

Effects of User-Platform Relationship Networks within the Livestreaming Industry

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Throughout the past decade, livestreaming emerged as a complex, dynamic landscape with a vast network of actors. Livestreaming technology allows users to create and broadcast a variety of content ranging from gaming, shopping, education, influencer streams, music, and many other topics in real time. The variety of content attracts interest from general audiences, strengthening the market and attracting heavy competition across platforms. The disruptive nature of livestreaming to media derives its strength from the accessibility of tools to participate. Unlike television and subscription-based services, the barriers of entry for content producers in livestreaming are simply a smartphone or computer with Internet connection. The low barrier to enter content production not only generates vast amounts of content, but also challenges the advantages of the costly infrastructure networks of traditional media.

Livestreaming presents not only a case for easy, monetized delivery of user-created content, but also a disruptive shift in society's interaction with media production. Streaming platforms draw advantage from the meshing of social media interactions with easily consumable, real-time video content. The combination of social and entertainment values produces a new network of users ready to watch, engage, and form strong communities around content channels. These characteristics of media inclusivity owe their roots to the popularity of amateur radio broadcasters in the 1910s. During this period, people across the country would tune in to distant radio broadcasts and engage in peer-to-peer sharing of media content. To the detriment of the growing involvement of citizens in media, military and television infrastructure largely shut down the ability for amateur broadcasters to reach audiences. In many ways, Livestreaming is a

rebirth of radio's inclusive values, providing a global community for the creation and sharing of media content without the cost burden of expensive broadcasting networks.

The social implications of emerging livestream markets are extenuated through elevated digital use cases resulting from the COVID-19 pandemic in 2020. As people seek virtual forms of entertainment, the environment of livestreaming assumes a larger role in providing social interaction and engagement with media. Research on the livestreaming ecosystem reveals a complex network of interactions between platforms, content creators, and user audiences. Technology that relies on users to produce and consume media should benefit from user involvement in the design process. This paper will explore these relationship networks and the disruptive developments that livestreaming introduces to user-based technology and inclusivity of design process.

Streaming: Bottom-up vs Top-down Models

The nature of how people interact with and consume media has been an ever-evolving component of society's development. In traditional formats, media channels are top-down, relying on organizations and publishers to disseminate content to audiences. Recent developments in file technology and the popularity of video on-demand sharing sites have prompted the emergence of platforms that support real-time, user-broadcasted content. These livestreaming platforms rely on a dominantly bottom-up model, where users create and broadcast content for other users to consume. Bottom-up video sharing places a strong emphasis on the relationships between the platform and the content creating users. As companies find success from bottom-up sharing platforms, the dynamic relationships between user experiences and platform goals become serious points of research. Research into the unity of platform needs and user feedback empowers the value proposition of users as valuable sources of innovation.

In the current research of user-enterprise relationships, the focus is placed on the relationships between corporate software vendors and their users. These constructive relationships are essential because of the responsibility of vendors to ensure good user experiences for their customers. From observations of the relationships between software developer, Oracle, and special interest user groups, new power relations and possibilities for wielding of influence were formed through participation in user communities (Mozaffar 2012). In this instance, Oracle recognizes its users as important stakeholders, able to provide valuable and constructive feedback to the development teams. Through open feedback channels and support blogs, developers institute components of a bottom-up model to their design process. In a bottom-up design model, knowledge and feedback are volunteered by users participating in a co-constructive capacity. In the case of the livestreaming industry, content creators hold a position of influence through engagement with their fan base. The relationship between creators and audiences opens channels for direct relationships between creators and the platform itself. Platforms take an interest in fostering relations with creators due to the financial implications of creators bringing high viewership metrics. Through this network of actor relationships, livestreaming companies configure creators as contributors to the development of value to the platform. With the livestreaming industry growing at an exponential rate, the technology will benefit from platforms' co-construction with users in a function that transcends deterministic views of technology and essentialist views of user identities (Oudshoorn and Pinch, 2003). This goes to say that the acknowledgement of users as developmental contributors opens new sources of valuable input towards the development of new technology. Casting user groups into roles of developmental contributors will not only offer value to platforms through collaborative design,

but will also support the push for inclusivity and democracy media, a concept that will be explored further later in the paper.

The developmental strengths of bottom-up models seem apparent to design cycles, but few media platforms have effectively implemented their user bases as resources. Because of this, most livestreaming companies operate on split models, relying on the bottom-up model for content production and operation, but remain committed to a top-down model for design and platform development. Through an exploration of existing research into the frameworks of user-platform relationships, several contrasts can be drawn between platforms based on how they utilize audiences as a resource for platform improvement.

Framework of User-Platform Interactions

The field of user-produced entertainment is especially subjectable to analysis of user-platform relationships. The developmental strengths of bottom-up models seem apparent to design cycles, but few media platforms have effectively implemented their user bases as resources. Because of this, most livestreaming companies operate on split models, relying on the bottom-up model for content production and operation, but remain committed to a top-down model for design and platform development. Through an exploration of existing research into the frameworks of user-platform relationships, several contrasts can be drawn between platforms based on how they utilize audiences as a resource for platform improvement. Framework for such analysis draws from the observations of user interactions on the platform and how the platform encourages or guides these interactions to facilitate platform development.

Livestreaming is an evolving technology, existing in many different forms of technical interpretation and interaction models. In order to break down the complex interactions within

these relationships, it is important to set the stage of rules and factors that influence the livestreaming industry. The livestreaming industry is in its relatively early development stage, and therefore has only seen a few closures on different technological interpretations. Because of this, different companies form vastly different interpretations of what ideal user-platform relationships should look like. In order to draw comparisons between the different platforms' approaches, a multi-layered typology stretching across many dimensions of streaming explains and accounts for variation across different streaming iterations (Spilker and Colbjornsen 2020). Spilker provides a dimensional analysis of the commonalities that exist within the variations of streaming services such as VOD streams, premium content services, music streaming, and livestreaming. By examining the application of the dimensions of content production, regulation, and audience treatment, livestreaming exhibits a stronger democratic model than other streaming technologies such as music and video on demand (VOD). Inclusive user networks form based on values of bottom-up content production, loose broadcasting regulation, and encouragement of audience participation. The characteristics of these network relationships place importance on the involvement of users for the further development and viability of the technology. The success of livestreaming and disruption of traditional media will rely on future exploration into the role of users in emerging technologies and the success associated with proper utilization of user, creator, platform relationship networks.

Livestreaming giant, Twitch, leverages the relationships between users and the platform to cast the user into roles based on desired patterns of interaction. "Scripts" are used to define the roles and classify the user interactions Twitch desires on its platform. "Scripting" users does not force the user to interact with the platform in a certain way, but rather identifies certain characteristics that explain how specific groups of users interact with the platform (Ask and

Spilker 2019). The effective user scripting by Twitch establishes a constructive relationship with its users by understanding the underlying patterns of interaction with the platform. This approach is one form of implementation of user feedback and the employment of user groups to improve technology. Twitch treats its user base not as homogeneous, but rather as a heterogeneous mix of different user groups. This enables the platform to observe different values and use cases that influence successful platform operation and growth. By utilizing this approach to user relationships, the company incorporates the users in developmental decisions, whether it be direct feedback or through observation.

Understanding and basing design on platform interactions is an effective way to incorporate user involvement in design, but does not come without limitations. The success of Twitch's user "scripting" lends itself to the specialization of the platform to support gaming streams. Larger platforms like Facebook and YouTube Live are challenged with catering to general audiences with diverse needs. When these larger platforms are faced with the challenge of accommodating diverse user bases, the attention to user-based principles in design and technical specialization is watered down by the overwhelming variety of interactions. In contrast to platforms with a niche market focus, large streaming platforms wrestle with the challenges and costs associated with implementing design changes to an ecosystem of billions of users. This results in development decisions filtered and diluted through many levels of management.

Benefits Resulting from User Involvement in Design

To understand the role of livestreaming in the inclusive media revolution, it is important to recognize strengths and weaknesses in prior user-platform relationships. Various instances of user-platform participations have manifested in bottom-up streaming models, primarily in VOD

services and social media. One of the most notable mobilization of users to hold influence was the formation of Multi-Channel Networks (MCNs) on YouTube. These MCNs effectively formed unions of content creators to help with publicity, content promotion, advertising partnerships, and platform side issue resolution. In addition to the revolutionary changes brought about by MCNs, it is worth looking at more traditional forms of user mobilization, primarily through support blogs and the interactive design competitions.

Multi-Channel Networks first emerged on YouTube as a way to guide creators to develop their brand and capitalize on the growing profitability of Internet content. The networks often operated as companies within the platform, identifying and managing the talent of its creators to grow viewership and attract the attention of sponsors. The benefits that networks presented to creators did not stop at the publicity level. With a large number of creators and channels signed on, MCNs commanded influence on the platform through engagement with YouTube's management team as well as fighting legal battles concerning creators' content rights and copyright issues (Gardner & Lehnert, 2016). The influence derived through MCNs came from their ability to aggregate creators' concerns and address representatives of the platform directly. YouTube management recognized the enhanced profitability models promoted through MCNs, and provided the appropriate channels for MCNs to voice concerns and resolve issues. While the creators were able to provide their input and suggestions to the platform through the MCNs, the middleman approach to inclusive development did not leave lasting changes to user-platform relationships. Today, MCNs primarily function as talent agencies, providing sponsor support and production resources to popular content creators. The past functionality of MCNs provide a look into the potential implications of unionization within the Internet content industry. As creators

continue to rely on streaming platforms as a source of income, platforms must recognize the value of co-constructing technology to avoid the red tape resulting from creator unionization.

Perhaps the most effective way to mobilize and involve users in the design process is through design competitions. Design competitions are events held by companies to challenge users or consumers to create a design for a product. Users are again employed in the validation process, prompted to vote for the best design. These competitions present not only an effective method to generate multiple designs from different perspectives, but also utilize an organic selection process to settle on the best design. Companies are able to easily influence the quality of designs they receive through prize offerings and design specifications. For digital applications, competitions can focus on best webpage design, best new feature suggestion, or on other concepts that a platform may find helpful. In a 2011 study of design competitions, researchers performed an empirical study of a Swarovski Enlightened jewelry design competition. Through the analysis, participants exhibited competence in their design as well as heightened feelings of engagement in the community of the brand. Participants also reported desire to participate in future competitions, citing enjoyment and autonomy in the creation of their designs (Fuller et. al, 2011). Participants of the competition broke down into 3 main experience groups: professional designers, design students, and hobby designers. This parallels to the levels of technical experience observed on digital platforms: creators, power users, and casual users. By harnessing these user groups in a constructive design process, the facilitating company grows the relationship to the community of its brand and receives multiple design recommendations through contest submissions. This method of user involvement is underutilized by digital platforms due to the focus of management teams engaging users to drive viewership and profitability metrics, rather than offer involvement in design processes.

The most commonly used method for engaging users in platform relationships is through support blogs and messaging forums. Online support blogs are relied on by companies to access user feedback for problems and improvement suggestions surrounding the service. These forums have long functioned as outlets for knowledge management through the capture, sharing, and acquisition of knowledge (Chan et. al, 2013). The interactive discussions hosted on blogs and sharing sites like Facebook and Reddit present forums where issues and ideas can be discussed and monitored by users. Reddit characterizes an interesting use case surrounding user governance of knowledge sharing. The site is configured by topic, labelled as subreddits, allowing moderators of a topic to manage the information shared on that subreddit. For some streaming networks, users operate a subreddit for each platform where the community can address and resolve problems that other users are experiencing. Reddit operates at a democratic level through the power it gives to users. Companies often look to Reddit and other blogs as a way to interact with their more dedicated users and utilize their perspective in addressing issues. Users that seek additional information and participate in discussion outside the platform of a streaming network are generally treated as knowledgeable contributors despite their non-expert background. Livestreaming networks draw feedback from these power users to understand the state of the platform, but may be limited by the number of active participants on the forum. Because of this, streaming networks require an interaction method that directly targets and incentivizes users to participate in development process. Through direct engagement channels, the livestreaming industry will be a driving force for democratizing inclusivity through media.

Democratization of Media and its Implications

As social media permeates the lives and day-to-day activities of people around the globe, so grows the power of individual voices and communication possible through content sharing.

Until recently, the distribution of news and media content relied on expensive infrastructures of television networks, printing presses, and broadcasting regulations. Today, inclusivity in media has largely been driven by social activism and movements occurring through inclusive social media channels.

Within civil society in the United States, media activism manifests in efforts to directly influence media practices and strategies or as a byproduct of unrelated social movements with strong media presence. Carroll and Hackett divide stakeholders of media activism into three circles: groups with professional specialization in the industry, non-expert interest groups, and groups mobilizing to combat perceived threats that commercialized media poses to democratic values (Carroll & Hackett, 2006). While the segmentation of media activists offers insight into structured media movements, the current growth of inclusivity in media is predominantly driven by organic user participation in the production and distribution of media content. Building on the observations of media activism by Carroll and Hackett, livestreaming user groups break down into the 3 categorizations: content creators, power users, and casual users. Content creators assume the role of professionally specialized stakeholders, due to the financial incentives of their participation to the platforms. The second group, power users, are considered the special interest “non-expert” stakeholders. These users command an understanding of the platform through repeated interactions and present a valuable resource pool of design recommendations widely overlooked. The final group, casual users, represent a majority of the user base. This group participates in a limited capacity and rarely offers feedback unless there is an issue in the functionality of the service. Considering the three use cases, a hierarchy of influence builds around the users’ technical knowledge of platform functionality. This hierarchy will come into

play in livestreaming platforms' challenge to determine what users will be given a voice contribute to the design process and how they will participate.

Within the scope of social media evolution, livestreaming technology demonstrates potential to empower the public to revolutionize the free sharing of information. Contrary to the traditional minimalist forms of media participation, livestreaming takes on a maximalist form of user participation. Maximalist forms are attributed to the recognition of diversity in heterogeneous audiences, leading to a balance between professional control and popular participation (Carpentier et al. 2013). Idealistic representations of livestreaming networks place a heavy emphasis on intrapersonal relationships formed in special interest communities. These communities often self-govern information shared, without need for platform interference.

As livestreaming develops into a primary source of information and media sharing, the functionality of the technology exhibits characteristics of a communication public service. Already, digital platforms host manifestations of digital citizenship. These manifestations create “alternate citizenship models” that blend online and offline civic engagement in governmental process (Wylie et al. 2018). Through these models, government bodies balance direct engagement with citizens and observation of ideas. Digital citizenship interactions focus on constructive discussions aimed to solve problems in the community. Citizens' access to digital forums enables participation in policy development, giving a voice and influence to individuals traditionally overlooked. As social media platforms and streaming networks play an increasing role in political involvement, control and development of the platform should be shared across the network of stakeholders. In an idealistic representation of democratic media, user-platform networks will share the responsibility of important decision making and co-construct the future of media technology. It is too early to label the current state of social media as a success of rising

media democracy, as its development and operation remains controlled by corporate interests, rather than democratic values.

Discussion

Technology is progressing at a rate today, faster than any other period in human history. In the span of a decade, smartphones and Internet connection populated nearly every corner of the globe, bringing about a revolutionary period of connection, communication, and information sharing. The revolution of information and media sharing has fundamentally altered the way people learn, work, socialize, and spend leisure time. As people continue to substitute activities for digital alternatives, the need for constructive digital environments and development processes becomes apparent. Bottom-up media models such as livestreaming are poised to play a large role in the continuing development of inclusive media. By constructing media channels centered around user content production, the methods of audience interaction mimic public forums with complementary and critical discourse surrounding the topic at hand. The development of user communities and knowledge surrounding interactions supports the value proposition of user participation and input in development processes.

Once digital service platforms recognize the wealth of information and input from participating audiences, the relationship between users and the platform will configure to support collaborative development. Looking back to the three primary user categorizations, content creators and power users demonstrate the highest levels of non-expert knowledge of the platform. For successful implementation of users in platform design, companies will need to explore different methods to identify and engage these groups as contributing users. Unlike government use of digital citizenship models, livestreaming companies are not obligated to seek

out and give importance to every users' opinions. This would be extremely difficult given platforms such as Facebook Live service around 2.9 billion users from every corner of the globe. Instead, the focus should be on the availability of constructive channels that encourage dedicated users to voice design recommendation and participate in the development of media technology.

The value of non-experts in development processes has been a widely explored topic for its potential impact on the future development of how humanity works, socializes, and spends their free time. As digital interactions grew to represent the future of global interactions, the relatively small number of tech companies developing and facilitating these phenomena rise to extreme power. Government bodies have just started to question the legality of the large, hegemonic institutions controlling the social media landscape. This issue becomes heightened when considering the push for economic digitalization resulting from the COVID-19 pandemic. Countries and their citizens rushed to substitute everyday activities for online alternatives in the face of nationwide lockdowns. As countries increase investment for digital infrastructure, tech companies and digital service providers are pressured to provide and operate channels through which meaningful interactions can occur. In the few years following the pandemic, the global economy will continue to digitize, presenting the need for democratic values in technology and media development.

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