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THE NETFLIX EXPERIENCE

A User-focused Approach to the Netflix Recommendation Algorithm

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Introduction

A large part of the user experience of Netflix is based on the recommendation algorithm that suggests content to subscribers. The chapter employs a user-focused approach to the study of algorithmic culture using Netflix's recommendation algorithm as a case study. While current research has focused on questions of black boxing (Pasquale, 2015), algorithmic biases in terms of visibility (Bucher, 2012), and socio-technological power of algorithms (Beer, 2017), there is a lack of research addressing the perception of algorithms and their logics by casual users. Theoretically, the chapter draws on current studies engaging with the notion of algorithmic culture suggesting a strong anchor in science and technology studies to develop an understanding of how technological innovations are actively adopted and appropriated by users in often unexpected ways (MacKenzie & Wajcman, 1999; Striphas, 2015). The chapter is empirically based on material gathered through a walkthrough of Netflix (Light, Burgess, & Duguay, 2016) and in-depth interviews with heavy Netflix users in Singapore. Based on the gathered material, we investigated both habitual and counterintuitive usage and perceptions of the recommendation algorithm.

The chapter suggests a rethinking of the role of the user for algorithmically enhanced cultural production. Based on our findings, we consider users as co-producers of content, contributing data and knowledge through their practices to the platform development and consequently to its success. This implies a shift in conceptualizing the consequences of algorithmic black-boxing, both in terms of ontology and epistemology. Our approach reinforces the idea of users not as passive data providers, but as active co-creators of cultural products. This also ignites the discussion about demands of opening the black box from a user's perspective moving beyond questions of ethics. Applying this perspective enhances the need for commercial platform providers to acknowledge the active role of users for their own development. Consequently, the chapter argues for a shift in the study of algorithmic culture taking user practices and perceptions seriously rather than foregrounding the platform and its algorithmic configuration. Overall, the chapter revisits the current streaming culture, analyzing the role of the viewer as co-producer of algorithmic culture.

Researching Netflix ~~Research~~

Previous research on Netflix has largely focused on either its content, such as *Orange Is the New Black*, *Black Mirror* and *House of Cards* (Artt & Schwan, 2016; Salem, 2011) or on Netflix as an emerging media platform, including discussions of the role of algorithms for the development (Finn, 2017, 93). Since this chapter is mainly interested in the user experience of engaging with Netflix in relation to its technological properties, we will focus on studies dedicated to the latter.

Ed Finn (2017), for example, studies the implications of algorithms on the creative process while crafting *House of Cards*, and the possible outcomes and consequences of those decisions for user's behavior and further content creation. He argues that "this app has assembled a sophisticated algorithm model for describing the cultural relationships among individual film and television works, a model that fully embraces the gap between computation and culture" (Finn, 2017, p. 93). Blake Hallinan and Ted Striphas (2016) in contrast, have focused on the Netflix Prize project as a way to outsource the platform's development to external stakeholders, users, and generally interested people. The Netflix Prize was an online contest offering US\$1 million to whoever could improve the accuracy of Cinematch, the company's existing movie recommendation system by 10% (Hallinan & Striphas, 2016, p. 117). The challenge announcement did not specify what "improving Cinematch" might mean. The

definition of improvement was rather one of the key outcomes of this contest, and although none of the suggestions were applied in the end, Netflix did come up with a solution to this matter by incorporating “taggers,” meaning more precise, in-depth yet “human” characteristics in the form of adjectives or descriptions, where more information was suddenly available and the system could perform at its best (Finn, 2017, p. 89). By instituting the Netflix Prize, the platform aimed to innovate the recommendation algorithm through crowdsourcing.

An interesting finding of this aforementioned research—besides improving the current recommendation algorithm—is what the authors discuss as the way “how new meanings and practices can insinuate themselves into long-established routines, transforming the latter in ways that may be just reaching popular awareness” (Hallinan & Striphas, 2016, pp. 118–119). A general lack in current research on Netflix is, however, a focus on user experience engaging with the streaming service and its recommendation logic.

In terms of recommendation systems, Jockum Hildén (2017) divides between recommendations based on (a) demographics; (b) media use and content similarity; (c) similar users; (d) user feedback; (e) social networks. He further adds that recommendation systems usually complement other, more general recommendations, such as curated content recommendations (such as editor’s picks), most viewed content, and most recent content. Netflix’s system is a combination of several types of recommendation systems. It relies heavily on previous usage and suggests similar content but combines it with recommendations based on user feedback and curated content (the role of Netflix’s original content is particularly important here). However, Netflix, like many other applications and platforms, does not fully disclose the characteristics of its algorithms.

Theoretical Background: Algorithmic Culture

Algorithms shape the way we consume entertainment, communicate and connect. In that sense, algorithms now figure as cultural objects themselves, while also shaping our understanding of culture. According to Striphas, big data and large-scale computation logics—such the one Netflix uses—alters the way humans think, conduct, organize, practice, experience and understand culture (Striphas, 2015, p. 396). The author defines it as the shift of delegating the work of culture of “sorting, classifying and hierarchizing people, places, objects and ideas” to computational processes that eventually modify the way we practice, experience and understand them (Striphas, 2015, p. 395).

An important aspect which also showcases that “tethered self” (Turkle, 2006, p. 6) and the blurring of boundaries is that personalization production happens at two levels: an automated one, where algorithms, marketing interests, and previous consumer behaviors are being considered, and a “human” one, based on user’s agency, where personal choices are also determined by peers, friends and a reference community. As Jones argues, these customized, individual choices of content are “not based on invisible interactions with machines [...] we should not be blind to the fact that is real people who occupy that space, virtual or otherwise” (Jones, 2002, p. 3). Jones considers in his analysis the music sphere, but the similar issue can be identified in the broader entertainment sphere.

Following Gillespie, we argue that algorithms should be understood as “socio-technical assemblages’ joining together the human and non-human, the cultural and computational” (Gillespie, 2014, pp. 404–405). Drawing on Flusser’s approach, Striphas argues that algorithm culture “is the automation of cultural decision making processes, taking the latter significantly out of people’s hands” (Flusser, 2011, 1, 1117 cited in on Striphas, 2015, p. 408). Hence, a platform is either the material or immaterial support for a social activity to happen. Usually, these social activities are formatted into protocols, meaning the expected or correct way to happen, and this phenomenon is presented to the final user with a friendly look or interface (van Dijck, 2012, p. 4). “Any platform’s connective structure is mediated by protocols: formal descriptions of digital message formats complemented by rules for regulating those messages in or between computing systems” (van Dijck, 2012, p. 4). Protocols can be “technical sets of rules” that work independently and indifferently from its very own content, but they can also improve and reframe their usability and goal, and differ from its original programming and intent, due to the way their owners use them (van Dijck, 2012, p. 4).

In this case, the platform is the Netflix application on a TV, tablet, phone or computer that plays entertainment content. The protocols are the programmed and formatted series, movies, and documentaries available to stream and then, when the users decide what to watch and their preferences start getting set up, those protocols mutate. These processes are available to the user thanks to a friendly interface with which they interact.

The architecture van Dijck highlights refers to what the regular user is usually unaware of and what the savvy user is hesitant about, which is the programming technique behind the apps and technology we use. For example, Netflix’s copyright laws do not let users change their IP location for more or different content; technical restrictions on other platforms include uploading photo requirements on Facebook as well as video length on YouTube. While

we aim to focus on user practices in relation to algorithms, it is important to keep in mind why we still mention these technical subjects as relevant. Platforms, protocols, and interfaces contribute to illustrate this matter, particularly the link between technological and social aspects.

An algorithm is any well-defined computational procedure that takes some value, or set of values, as input and produces some value, or set of values as output. An algorithm is a sequence of computational steps that transform the input into the output. We should consider algorithms, like computer hardware, as a technology. (Seaver, 2014, p. 1)

This definition is enlightening because it provides clarification of the emerging fact when “rigid, quantitative logic of computation tangles the fuzzy, qualitative logics of human life” (Seaver, 2014, p. 2). As stated, brands, communications, and media cannot be separated from everyday life and the representation of the online self: these zeros and ones can actually be considered a 21st century fingerprint or the users’ digital trace, which reflects on their offline persona. The same thing applies to Netflix. “Given the personalization [of] algorithms [...] all interactions with the system are tailored to specific user accounts” (Seaver, 2014, p. 5).

These are three very important characteristics about algorithms: in no particular order, the first relates to the role algorithms have. “These algorithms are producing and certifying knowledge” (Gillespie, 2012, p. 2). The second one is how algorithms are readable and therefore usable, “only contrasted and in cooperation with data” (Gillespie, 2012, pp. 3–4). Lastly, it is important to state that it is not the algorithm results that matter, it is what the user does with them (Gillespie, 2012, p. 4).

We therefore emphasize the interactive, engaging, and performative actions of users that have to be considered in reshaping media, and therefore culture. This active behavior is not new (Williams, 1974), but the engagement with algorithms and automated systems adds a new layer to this relationship. This chapter will reflect upon users’ actions to develop an understanding of how technological innovations are actively adopted and appropriated by users in often unexpected ways (MacKenzie & Wajcman, 1999; Striphos, 2015).

Methods and Material

This research is empirically based on material gathered through a walkthrough of Netflix (Light et al., 2016) and in-depth interviews with heavy Netflix

users based in Singapore. Based on the gathered material, both habitual and counter intuitive use and perceptions of the recommendation algorithm were investigated.

The walkthrough method allows for the examination of the app interface and provides a better understanding of the embedded cultural references shown on it that guides and shapes users' experiences, merging symbolic and material cultural objects (Light et al., 2016, pp. 5–7). A walkthrough method provides vital information on how to address some of the questions for the users' interviews and will provide hints for the process of standardize and analyze the quantitative content analysis.

In addition, we conducted in-depth, think aloud interviews—"a research method in which participants speak aloud any words in their mind as they complete a task" (Charters, 2003, p. 68). The interviewees were first asked to turn on Netflix as they usually would and watch it for a while. In combination with observing their user-practices, we asked them to reflect on what they were doing and why. The interviews lasted around forty minutes, each giving insights into the user's experience and journey while using the app. Additional questions not directly related to the practice of watching included context information such as when, where, on which device, with whom our participants normally watch Netflix as well as questions related to the number of profiles, accounts, content, and experiences related to social, technical and algorithmic aspects. Their answers were contrasted with the information gathered through the walkthrough method. For this chapter, however, we rely mainly on the interview material. The material gathered with the help of the walk-through serves as contextualizing data that are not presented extensively here.

The empirical material collection for this research was conducted in Singapore, a worldwide creative hub where 44% of the entire population was under a work permit pass during 2016, meaning they were not considered permanent residents nor Singaporean citizens (Statistics, 2016), providing a cosmopolitan sample (see table 12.1 for an overview). Participants originated from Latin America, North America, Europe, and Asia itself, which resulted in a diverse sample to illustrate this global phenomenon. Gender and age were also variables taken into consideration. Particularly age features as a selection criterion. *Millennials*, referring to the generation born between 1984 and 2004, was the generation selected for the investigation since they are more prone to change: their age and tech skills allow them to be more flexible, easily adaptable, and learners of new experiences (Howe & Strauss, 2000).

Table 12.1. Overview of the participants.

Sample: Singapore Based, Heavy Users, Creative Industry Employees			
	Nationality	Gender	Age
Interviewee A	United Kingdom	Female	31
Interviewee B	United Kingdom	Male	34
Interviewee C	United States	Female	36
Interviewee D	Brazil	Male	34
Interviewee E	Brazil	Female	28
Interviewee F	Philippines	Male	34
Interviewee G	Philippines	Female	32
Interviewee H	Uruguay	Male	36

Source: Author.

Finally, the last considered variable was usage. The selected Netflix users were heavy users. They should have a Netflix account—not necessarily one of their own—and watch it at least 3 times a week. This would allow us to investigate a savvy user approach, maybe not an expert one, but at least an experienced user who dealt with the app on regular basis and was familiar with it. Taking all these variables into consideration, one can briefly sum up that this study focused on how the Netflix algorithm was perceived by users, conducted through a gender panel sample of millennial, ex-pat users from three different continents currently living in Singapore and working in the creative industry. Considering the aim of understanding user experience, it is important to define some of the limitations of this study. Programming, coding, and Netflix’s structure will be only taken into consideration throughout the user’s eyes and not the software structure. How its algorithm and content is programmed, coded, and suggested is something this research can infer in light of users’ experiences, but will not attempt to clearly define how these elements are actually designed on and for the app.

Watching Netflix: When, Where and With Whom

The participants of the study usually watched Netflix at home and alone. Only in some cases other people, for example partners, were present. The experience also occurred as an after-work routine or leisure activity option.

[Netflix is] Something to keep me company if I don't really go to sleep. Netflix and chill by myself! (Interviewee C, Female)

This articulation of time definitely affected not only the participants' preferences on what to do during their weekends and free time but was also an important indicator for the content: people chose to dedicate valuable time to watch this app so, therefore, the offered content, the recommendations' logic and precision as well as the overall experience should be worth it. The participants preferred watching Netflix on a smart television set or a television connected to a laptop rather than on tablets or mobile phones. Many defining factors: image quality and size, subtitles readability, can be enhanced with external devices such as speakers and sound systems, and overall a television delivers a better sensorial experience.

Feeling the Algorithm

New physical practices and technological embodiments such as clicks, swipes, remote control usage, or screen touches are essential to the experience of the Netflix application. One of the biggest drawbacks of the TV as the favorite device for Netflix is the search bar and the remote control: users have to tap letter by letter and the search bar is hidden and not much appreciated. This pre-defined set-up tends to promote the algorithmic logic and the suggested recommendations over the individual search of specific content. As Bull defines it, communication technologies “embody a range of filtering practices [...] in a world in which the cultural industry is continually trying to attract our attention, we turn to those industries to try to manage our experience—to carve our mediated space for ourselves” (Bull, 2007, p. 22, 23).

The idea that we actively manage our mediated spaces and lives as expressed by Bull, figures also in a number of our interviews, particularly in relation to finding new content. Users develop a pragmatic approach towards algorithmically suggested content and the potentially endless archive of unsuggested content. This respondent describes his experience of Netflix as limiting searches and nudging the users towards suggested content:

I think they don't want you to search, right? There's no easy way to search for stuff ... Or at least it's somewhere hidden ... but then you have to type letter by letter, with the control ... but if you have the Apple TV you can search by voice ... we have a keyboard which we can use, but we don't use it. ... (Interviewee F, Male)

Actually, apps brought to life in phones, tablets, and computers, are “closer to our faces and bodies, from across the room to pockets, laps and hands” (Finn, 2017, p. 102). This is just not a physical proximity, but an algorithmic knowledge proximity: our way of learning and interacting provided by this app “leads to a reinvention not merely of content but of user behavior” (Finn, 2017, p. 102). According to our interviewees, users are very much aware of the strategic design of Netflix favoring their own principles for suggesting content rather than enhancing independent searchers. This is, however, not experienced as a disadvantage, but as the primary value of algorithm-based television consumption. It does not affect the perception of functionality nor the brand image the interviewees showed towards Netflix either. On the contrary, as stated in the above participant’s quotation, they acknowledge it as a strategy and not as a major issue that interrupts their experience. It is therefore an ambivalent experience of feeling enabled to find the right content, while delegating agency to algorithms that is foregrounded in the interviews.

Gendered Experiences of Recommendations

Netflix’s motto is “everything is a recommendation” (Finn, 2017, p. 95). This is not taken lightly: micro-tags curate, differentiate, gather and group the content as well as the algorithm, personalizing the menu and its options from user to user. As stated once by Netflix itself, “there are 33 million different versions of Netflix [in US] or a uniquely tailored system for each individual to consume” (Finn, 2017, p. 95). Given this customization and personalization possibilities, talking about 33 million versions of Netflix is possible, but one can also think of it differently. As Manovich (2009) explains it, users are people and people are users. Not only merely “people” or “users” but with a name, a last name, taste, likes, dislikes, friends, preferences and a voice, either represented algorithmically or physically in the offline world.

Another important manifestation of “everything is a recommendation” (Finn, 2017, p. 95) is the contextual trend strategy Netflix performs. Content is not only generated and/or pushed randomly, it is also meticulously crafted to match important and relevant media or real-life events: a new season teaser of *House of Cards* when Trump assumes the presidency or the launch of an original content documentary called *The Cuba Libre Story* when Fidel Castro passed away. This phenomenon is also another way on how algorithmic techniques and programming, that seem to be hidden under a black screen on each

device, are actually very much alive in today's creative industry and play a very important role feeding and shaping our daily life.

The number of categories, genres, and suggestions surprised a majority of our participants. Recommendation rows ("Because you watched ...") tended to be more than half of the total amount of displayed content. Usually more than half of the recommendation rows were offered by the algorithm according to past watched selections, pushing original content first in any of those rows.

When it comes to content and its relationship with the algorithm itself, there is an interesting distinction about the approach and overall perception of the app and the algorithm logic behind it regarding gender. Male interviewees usually complement the app usage by other sources of online streaming services: because of updated content, availability, taste, etc. Male users invested more time in organization and planning their Netflix usage. They often relied on reviews outside of Netflix, particularly to decide which series to follow, while movies were chosen more spontaneously. Women, in contrast, tended to select what content to watch according to their routines. They reserved lighthearted content for breakfast or weekends, and more intense programs such as dramas, documentaries, or thrillers for the nights. This finding raises the question of whether they chose that content for those moments or if those idle moments inclined them to pick those series instead. Also, the only organizing aspect mentioned was an external tool used to keep track of the airing dates of their favorite tv shows.

The male participants in our sample would prefer a more holistic or integrated approach regarding the service: they reported that if the app cross-shared information with some of their other apps such as social media or search behavior, the recommendation could be more accurate.

They just recommend on whatever you watched on Netflix, whereas, if you look how people advertise on the Internet, they will track all your behavior. I wonder if Netflix could invest more on this ... Probably they don't need to ... What I mean is that maybe they could find more relevant the things I search for on the IMDB for example, or Google ... coz I would always Google them ... and take it from there. I guess what I'm saying I just don't only rely on Netflix telling me what to watch. If things are in Netflix I watch it, if they are not, then I'll torrent it. (Interviewee B, Male)

In contrast, our female participants emphasized the importance of stories and quality of the content. Their experience is also limited to availability and time rather than technical aspects.

Let me see ... The ones like these? [showing to us the selection of that section] Yes. I would actually have a look through this ... at the moment from what they suggest I probably would watch some of the things they've suggested. (Interviewee A, Female)

When it comes to gender, it is, therefore, important to distinguish the different practices performed by the users. While male participants tended to organize their viewing in terms of functionality and app features, the female participants' organization was closely related with their offline practices outside of the Netflix platform, such as time management and its corresponding content consumption and administration.

Working for the Algorithm

When discussing profiles and accounts with the participants, Western millennials, both male and female, tended to have their own accounts and were aware of the teaching/learning principles of Netflix's suggestion logic. They wanted to promote it and they expected better and more accurate curation, suggestions, and listings if they are not sharing their profile with other users. Although most of the interviewees complained about the seldom "one off" recommendations that were unexpected or not accurate to their profiles, they tended to neglect the active rating feedback, assisting the app in tailoring content and suggestions. They did not rate likes/dislikes, and they rather considered that binge watching or quickly closing a title should tell the algorithm more than a literal thumb up would.

The usage of accounts and profiles was very interesting. Usually subscribers create several user profiles within one account. Normally, users would respect the distinction between different profiles and only use their own. This practice continued even if the users had moved out from their home countries: they kept sharing their accounts with people at home, although they had access to a different catalog of options. This was one of the main issues and concerns regarding their experience. Regardless of the active rating, our participants tended to co-work as much as they could to help the algorithm: even in shared profiles a couple respected the fact that only she was supposed to use the "My List" feature while he wouldn't, so they do not interfere with each other's experience.

The Netflix experience has been highly rated by all the interviewees, and the only thing that led the user to seek for entertainment somewhere else is the lack of content, particularly in Singapore, where the catalog was not as

vast as in other markets due to its recent launch. The majority of the participants replied with a negative satisfaction regarding title availability but reported positive and constant usage of the app regardless.

There was no major discomfort perceived from the interviewees when the algorithm went wrong: not in terms technical failure, but when the app did not suggest content the users liked or when Netflix recommended content that had little to do with their taste. This mismatch was not perceived as a mistake; on the contrary, this was perceived as a lack of licenses or available content but not as Netflix's failure. No major unexpected practices were detected more than hacks and online tricks to get better content results such as the usage of VPNs or unveiling hidden tags for better search results. There was a strong trust in the app and its aim to provide the best possible service for streaming content, so this was not perceived as something that might affect Netflix's performance or profile submissions. It does, however, represent an area for growth for their competitors. If the users cannot find what they are looking for or feel that they are not being suggested the right content, they immediately change to another on-demand app provider, torrenting site, or even to indirect competitors such as cable TV.

Discussion

It is interesting to consider each user as a co-creator. By watching, clicking, rating, and binge watching, people are generating valuable data that Netflix may use to further content creation. There might be different levels of co-creation as well, starting from an un-aware one, as the mere act of watching and selecting content, to a conscious decision of rating the content we prefer.

Netflix, with its algorithm system and its live generation and storage of user behavior and data, as well as other contemporary apps, allows an increasing surveillance process where "the work of being watched is steadily eclipsing the work of watching" (Caraway, 2011, p. 698). This issue is very important for these companies where their major asset and capital value are their users. This leads to an interesting paradox of users paying for a service in which they also produce new, added value for the company they are hiring the service from. Users are improving the system as they are paying for its service with their data at the exact same time they enjoy their favorite show. Even during that "free month trial" credit card information, user preferences, and new viewer behaviors can be studied and withdrawn, for example, to promote

co-branding strategies with credit cards and other brands and services that engage with the yet new, formally unsubscribed, users.

This could be understood in the light of neo-Marxist approaches, which suggest that users are alienated, unaware, and even losing that “fake” leisure time they think they are enjoying, while actually producing information and value for a third party. Or, on the other hand, this can be considered an emancipatory and co-creational path towards better entertainment. Not only is the user a key influencer and defining factor of this new on-demand logic and economy, providing input on how the apps should function and what they should look like, but also shapes its own entertainment pool of options. The user becomes a co-creator of content, and the algorithms are the way to consolidate all the input and feedback the user provides click after click. Hence, users are co-creators and co-producers of the entertainment and cultural industry they consume and live in.

Conclusions

How does the user perceive Netflix’s suggestion logic? After conducting this research, entertainment, fun, companionship, distraction, and information are some of the reasons for turning the app on. The catalog available on the app has become an excuse to share, interact, and socialize on and offline for this *app generation*. Netflix is currently one of the major cultural content producers and distributors of our time. To give a recent example, if one searches on Google *13 Reasons Why*, one of its latest original productions, the search engine will display 7.380.000 results—and this is only within 3 weeks of its worldwide release—showcasing the cultural success, relevance, and importance of Netflix’s Originals. As reflected in this research, this app has major repercussions for what and how users choose to spend their leisure time: “Web 2.0 platforms may be technically indifferent to the content they transport, but they are not socially or culturally indifferent. [...] Content is no longer simply ‘water’ but a certain brand of water: its content has changed as a result of its packaging and distribution and drinking bottled water becomes part of someone’s identity and daily routine” (van Dijck, 2012, p. 7–8).

The user is generally aware of the recommendation logic and wants to take the best advantage of it. This advantage is expected but not cultivated: evaluating content and having good quality, engaging titles to watch is important, although the users do not generally engage in rating or reviewing themselves—at least not within Netflix. They do so through their practices

outside the platform: sharing trailers, commenting with friends, and promoting certain shows.

Overall, this algorithmic logic expands the user's experience since it suggests titles and content the user would not choose on first sight. A more human-focused approach has suggested nothing but to reaffirm algorithmic logic as more than just zeros and ones. Instead of regarding algorithms as powerful, all-mighty entities, they can be considered something that emerges in relation to practices, in many places, every day, again and again, constantly under construction (Ziewitz, 2011, p. 5). Ziewitz's (2011) interpretation, combined with the empowerment of the user/viewer is a very interesting connection worthy of further research, especially the meanings and connotations of algorithmic narratives and how they affect not only the user experience but also the cultural industry. User behavior, its interaction, and its use of algorithm logic behind global entertainment apps is a yet untapped fertile soil for the industry as a whole that is looking for insights and raw material to generate new, more diverse and inclusive content, contemplating a more representative sample of those 33 million recommendations, that in sum, the user is consuming, demanding and co-creating.

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