



Figure 1: Examples of creative livestreams on Twitch, YouTube, and Facebook. Artists stream videos of themselves working on creative projects such as illustration, crafts, drawing, and music. Sources: bit.ly/2SJYFRa, bit.ly/2TK12Rq, bit.ly/2SK5zWE, bit.ly/2Bv9Y69

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Creative livestreaming: How sharing one's process can inspire, educate, and engage

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ABSTRACT

Many artists have begun livestreaming the process behind their creative work, allowing viewers to learn and be inspired from the decisions - and mistakes - they make along the way. Our current research explores creative livestreams, a growing medium where people share a window into their work as it unfolds. Through content analysis of a sample of livestream archives, we provide a general sketch of creative livestreams and identify four common forms they take. Based on this as well as interviews with streamers and surveys with viewers, we identify open questions for the research community around how to better support the goals of creative streamers and viewers.

CCS CONCEPTS

- Human-centered computing → Social content sharing.

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Figure 2: A typical creative livestream setup. (a) A camera or screencast displays the artist's workspace. (b) A second camera shows the artist's face. (c) Graphical overlays provide ambient information about the artist (e.g., social media pages) and display interactions with the audience (e.g., pop-ups that appear when viewers subscribe or donate to the stream). (d) Live chat allows viewers to communicate with the streamer.

¹twitch.tv, youtube.com

²picarto.tv

KEYWORDS

livestreaming; online video; creativity

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INTRODUCTION

Artists communicate and share their creative work through online galleries, communities, and social media. Some also share works-in-progress, how-to tutorials, and videos describing the process that leads them to a final product. However, these highly curated windows into process require time and effort for the creators to produce and share. Livestreaming allows creators to share their unedited process *while* they work. Many artists have begun to broadcast live video as they work on graphic design, crafting, drawing, or music through platforms like Twitch and YouTube¹ (Figure 1). These videos usually feature the artist's workspace, a view of their face, and audio of them narrating as they work (Figure 2). Communities have formed around creative livestreaming, including dedicated platforms for sharing creative process (e.g., Picarto²). Livestreaming democratizes the studio-apprentice model, enabling anyone to see experts' in-context choices by working alongside them [11].

Research on livestreaming has mainly focused on other domains, such as video games [3, 4, 8, 12], software programming [1, 2], and lifestyle [6, 14]. Our ongoing work explores current practices for creative livestreaming, and how they compare to other livestreamed activities. By “creative livestreams,” we mean activities such as “visual art, woodworking, costume creation, prop building, music composition, or any other process in which you entertain and connect around a creative activity” [7].

Through content analysis of a sample of livestream archives, we provide a general sketch of creative livestreams and identify four common forms they take. We have also conducted interviews with 8 streamers, and online surveys with 165 viewers, the details of which will not be discussed in this paper. Based on our findings, we propose four main open questions regarding how to better support the goals of creative streamers and viewers.

WHAT ARE CREATIVE LIVESTREAMS?

Creative livestreams are showing up on many different platforms. Picarto, a livestreaming platform dedicated to creative work, launched in 2013; Twitch launched its *Creative* category in 2015 [7]. To deal with its explosion in popularity, Twitch replaced the *Creative* category with six more-specific categories in September 2018: *Art, Music & Performing Arts, Science & Technology, Beauty & Body Art, Food & Drink, and Makers & Crafting* [9]. Creative livestreams also appear on many other platforms,

Category	Avg. # livestreams	Avg. # live viewers	Avg. # viewers / stream
Art	339	6417	21
Beauty & Body Art	5	177	17
Food & Drink	19	1088	64
Makers & Crafting	40	680	16
Music & Performing Arts	286	6881	24
Science & Technology	91	1155	12

Table 1: Summary of popularity of Twitch's creative livestream categories. The number of currently-live streams and currently-watching viewers were collected 4 times a day for a week and then averaged.

but often without a distinct category. For example, many creative streams on YouTube are categorized as *Education*, *How-to & Style*, or even *Gaming*.

To gain an initial understanding of the forms creative livestreams can take, we analyzed a sample of videos on Twitch, one of the most popular platforms for livestreaming. For each of Twitch's six creative categories, we gathered aggregate metrics about streamers and viewers. We also watched and took notes on 29 videos randomly sampled from the 600 most-viewed videos in each category.

Results: Most streamers focus on work & engage with viewers. Table 1 shows overall metrics for the creative categories on Twitch. The most popular categories by far are *Art* and *Music & Performing Arts*. The category with the most viewers watching per stream is *Food & Drink*, likely because there are fewer streams to choose from relative to the number of interested viewers. These communities are small relative to the most popular games; for example, the game Fortnite has between 5,000 and 10,000 streams live on Twitch at any given time, with around 100,000 viewers watching.

The 29 sampled videos span a range of different creative activities (Table 2). Almost all videos contained either a screencast view for digital work (13/29) or a camera view for physical work (15/29). Most (26/29) showed the artist's face: in 10 as part of the main camera feed, and 16 as a separate feed overlaid in a corner (as in Figure 2). Almost all artists (27/29) talked out loud while streaming; of the two silent streamers, one occasionally posted in the chat. Most artists talked about a mix of their work and other topics (18/29). Some talked only about their work (9), or only about other topics (1). Many videos (19/29) included background music.

Most artists engaged with the chat at least sometimes (24/29). 18 artists engaged frequently with the chat, and 6 occasionally. In all 26 videos where chat replay was available, viewers asked the artist questions via chat at least occasionally, or in some videos (9/26) frequently. In 15 of these videos, all chat questions appeared to get answered, sometimes by other viewers or moderators in the chat. In the rest, some (7/13) or many (4/13) questions went unanswered.

Four common types of creative livestreams. We identified four common types of creative livestreams. Sjöblom *et al.* [13] offer a similar characterization of video game livestreams. Table 2 shows the primary type of each stream in our sample. These are high-level trends; some streams bridge multiple types.

Teaching streams have an instructional focus, where the streamer is educating the viewers. These include step-by-step how-to demonstrations, critiquing others' work, or answering viewers' questions.

Making streams focus primarily on creative work and process, but not explicit teaching. These include an artist silently working, or an artist describing *what* they are doing but not *how*.

Socializing streams feature the streamer chatting casually with viewers, often while working on a project (but the project is not the main focus). Socializing streams often have tight-knit communities with recurring viewers.

Category	Activity (# videos if >1)	Primary type of stream
Art	Multimedia production	Making
	Digital drawing (4)	Making
	Animation	Teaching
Beauty & Body Art	Makeup	Socializing
	Makeup (3)	Making
Food & Drink	Cooking	Teaching
Makers & Crafting	Making foam props	Teaching
	Sewing quilts	Socializing
	Bead art (2)	Making
	Assembling models	Making
	Assembling models	Socializing
	Woodworking	Making
	Pottery	Making
Music & Performing Arts	Music production	Performing
	Music production	Making
	Acting & improv games	Performing
Science & Technology	Building a computer	Making
	Programming (3)	Making
	Game development (2)	Teaching
	Talking about technology	Socializing

Table 2: Creative activities shown in a random sample of 29 livestreams from Twitch's creative categories, and the primary type of structure each stream exhibits.

Performing streams feature the artist performing their work. Naturally, these mostly include performative arts like music and acting (*e.g.*, as opposed to drawing). These often take a more casual, improvisational form than non-live recorded performances.

Within each type, the amount of interaction between the streamer and the audience varies. Some streamers hold “request streams” or “Q&A streams”, where the content and flow are determined by audience requests or questions, respectively. Some hold contests or lead audience games.

OPEN QUESTIONS AND OPPORTUNITIES

We have also conducted interviews with 8 creative streamers, and online surveys with 165 creative livestream viewers. Our main findings were that streamers enjoy engaging with viewers but often find it difficult to balance their attention between that and their work, and that one of the main reasons people watch creative livestreams is for inspiration. These led us to the following open questions and opportunities, many of which may apply to other livestreaming activities beyond creative work.

How might creative livestreams better engage viewers? In line with prior work, we found that creative streamers primarily interact with their audiences through live text chat. Sometimes, conflicting viewer goals can hinder the chat experience; *e.g.*, learners' questions can get lost in the many lines of text written by viewers who are there primarily for social engagement. Are there better ways for streamers and viewers to interact?

How might we support creative livestreams as audiences scale? While creative livestream communities are currently small compared to livestreams in other domains like video gaming, they are also relatively new. While some streamers enlist moderators to help enforce chat rules and answer questions, not all streamers have the time or experience to find and train reliable moderators themselves. How might we democratize the experience of having supportive moderators, and what other facilitation might streamers need?

How might we make creative work more “performable”? Echoing prior work on programming livestreamers [1], several of our interview participants mentioned that they were not comfortable streaming certain parts of their creative process, because they worried it would not engage the audience or it required their full focus. It can be inspiring and educational for viewers to watch the early ideation stages, but these parts of the process can be hard to share live, as they feature a lot of internal reflection and messy iteration [10]. How might livestreaming platforms better support sharing *all* parts of the creative process?

How might we better support watching livestream archives? Some viewers in our surveys watch livestream replays when they are no longer live. This viewing experience is often lacking because livestreamed videos are long, have limited navigation options, and include long periods of downtime and conversation with the then-live chat [5]. How might we better summarize and navigate creative livestreams after the fact?

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REFERENCES

- [1] Travis Faas, Lynn Dombrowski, Alyson Young, and Andrew D. Miller. 2018. Watch Me Code: Programming Mentorship Communities on Twitch.tv. *Proceedings of the ACM on Human-Computer Interaction* 2, CSCW (nov 2018), 1–18. <https://doi.org/10.1145/3274319>
- [2] Lassi Haaranen and Lassi. 2017. Programming as a Performance: Live-streaming and Its Implications for Computer Science Education. In *Proceedings of the 2017 ACM Conference on Innovation and Technology in Computer Science Education - ITiCSE '17*. ACM Press, New York, New York, USA, 353–358. <https://doi.org/10.1145/3059009.3059035>
- [3] William A. Hamilton, Oliver Garretson, and Andruid Kerne. 2014. Streaming on twitch: fostering participatory communities of play within live mixed media. In *Proceedings of the 32nd annual ACM conference on Human factors in computing systems - CHI '14*. ACM Press, New York, New York, USA, 1315–1324. <https://doi.org/10.1145/2556288.2557048>
- [4] Pascal Lessel, Alexander Vielhauer, and Antonio Krüger. 2017. Expanding Video Game Live-Streams with Enhanced Communication Channels: A Case Study. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI '17*. ACM Press, New York, New York, USA, 1571–1576. <https://doi.org/10.1145/3025453.3025708>
- [5] Zhicong Lu, Seongkook Heo, and Daniel J. Wigdor. 2018. StreamWiki: Enabling Viewers of Knowledge Sharing Live Streams to Collaboratively Generate Archival Documentation for Effective In-Stream and Post Hoc Learning. *Proceedings of the ACM on Human-Computer Interaction* 2, CSCW (nov 2018), 1–26. <https://doi.org/10.1145/3274381>
- [6] Zhicong Lu, Haijun Xia, Seongkook Heo, and Daniel Wigdor. 2018. You Watch, You Give, and You Engage: A Study of Live Streaming Practices in China. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems - CHI '18*. ACM Press, New York, New York, USA, 1–13. <https://doi.org/10.1145/3173574.3174040>
- [7] Bill Moorier. 2015. Introducing Twitch Creative. <https://blog.twitch.tv/introducing-twitch-creative-fbfe23b4a114>
- [8] Anthony J. Pellicone and June Ahn. 2017. The Game of Performing Play: Understanding Streaming as Cultural Production. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI '17*. ACM Press, New York, New York, USA, 4863–4874. <https://doi.org/10.1145/3025453.3025854>
- [9] Tom Robertson. 2018. Introducing Tags and New Categories: New Ways to Discover Streamers on Twitch. <https://blog.twitch.tv/introducing-tags-and-new-categories-33744ef7b04f>
- [10] Donald A. Schoen. 1983. *The reflective practitioner: how professionals think in action*. Basic Books. 374 pages. https://books.google.com/books/about/The_{_}Reflective{_{}}Practitioner.html?id=ceJlWay4-jgC
- [11] Donald A. Schoen. 1985. *The design studio: An exploration of its traditions and potentials*. RIBA Publications for RIBA Building Industry Trust. 99 pages. <https://www.abebooks.com/9780947877453/Design-Studio-Exploration-Traditions-Potentials-0947877452/plp>
- [12] Max Sjöblom and Juho Hamari. 2017. Why do people watch others play video games? An empirical study on the motivations of Twitch users. *Computers in Human Behavior* 75 (oct 2017), 985–996. <https://doi.org/10.1016/J.CHB.2016.10.019>
- [13] Max Sjöblom, Maria Törhönen, Juho Hamari, and Joseph Macey. 2017. Content structure is king: An empirical study on gratifications, game genres and content type on Twitch. *Computers in Human Behavior* 73 (aug 2017), 161–171. <https://doi.org/10.1016/J.CHB.2017.03.036>
- [14] John C. Tang, Gina Venolia, and Kori M. Inkpen. 2016. Meerkat and Periscope: I Stream, You Stream, Apps Stream for Live Streams. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems - CHI '16*. ACM Press, New York, New York, USA, 4770–4780. <https://doi.org/10.1145/2858036.2858374>