–17.
- Lee, J., 2015. The Double-Edged Sword: The Effects of Journalists' Social Media Activities on Audience Perceptions of Journalists and Their News Products. *Journal of Computer-Mediated Communication*, 20(3), pp.312–329.
- Lenzner, B., 2013. Documenting Protest and Police: Occupy Wall Street and the (R) evolution of Digital Mobile Video. *Networking Knowledge: Journal of the MeCCSA-PGN*, 6(3).
- Linstone, H.A. & Turoff, M., 1975. *The Delphi Method*, Reading: Addison-Wesley.
- Livingston, S. & Bennett, W.L., 2003. Gatekeeping, Indexing, and Live-Event News: Is Technology Altering the Construction of News? *Political Communication*, 20(4), pp.363–380.
- Mackay, W.E., 1995. Ethics, lies and videotape.... In *Proceedings of the SIGCHI conference on Human factors in computing systems - CHI '95*. pp. 138–145.
- Mingers, J. & Walsham, G., 2010. Toward Ethical Information Systems: The Contribution Of Discourse Ethics. *MIS Quarterly*, 34(4), pp.833–854.
- Mirbabaie, M. & Zapatka, E., 2017. Sensemaking in Social Media Crisis Situations - A Case Study on the Brussels Bombing in 2016. In *Proceedings of the Twenty-Fifth European Conference on Information Systems (ECIS)*. pp. 2169–2186.
- Nip, J.Y.M., 2006. Exploring the second phase of public journalism. *Journalism Studies*, 7(2), pp.212–236.
- Oh, O., Agrawal, M. & Rao, H.R., 2013. Community intelligence and social media services: a rumor theoretic analysis of tweets during social crisis. *MIS Quarterly*, 37(2), pp.407–426.
- Paulussen, S. et al., 2007. Doing It Together: Citizen Participation In The Professional News Making Process. *Observatorio (OBS*)*, 1(3), pp.131–154.
- Pinter, A.T. et al., 2017. Adolescent Online Safety. In *Proceedings of the 2017 Conference on Interaction Design and Children - IDC '17*. New York, New York, USA: ACM Press, pp. 352–357.
- Scheibe, K., Fietkiewicz, K.J. & Stock, W.G., 2016. Information Behavior on Social Live Streaming Services. *Journal of Information Science Theory and Practice*, 4(2), pp.6–20.
- Skinner, R. et al., 2015. The Delphi Method Research Strategy in Studies of Information Systems. *Communications of the Association for Information Systems*, 37, pp.31–63.
- Smith, T., Obrist, M. & Wright, P., 2013. Live-streaming changes the (video) game. *Proceedings of the 11th European Conference on Interactive TV and video - EuroITV '13*, p.131.
- Society of Professional Journalism, 2014. SPJ Code of Ethics. Available at: <https://www.spj.org/ethicscode.asp> [Accessed July 15, 2017].
- Stahl, B.C., 2012. Morality, ethics and reflection: a categorisation of normative research in IS research. *Journal of the Association for Information Systems*, 13(8), pp.636–656.
- Stahl, B.C., 2008. Researching Ethics and Morality in Information Systems: Some Guiding Questions. In *ICIS 2008 Proceedings*. pp. 1–17.
- Stewart, D.R. "Chip" & Littau, J., 2016. Up, Periscope. *Journalism & Mass Communication Quarterly*, 93(2), pp.312–331.
- Stieglitz, S. et al., 2018. Sense-making in social media during extreme events. *Journal of Contingencies and Crisis Management*, 26(1), pp.4–15.
- Strasser, A., 2016. Delphi method variants in IS research: a taxonomy proposal. *Pacific Asia Conference on Information Systems*.
- Twitch Interactive, I., 2017. By the Numbers. Available at: <https://www.twitch.tv/p/about> [Accessed November 7, 2017].
- Twitter, 2015. Introducing Periscope. Available at: https://blog.twitter.com/official/en_us/a/2015/introducing-periscope.html [Accessed October 12, 2017].

- Ustream, 2017. Our Company. Available at: <https://www.ustream.tv/our-company/about> [Accessed November 23, 2017].
- Wisniewski, P. et al., 2015. Resilience Mitigates the Negative Effects of Adolescent Internet Addiction and Online Risk Exposure. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems - CHI '15*. New York, New York, USA: ACM Press, pp. 4029–4038.
- Zimmer, F., Fietkiewicz, K.J. & Stock, W.G., 2017. *Human Aspects of Information Security, Privacy and Trust* T. Tryfonas, ed., Cham: Springer International Publishing.