



The politics of user-platform relationships: Co-scripting live-streaming on Twitch.tv

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Abstract

What characterises the relationship between users and platforms? How are use and users configured by platform design, and in turn, how do users accept or reject such efforts? Using the live-streaming platform Twitch, this paper explores the user-platform relationship to answer these questions. Twitch is a highly popular live-streaming platform with an emphasis on gaming, whose rise to fame has been far from streamlined or expected. Based on qualitative analysis of design, discourse and user practices, the paper draws on script theory from science and technology studies and platform theory from Internet studies, to unpack the configuration of use and users. By tracing the development of the platform, we identify a pattern of frequent interaction between platform owners and users, and consequent course changes, which we label *co-scription*. Finally, we analyse the current Twitch script and propose five dimensions of co-scription that determine the user-platform relationship: 1) Sociality: community or individual use; 2) Audience: specific or general; 3) Moderation: strictly moderated or *laissez-faire*; 4) Content: user-generated or commercial; and 5) Scope: specialised or multi-feature.

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Introduction

What can Twitch teach us about the rise of streaming platforms, userplatform relationships and recent shifts in our media ecology? This article investigates the role of users in the evolution and politics of live-streaming platforms. Our research examines use and users to address some of the tensions and challenges involved in the development and configuration of streaming platforms. We aim to move beyond claims of platforms as neutral or impartial technologies, instead we explore platform evolution as a reciprocal relationship between materiality, practice and politics. We use the theoretical frameworks of platform politics (Gillespie, 2018, 2010) and scripts (Akrich, 1992) to unpack the choices, technical features, cultures and coincidences that have shaped Twitch. Our main interest lies in how the platform envisions use and users, and how such visions (a.k.a., scripts) are accepted, subverted or rejected by users themselves. To unpack Twitch's platform politics and scripting processes, we perform analysis of: a) Twitch's historical evolution, and b) Twitch's current self-presentation, community discourse and user practices. Our analysis is based on a combination of in-depth interviews, document studies and design analysis (see the [Methodology](#) section).

Twitch has been a pioneer in live-streaming, and is a highly popular platform with more than 15 million daily viewers and 140 million unique monthly viewers [1]. It has established itself as the

leading live-streaming platform in America, Europe and Asia (Pires and Simon, 2015; Taylor, 2018). Twitch is designed for live-streaming of both amateur and professional content, and though it accommodates various kinds of content, it is most famous for streaming video game play, where broadcasters combine live footage of gaming with running commentary and community interactions. In addition to hosting content, Twitch also host the most important eSport competitions and speed running (speed playing) contests with audiences of millions, and cooperate with game developers to promote games and build communities through Twitch (Consalvo, 2017). The success of live-streaming platforms such as Twitch runs counter to contemporary media theories of the evolution of television, which are premised on a shift from linear television to time-shifting and on-demand streaming of archived content (*cf.*, Dhoest and Simons, 2016; Van Esler, 2016; Lotz, 2017, 2014). This has prompted a renewed need for research on live-streaming as a phenomenon and practice, as well as the platforms that supports it.

Twitch combines video live-streaming with social media features such as timelines, chat and direct messaging, as well as options to like, share and comment. Arguably, what has come to characterise and distinguish Twitch from other streaming and video hosting services with gaming content (including YouTube) is the participative engagement of and intense interactions between game-casters and their viewers (Gandolfi, 2016). The social functionality encourages interaction and participation, and Anderson notes that it is 'difficult to find video streams on Twitch without, at bare minimum, an audio feed of the player, and a chat box is constantly updated with messages from eager viewers' [2]. To promote activity at all levels, Twitch sport an advanced economic incentive structure contributes to the dynamic with various micro-transactions (*e.g.*, game loot, gear acquisitions, donations) and reward systems (*e.g.*, stream and chat advantages, affiliations, partnerships). Bruns noted early on that 'no current mainstream "interactive television" system is able to deliver a similar transmedia experience' [3]. How was Twitch able to come up with such a complex media configuration? To understand this we need to understand platform and their politics.



Platforms and their politics

Streaming platforms are complex assemblages in which many (potentially unlimited) actors can operate. They are bounded units possessing diverse content and catalogues of users and more (*cf.*, Beer, 2013), and they enable a more or less comprehensive set of usages (*cf.*, Gillespie, 2018, 2010). Further, they possess an array of proprietary algorithms and other technical means to enforce and regulate conduct (*cf.*, Bucher, 2018), and display marked borders, which are normally clearly recognised by their users (who know, *e.g.*, that they are watching a YouTube video, reading a Twitter message, listening to a song on Spotify, etc.) [4]. Two recently published monographs about Internet platforms by central media theorists — Lotz's (2017) *Portals* [5] and Gillespie's (2018) *Custodians of the Internet* — point to the way in which platforms represent fundamentally new information configurations. They also illustrate challenges in understanding the role of users in this social and technological development.

Lotz's analysis departs from Mieke's (1989) triumvirate of media models: publishing (books and music), flow (television) and written press (newspapers). She suggests that streaming platforms represent a new fourth model, which she calls the subscription model, characterised by (among other things) elimination of time specificity and reduction of capacity constraint [6]. Gillespie, for his part, points to the uniqueness of platforms by emphasising how platforms are media, markets and infrastructures at the same time: they simultaneously mediate the circulation of information, condition its exchange and stand beneath and beyond these information flows [7]. Together they propose an understanding of platforms that emphasises the material, institutional, financial and social dimensions. But, what about the role of users?

Interestingly, Lotz and Gillespie differ greatly in how they conceptualize user-platform relationships, in part due to what platforms they have been investigating. Lotz's primary research focus is on streaming platforms delivering 'long-form content' from professional vendors (*e.g.*, Netflix, HBO Now, CBS All Access), and she explicitly excludes 'user- and amateur-generated content' from 'content aggregators' (*e.g.*, YouTube) from her theorising. On the other hand, Gillespie, who studies social media platforms, defines platforms as 'online sites and services that (a) host, organize, and circulate users' shared content or social interactions [and] (b) without having produced or commissioned (the bulk of) that content' [8]. Twitch fit in neither definition, as it hosts both professional long-form content and user-generated content and interaction. Thus, in order to investigate a multi-faceted platform such as Twitch, we need a more open-ended approach combining the definitions of these two authors.

Platforms are hubs in which a wide range of actors — both human and non-human — interact to create and share content. To understand how these complex assemblages work, it is necessary to untangle the way in which diverging interests — especially between owners and users — push and pull platforms in different directions. One area of frequent contention has been platform monetization. Commercial platform strategies have largely been unpopular, and have been met with side-stepping, bypassing, opposition or mockery, as users have protested the ways in which community interactions and — productions are forcibly monetized (Lobato and Thomas, 2015; van Dijk, 2013). Even purely

idealistic platforms such as The Pirate Bay have been commercially exploited against their will (see Schwarz, 2014); and sealed platforms such as Spotify are vulnerable to various forms of user manipulation (Eriksson, *et al.*, 2019). The way tensions appear across platforms, regardless of content type, demonstrates how platform-user relationships are likely to become subjected to contradictions and paradoxes. Especially when commercial interests are introduced.

Gillespie (2010) illustrates this better than anyone in his much referenced work, 'The politics of platforms'. In this article, Gillespie analyses YouTube's discursive and infrastructural manoeuvres in order to cater to and negotiate the many contradictory expectations and demands placed on the platform, balancing its role as a host of bottom-up user-generated amateur content and a pirate haven, on the one hand, with its role as a reliable and responsible top-down mega-buck marketing platform, on the other. For example, Gillespie shows how YouTube, through its infrastructure, dealt with troubling sexual content in three ways: introducing a new standard to remove inappropriate videos; assigning certain videos to an 'adult' category; and algorithmically demoting these videos from 'Most Viewed', 'Top Favourited' and other browsing pages. However, Gillespie's most important point is that YouTube uses the term 'platform' to neutralise contradictions: 'Whatever possible tension there is between being a platform for empowering individual users and being a robust marketing platform and being a platform for major studio content is elided in the versatility of the term and the powerful appeal of the idea behind it' [9]. Consequently, the investigations of platforms should untangle diverging interests, and critically investigate the naturalizing efforts made by platform owners.

Other media scholars use theoretical concepts such as 'bias' (Cheney-Lippold, 2017), 'affordances' (Bucher and Helmond, 2017) and 'media logics' (van Dijck, 2013; van Dijck and Poell, 2013) to open the black boxing efforts of platform owners. In this article, we use the concept of scripts and its associated vocabulary to embark on the same task. A clear advantage of this vocabulary, we argue, is how it sheds static and determinist accounts of technology and focuses on processual and dynamic aspects of platform formation. Equally important, the concept of scripts highlights the importance of use and users in technology configuration. While users play an integral role in shaping the meaning and functionality of technology, they are often overlooked in narratives of technological development in favour of reductive stories of genius inventors or superior design (Oudshoorn and Pinch, 2003). So before addressing the user-platform relationships of Twitch, let us present the concept of script and its associated vocabulary.



Renewing scripts and associated vocabulary

Akrich (1992) noted that all technologies hold a *script* (a 'manuscript') that is intended to direct its use, and script analysis is a way to unpack text and things (or signs and material), as complementary parts of the same sociomaterial assemblage (Bijker and Law, 1992; Latour, 2005). The concept of scripts was developed as part of the semiotic turn in science and technology studies. Semiotics 'is the study of order building or path building' and 'may be applied to settings, machines, bodies, and programming languages as well as texts' [10]. The approach highlights how seemingly neutral technologies hold preferences for certain types of users and use, as designers imbue the products they make with visions of its use and who the user is. Analysis of these scripts can elucidate the way in which a technology positions itself in relation to potential and actual users for example how gendered symbols discourage women users to use certain ICT (Oudshoorn, *et al.*, 2004).

The process whereby designers try to materialise their worldviews, visions, injunctions and prohibitions in the artefacts they make is called *in-scription*. In a much quoted passage, Akrich states that, through in-scription, designers 'define actors with specific tastes, competences, motives, aspirations, political prejudices, and the rest, and they assume that morality, technology, science, and economy will evolve in particular ways' [11]. The process whereby users try to decipher and give meaning to the scripts, the 'reading of the text', is called *de-scription* and should be investigated as responses of either acceptance or rejection (or some negotiated position in between). Acceptance of the designer's script and acting in accordance with the in-scription is called *sub-scription*; rejection is called *de-inscription* (also known as an *anti-program*) [12]. Finally, Gjørn and Hård (2002) proposed the concept of user scripts to elaborate how user create their own visions for use, as sub-scription and de-inscription do not capture the full scope of the work involved in appropriation technology.

A full-scale analysis of all past and present processes of in-scribing, de-scribing and re-inscribing Twitch would amount to what Pollock and Williams (2010) call 'biographies of artefacts'. Our aim is more modest. We hope to pinpoint some of these processes, both in the past and present, and use these glimpses to identify some more general dynamics and tensions in the development of streaming platforms.



Methodology

Our analysis utilises several empirical sources to address the social and material aspects of platform

development and user configuration. Our starting point was a qualitative study of Twitch audiences and everyday life practices based on 12 long, in-depth interviews (ranging from 2 to 2.5 hours each) with engaged Twitch users aged 18 to 32 during 2017 and 2018 [13]. The interview guide focused on viewing practices; why and how participants had started using Twitch, current practices, interactions with other users and their opinions on the Twitch platform and community. In addition, we learned about informants' perspectives and interpretations of Twitch's development and various controversies within the Twitch community. The transcribed interviews were coded and key categories of use were identified. This directed us to the chequered history and curious ways in which Twitch attempt to configure their users, and we supplemented the interview data with additional sources to address the platform's history and current policies.

The historical analysis of Twitch's development is based on a secondary analysis of the research literature and extensive Wikipedia entries on Justin.tv and Twitch.tv, as well as other online sources. The design analysis of Twitch investigates both physical script (design) and sociotechnical scripts (ideas about the design) (Fallan, 2008). Specifically, the script analysis is based on explorations of the platforms visual appearance (style, ordering of elements), features (functionality, technical and competence requirements) and promotional material (in particular the "about" page). The data and analysis is presented in two parts: a brief history of Twitch that emphasises the changes of envisioned users, and current scripts of Twitch and how they are read by users. Finally, building on this analysis we present five dimensions that characterises user-platform relationships.



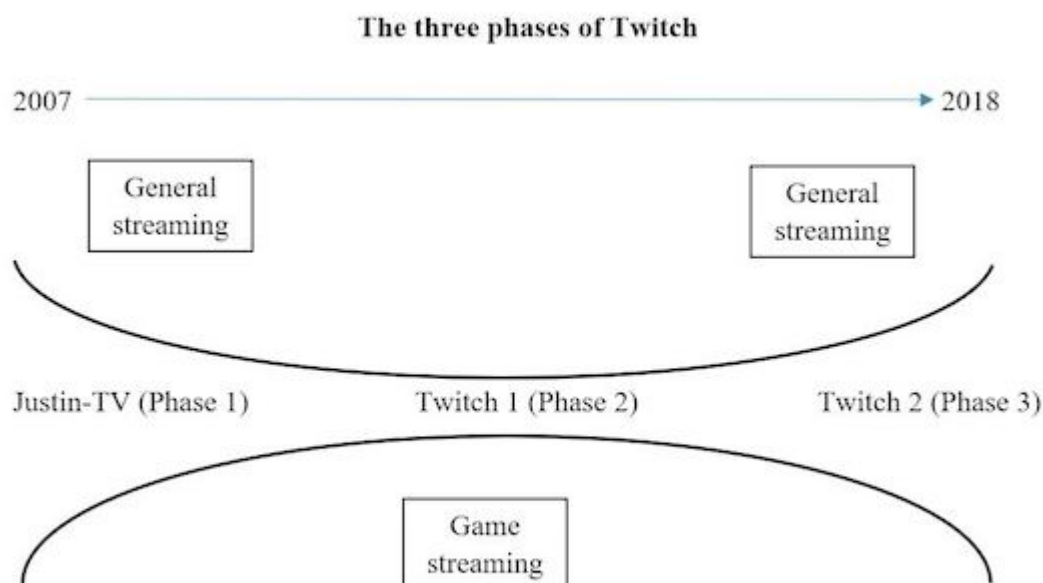
Three phases of Twitch

The idea of platforms as neutral, apolitical vehicles for content, is quickly dispelled by tracing their development. Twitch is no exception, and in this section takes we draw up the history of how Twitch's owners have, over time, employed shifting in-scription strategies to attract certain user groups, and impede or block others [14]. The history of Twitch can be described in three phases. *Phase 1* dates back to March 2007 when Justin Kan, an American Internet entrepreneur, started broadcasting his life 24/7. The novelty of this practice attracted media attention and popularised the term *lifecasting*. Later that year, Kan's successful solo performance was converted into Justin.tv — an open, multi-channel platform for lifecasting. As the phenomenon caught on, by the end of 2007, more than 3,000 people were lifecasting on Justin.tv, covering a plenitude of roles — from culinary experts and radio personalities to voyagers and shark hunters. In 2008, *event streaming* was accentuated as a second casting option and Justin.tv added nine selectable categories for broadcasters: 'Featured', 'People & Lifecasting', 'Sports', 'Music & Radio', 'Gaming', 'News & Tech', 'Animals', 'Entertainment', 'Divas & Dudes'. The beginning of Twitch was in other words a bottom-up innovation where Justin.tv capitalized on emergent user practices.

In the years that followed, Justin.tv experienced fast growth, especially due to what Bruns (2009) terms 'guerrilla re-broadcasting' — that is, unauthorised forwarding of media content that is only available via paid TV subscription or in other ways restricted. In particular, the live repurposing of sporting events on the platform came under heavy attack from the rights holders of the original media (Birmingham and David, 2011; Burroughs, 2015). The company tried to find ways to detect and filter out infringing content in real time but struggled to find good solutions. In addition, a couple of crises badly harmed the platform's reputation. Among these, a live suicide, reportedly encouraged by viewers, which received widespread media coverage and raised public discussions on editorial responsibility (Stelter, 2008). These problems led to reduced interest and investments from stakeholders, and, finally, the shutdown of Justin.tv in 2014.

Meanwhile, the relatively hassle-free gaming section was growing increasingly popular. The openness of the platform had fostered the rise of another, less controversial, set of user practices that were also outside of the original business plan; live-streaming of computer games. In 2011, *Phase 2* saw Twitch concentrate its operation around this dedicated and loyal user constituency of gamers. This shift marked a narrowing of the platform's in-scriptions — from general audience and content (lifecasting) to a specific and dedicated user group (streaming gameplay). The platform has since continued to grow among gamers, justifying Churchill and Xu's (2016) claim that it is now the biggest gaming community the world has ever seen.

The beginning of *Phase 3* was marked by a corporate takeover. In August 2014, Amazon acquired Twitch Interactive for US\$970 million, and content from Amazon's own streaming platform, Amazon Prime, is increasingly becoming interchanged with Twitch content, as Amazon Prime subscriptions are bundled together with so-called 'Twitch Prime' subscriptions. At the same time Twitch has gradually expanded back into non-gaming content: "Music" featuring radio shows, music production activities, touring diaries and more in January 2015; "Creative" for the co-creation of art and craft works in October 2015; and "Food" in summer 2016, tapping into the East Asian phenomenon of 'social eating', it launched a category of 'Food'. Finally, in March 2017, Twitch launched an 'IRL' (In Real Life) category, allowing users to lifecast about virtually anything — bringing Twitch more or less back to where it had started 10 years prior. Phase 3 also involved upgrading technical features of the platform to cater to non-streaming content by providing more on-demand features, enabling new possibilities for archiving and retrieving clips and highlights from live feeds.



Note: Larger version of Figure 1 available [here](#).

Figure 1 depicts Twitch's transformation through the three phases — where the in-scribed user shifts from general to specific and back again. As we saw, Phase 1 ended with conflict. Justin.tv did not manage to handle the breadth of its users and their re-inscriptions, and this led the service to constantly collide into the outer edges of the formal and legal media economy (Lobato and Thomas, 2015). In comparison, Twitch's Phase 2 was relatively hassle-free, marked by tight interaction and cooperation between the platform owners and a growing community of dedicated gamers (*cf.*, Taylor, 2018), though limited in theme. In the current Phase 3, following a takeover by Amazon, Twitch has moved much closer to the centre of the commercial mainstream platform economy by once again expanding into non-gaming content and thereby encouraging new uses and appealing to new user groups. Current platform configuration defies previous definitions of platforms that favours either amateur or professional content, or delineates platforms based on live vs. archived content. By tracing the development of Twitch, we also see how the current platform is shaped by user driven innovation, a creative community, legal frameworks, stakeholder interests and changes in ownership.



The dynamics and dimensions of co-scripting

Our brief overview of Twitch.tv's history illustrate how platform development is the result of pushes and pulls between the designers' in-scriptions and users' de-scriptions and anti-programs. The platform started out as a way of lifecasting everyday content on Justin.tv; but unruly users streaming copyrighted material forced a change. The rise of the video game streaming subculture and the separation of Twitch as a uniquely game-related platform marked the beginning of Phase 2, while Twitch's change in ownership and opening of the platform to general content (both amateur and professional) marked a return to a more general platform for live streaming in Phase 3. The platform development cannot be ascribed to clever engineers or visionary entrepreneurs — as technological successes often are. Instead, our analysis show how Twitch is the result of a messy developmental trajectory with many small steps of change (as opposed to a 'out of the box' innovation) where emergent practices were integrated into the platform's profile, and features and content were added on the grounds of both creative and unruly users. These processes of anti-programs and re-inscriptions are so pervasive that we argue that it is most accurate to understand them as intertwined with designer's script, as collectively made scripts, which we label: *co-scripts*.

We coin the term *co-scripts* to highlight how use cannot be separated from technological development, and to deliberately blur the line between designers, owners, content creators and users. The user scripts of electric vehicles detailed by Gjøen and Hård (2002) are similar in their emphasis of users, but the scripts they describe are neither digital nor networked. Twitch, however, an example of a networked public (with material affordances for permanence, replicability, scalability and searchability)

(boyd, 2010) where interactions, productions and relationships are mediated by platforms. The user-platform relationship is not a one-to-one, it also includes a community where new associations are formed between actors, most notably new forms of feedback mechanisms (e.g., audience metrics and user forums), and new forms of dependency between producers and users (eg. Users as content creators). In the next section we explore the current co-scripting that takes place on Twitch.

Twitch scripting their users

The platform-user relationship is one of push and pull, where both technical features and community practices are the subject of change. Through phase 1 to 3, different users have been envisioned — or in-scripted — in the platform; from lifecasters, to gamers to everyone. In this section we will further analyse how users are scripted in Phase 3, to see how a platform for “everyone” is actually quite specific. Five scripted user qualities are identified (sociability, gamer interest, ethical behaviour, paying customer and potential professional broadcaster). For each script we address both in-scriptions in design and promotion, and the de-scriptions and re-scriptions of users.

Scripting Twitch users 1: Twitchers as socialites

The most prominent script is of users as social, and the platform envisions community interaction to be a central aspect of the user experience. Social features like chat channel, viewer stats, follow- and friend functionality, direct messaging and more take up a sizeable part of the screen, enclosing the stream that is placed centre stage. The design inscribes a form of use where viewing and interaction, content and community, are inseparable. This is visible in the slogan: “Don’t just watch, join in”, but also in their self-description:

“We are a global community of millions who come together each day to create their own entertainment: unique, live, unpredictable, never-to-be repeated experiences created by the magical interactions of the many. With chat built into every stream, you don’t just watch on Twitch, you’re a part of the show.” [15]

Interestingly, the in-scribed interest in socializing is both accepted and rejected by our interviewees. On one hand, they agreed wholeheartedly that active participation and engagement with others (both audiences and streamers) had a decisive appeal. On the other, their ‘default’ mode of viewing was detached and non-engaged. The informants would let Twitch play in the background while going about their daily life, similar to how radio is used. However, unlike with radio, our interviewees would at key moments *switch* mode of viewing and engagement from passive background entertainment to active involvement in the stream and its community. In fact, *switching* between modes of viewing and engaging is a key characteristic of Twitch viewing as the users took advantage of the flexibility offered (Spilker, *et al.*, 2018).

Switching took place along two partly correlated dimensions, which we conceptualised as *affective switching* and *spatial switching*. Affective switching meant switching between passive and active user roles. These on-and-off shifts in attention are partly related to factors external to Twitch, such as pauses in game play, waiting times (e.g., if a user died in a game) and pure procrastination; and partly internal factors, such as high levels of action in the game being streamed, activity in the chat channel or the broadcaster doing something different or exciting. Similarly, spatial switching, or switching between stream channels with smaller or larger audiences, was a frequent and integral part of informants’ Twitch experiences. In short, large streams were watched because of the broadcaster’s skills or charisma or other entertainment or action elements, while the social element fell into the background. Smaller streams, on the contrary, were normally preferred for their community feeling and the close interactions with and responsiveness of the broadcaster.

Finally, while Twitch is generally used for live-streaming and chats, our interviewees highlighted that they learned about special happenings or controversies on Reddit, watched highlights and replays on YouTube and communicated with friends and fellow players through VoIP communities such as Discord and TeamSpeak. Thus, while there is a clear division of labour between platforms and services, these should be understood as part of the same assemblage, as they both play a role in facilitating the use and meaning of Twitch.

In summary, the social script is highly visible and persistent, but is partially rejected as users did not experience interaction as a necessity, but rather a feature to switch on during key moments.

Scripting the Twitch user 2: Gamers forever

In light of Phase 3’s return to general content, we expected Twitch current script to be non-descript and oriented toward lifecasting in general. Surprisingly, Twitch still inscribes its users as gamers; algorithmically (game streams dominate both home and browse-page), through content ordering (diverse gaming content categories vs ‘creative’ covering everything else) and promotional images (all showcased streams are gaming related). Twitch even explicitly describes gamers as its core audience in a section directed to potential advertisers: ‘Gamers are social. Video is their language. Twitch is

their platform. Reach and resonate with the most influential gamers on the planet' [16]. So, while Twitch is broadening its scope to include many types of interests and fan communities, this has been performed in a very wary manner, and Twitch has continued to actively code itself as primarily belonging to the gaming domain.

The scripting of Twitch as a platform for gamers resonated strongly with our gamer informants. They were introduced to Twitch through gaming related interests and considered 'being a gamer' a prerequisite for someone to watch typical Twitch content. Outside of rare once off events like the nine-day marathon streaming of Bob Ross' 'The Joy of Painting' at the launch of Twitch Creative, they did not see much appeal in the platform for non-gaming content. By and large, these users were satisfied with Twitch's current set-up and features. They did not care much or express strong opinions about the platform's opening up to new user groups and channels. However, indirectly, some of our informants felt threatened by Twitch's efforts to broaden its user constituency, like changes to behaviour guidelines as part of the mainstreaming effort.

Scripting Twitch users 3: The ethical Twitcher

Twitch introduced new behaviour guidelines in February 2018. The new script, articulated through guidelines, rules of moderation and tools for content moderation, envisions a highly moral, well behaved user with an interest in perpetuating a diverse and welcoming community. At the time, the Twitch community was infamous for its toxicity; high levels of harassment, offensive language and bigoted discourse, prompting panels at Twitchcon and cooperation with game publishers to reduce abuse [17]. Especially women streamers have been subjected to targeted harassment and double standards (Harvey, 2019). However, toxicity was not the only issue these new regulations addressed. A growing number of streamers were using the platform to dress and behave in sexually explicit ways for money and use their channel to promote sexual services on other platforms [18].

However, the family friendly interactions and content that Twitch proposes is in conflict with some strands of gaming culture in which being offensive and 'politically incorrect' is part of the appeal (Ask, *et al.*, 2016). Indeed, our informants pointed to the offensive language of Twitch chat as an element distinguishing Twitch from similar platforms, and a way to determine insiders from outsiders. Being able to understand and deal with the tone, feel, lingo and symbolism was the hallmark of 'real' gamers and considered a requirement for users to fully be able to enjoy gaming related content. Inversely, anyone unable to decode the vernacular and instead take offense by the extensive use of slurs, frequent sexual requests or racist comments were as outsiders (such as parents, partners and other non-gamers). Many of the informants felt that Twitch had started to suspend game streamers for conduct that had previously been considered common, while overlooking the increasing presence of 'sexual streaming' in IRL channels. In this sense, we may understand the new community guidelines as a re-inscription of the platform, an inscription Twitch promotes as community driven, though it is also likely to make the platform more appealing to advertisers. After all, the platform has to earn money.

Scripting Twitch users 4: Patrons

The commercialisation of platforms has repeatedly been a source of conflict as the interests of platform users and owners diverge (see both van Dijck, 2013 and Gillespie, 2010), but Twitch appears quite successful in this aspect. We believe this is due to a) accepted scripting of use, support and payment as interchangeable; and b) multiple and flexible ways to pay. Paying for content runs counter to old-school Internet ideals, but in a clever move Twitch does not frame audiences as customers (persons paying for a service or content); rather, it configures the audiences as patrons (persons supporting broadcasters and communities), linking fan loyalty to donations and subscriptions. On the 'About' page contributing to the community is described as 'watching, chatting, subscribing, and cheering with Bits, and more, you're helping your favourite streamers get rewards, recognition, and yes, even love'. Whereas watching and chatting is free, subscribing and cheering with Bits are not, and the way they are listed side by side is illustrative of how watching, communicating and creating content is interwoven with monetisation. The way in which watching streams and paying for them through monthly subscriptions, sponsored streams, microtransactions and off-platform payments (through services such as Patreon) were framed as expressions of loyalty and support might be understood as the emergence of a *patron economy*. In this patron economy, there was no difference made between enjoying content and paying for it. However, its success also relied on streamers integrating the exchange of money into their streams, as well as support from industry and community.

The platform design directed users towards payments. For example, non-paying members were punished with inescapable ads, and 'subscribe', 'buy' and 'give bits' buttons were prominently displayed on the top right corner of the screen, above the stream. Paying members were given unique tokens (*e.g.*, emoticons, as decided by the broadcaster) to display in chats and differentiate themselves from non-paying members. However, these features only mattered because they were integrated into how content was created and the community interacted, which was only possible because of the inclusion of non-human actors. Broadcasters used extensions (plug-in software) to, for example, play a sound and display the name of a new subscriber or announce when a donation ticked in. This allowed streamers to welcome new subscribers or thank those who had donated during their performance, making the giving and receiving of funds an integral part of the content, itself.

Overall, our informants expressed sympathy with the patronage system, which is the foundation of the Twitch economy. On a monthly basis they would spend on Twitch similar to what they would pay in general subscription fees of (e.g.) Netflix and Spotify. Thus, Twitch's inscription of users as patrons, not customers, found deep resonance among our informants. Of course, there were also some accusations of 'sell out' behaviour — for example, when broadcasters promoted sponsors heavily or spoke too favourably about certain games. However, many of the broadcasters they chose to support were persons they admired and cared for and felt they knew or were acquainted with in one way or another. They felt that they were part of the same community as these broadcasters were simply located elsewhere on the audience to broadcaster continuum.

Scripting Twitch users 5: Potential content creators

Money is, of course, not the only thing that audiences contribute to the platform, as the majority of the content is user created. This leads us to the final scripted quality of the Twitch audience: the user as a (potential) broadcaster. Of the estimated 100 million unique viewers per month, 2.2 million choose to broadcast, themselves [19]. As a live-streaming service, Twitch is reliant on a large stable of broadcasters to ensure available content whenever audiences log on, and the great variety of streams is one of Twitch's main appeals, as it allows for flexible and multiple viewing practices (Spilker, *et al.*, 2018). To turn audiences into broadcasters, Twitch has issued strong scripts through its promotional material, design features and incentive systems, and the scripted audience is always one of a potential broadcaster.

The two main ways users are incentivized to become professional broadcasters is through design, and through its partner system. For a user to start a stream, they need only to push the 'Set up server' button and choose a name for the channel. Thus, shifting from audience member to broadcaster is relatively easy, as both roles use the same software, hardware and the evolution follows a ready-to-go default setup. This scripts the user as someone without specialised knowledge about broadcasting and community management. Even if none of our informants was broadcasting at the time of the interviews, seven had previously tried to do so (two had streamed regularly and five had broadcast only on a test basis), and their experience is in line with the script. It was easy to set up and test. However, more advanced functionality is available in more hidden menus, and by adding third party software (addons), revealing a less visible script of a professional broadcaster with technical competence, a desire to build and manage a community- and make money doing it.

The affiliate and partner system adds monetization features to the stream. Of the 2.2 million creators who stream their own content, 150,000 are classified as 'affiliates' and 27,000 as 'partners', based on the number and frequency of their streams as well as the size of their audience [20]. Twitch has even created a step-wise, achievement-based programme called 'Path to Partner' that can be described as a gamification of the path to becoming a professional broadcaster. The affiliate and partner system takes for granted that users who want to be popular, also desire to make money from their interests. This in contrast to other fan communities where ideals of gift-economies are prevalent (Turk, 2014). It assumes that all users know and recognise the relevant opportunities and gradients and understand that success is as difficult as passing through the eye of a needle — just as skill (and money) are required to move to higher levels in many computer games.



Five dimensions of user-platform politics

Script analysis has supported us in understanding the role of users in the development and continued use of Twitch.tv. We have demonstrated how a specific type of user is constructed through five co-scripts articulated through design, feature and use, a user who is a social, is interested in gaming, prefer family friendly communities, pays for content and is a potential broadcaster. Drawing on this analysis on Twitch and co-scripts we propose the following five dimensions as key arenas for configuration of user-platform relationships: 1) Sociality: community or individual use; 2) Audience: specific or general; 3) Moderation: strictly moderated or *laissez-faire*; 4) Content: user-generated or commercial; and 5) Scope: specialised or multi-feature. Each dimension represents a spectrum of configurations, and we argue that these are key dimensions for the development of streaming platforms, more generally.


First we should consider sociality and the relationships between users; does the platform support interaction between users, and if so, what kind of interaction? Ranging from none, only featuring streaming of content (e.g., Netflix), to social features being an integrated aspect of both platform and content (e.g., Twitch). Though watching Netflix is undoubtedly a social venture for many, as the screen is shared within the household or with a second screen, the Netflix viewer is not scripted as social. There are no scripts on Netflix directing the user to interact with other Netflix users. Twitch on the other hand envisions a user as equally interested in the community and possible interaction with the streamer, as in the content itself. Also, the streams are shaped by audience participation, with competitions, thanking new subscribers or answering questions from chat are commonplace events on the stream. It is worth noting that even with a strong social script, Twitch does not require users to be social at all times, and an important element of its appeal is the possibility to switch between active and passive viewing practices (see Spilker, *et al.*, 2018).

Second, there is a tension between being a specific- or a general-audience platform. Currently, Twitch seems to be pursuing a have-it-both-ways strategy. It appears fully aware that it has become the world's leading live-streaming platform by engaging a specific and committed user group rather than catering for the general public. By continuously scripting its users as gamers, investing in exclusive eSport competitions and cooperating with game development companies, Twitch has tried to keep the gaming community on side. At the same time, both Twitch and Amazon are eager to exploit the platform's market-leading position to reach a broader audience — as indicated by the new content categories and the bundling subscription offer with Amazon Prime. Opening up the platform runs the risk of losing the community and eroding the loyalty of the user constituency; indeed, our interviewees showed little interest in Twitch becoming a general streaming platform.

The third dimension relates to the regulation and moderation of behaviour. While on the surface Twitch's moderation may appear trivial, it has major consequences for the kind of content that can be streamed, and the community at large (which is explicitly made part of the platform's appeal). In Twitch's first and second phases, a *laissez-faire* approach was taken to user interaction, whereby community guidelines existed but were not enforced. In the third and final phase, new guidelines were introduced to make the platform more accessible, both for existing users and for potential (general) audiences. However, as Gillespie (2018) points out, moderation is a double-edged sword: too little, and users may leave to avoid toxic environments; too much, and users may leave because the platform feels too intrusive or antiseptic.

The fourth dimension is content, and the choice between hosting user-generated or commercial content. The basic idea of Twitch — and Justin.tv before it — is to make it easy for users to broadcast their own streams and watch other users' streams. This has been the guiding principle for the platform's infrastructure and, so far, been easy to recognise from the user interface (in contrast to, e.g., Netflix or music streaming solutions such as Spotify). The scripting of audiences as potential professional broadcasters, with partner systems and gamified paths to support more viewers to become broadcasters, is an example of how user-generated content is supported on Twitch. However, as they become more established, with sponsor agreements, professional equipment and subscription revenue, the line between user-generated and commercial content is further blurred. At the same time, it appears other commercial content is becoming increasingly important for the company's strategy. It is not difficult to predict that this type of content will be accentuated in various ways, such as through algorithmic ranking systems and placed content recommendations, much as we have seen on YouTube and Facebook, among other platforms (Bucher, 2018; Helmond, 2015). To date, Twitch has largely been successful in scripting its use and payment system as intertwined (*cf.*, patron economy), but it remains to be seen whether the script is strong enough to include commercial content.

Finally, platforms must perform a balancing act between being technically specialised and being multi-feature — between specialising in a particular use or catering for a plethora of uses. Twitch developed as a platform dedicated to live-streaming from the bottom-up, and this has been and will possibly continue to be its main advantage, as other platforms are now investing in live-streaming. Instagram, Twitter, Facebook and YouTube are social networks or video-on-demand platforms that are adding live-streaming capability onto differently designed technical infrastructure. This probably explains why YouTube — Twitch's main, and bigger, competitor when it comes to gaming content — has not been especially successful with its heavy investment in YouTube Live. Conversely, Twitch faces the same challenge in its development of on-demand features. Gillespie (2018) claims that it is imperative for platforms to include more features in response to growth and competition. That live-streaming is becoming a feature on ever more platforms seems to confirm this claim. However, looking at Twitch's story, we also see the opposite trend — narrowing and concentrating on specific features and applications. As a result of this process, Twitch is often used in tandem with other platforms, such as YouTube to watch highlights and replays, and Discord to chat with close friends with the noise of public channels. So, while being technically specialized, Twitch is supplemented by other technologies to cover a wider set of potential uses.

In this paper, we have analysed the evolution of Twitch, emphasising the contributions of both users and owners to this process. Combining the two theoretical perspectives of platforms and scripts, we have argued that their combined efforts can be understood as *co-scription*, and that co-scription is a useful starting point in understanding the collective scripting that occurs in networked technologies such as platforms. Our aim has been to show the importance of including user perspectives in addressing both how owners and producers envision use and users and how users, themselves, make sense of use, in order to adequately understand the development of platforms. Based on the analysis of Twitch scripts we propose five dimensions of user-technology relationships: sociability, audience, moderation, content and scope. 

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Notes

1. Twitch.tv, 2018. "Audience" (11 August), at <https://twitchadvertising.tv/audience/>.
2. Anderson, 2017, p. 1.
3. Bruns, 2009, p. 4.
4. This definition excludes, for example, simpler Web sites, e-mail communication and distributed networks.
5. Lotz prefers to call these infrastructures/services 'portals', but she uses the term in the same manner as others use 'platforms'.
6. Lotz, 2017, pp. 22–24.
7. Gillespie, 2018, pp. 21–23.
8. Gillespie, 2018, p. 18. In addition, Gillespie's definition includes a point (c) about infrastructuring and a point (d) about moderation.
9. Gillespie, 2010, p. 358.
10. Bijker and Law, 1992, p. 259.
11. Akrich, 1992, p. 208.
12. Akrich and Latour, 1992, p. 260; Latour, 1992.
13. The first six interviews, which formed the basis of Martin Hansen's (2017) Master's thesis, were conducted in winter 2017; an additional six interviews were conducted in summer 2017, to complement the data.
14. Unless otherwise indicated, the information presented in this section is retrieved from <https://en.wikipedia.org/wiki/Justin.tv> and <https://en.wikipedia.org/wiki/Twitch.tv> (27 November 2017).
15. From Twitch's "About" page, at <https://www.twitch.tv/p/about>, accessed 1 February 2019.
16. "Twitch advertising," at <https://twitchadvertising.tv/>, accessed 26 August 2018.
17. C. Campbell, 2016. "TwitchCon diversity panel deluged with racist chat" (6 October), at <https://www.polygon.com/2016/10/6/13176706/twitchcon-racism>; M. Jeffery, 2016. "Blizzard and Twitch team up to battle racism in chat," at <https://gamerant.com/twitch-racist-chat-blizzard/>.
18. BBC, 2017. "Call for Twitch to police sexual streaming" (9 December), at <https://www.bbc.com/news/technology-42222939>.
19. Twitch Tracker, 2018. "Statistics" (27 August), at <https://twitchtracker.com/statistics>.
20. Twitch.tv, 2018. "Joining the affiliate program" (27 August), at <https://help.twitch.tv/customer/portal/articles/2785927-joining-the-affiliate-program>.

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