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Interpenetration and intermediation of crowd-patronage platforms

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Interpenetration and intermediation of crowd-patronage platforms

Web platforms are becoming part of everyday life for internet users. They come in many forms, offering a range of products and services for both producers and consumers as they (re)produce multi-sided markets. Platforms act as key intermediaries, bringing together third parties and shaping the provision of access to information, finance, content and networks. They operate within an ecosystem, connected through technical service provision and operational logics that promotes interpenetration between platforms. This article explores how interpenetration with and from two crowd-patronage platforms – Patreon and Subbable - is co-constitutive of their intermediary functions. Both sites connect(ed) artist-creators with patrons, offering an alternative means of income generation in the face of declining advertising revenues and digital piracy. Through this examination I propose the expansion of the interpenetration concept to include analysis of where in a platform's 'stack' interpenetration occurs, and how power asymmetries between platforms enables or constrains their adaptive capacity when faced with change. In so doing I argue interpenetration through shared operational logics transforms cultural work as it is enrolled into a calculus of web metrics that allow algorithmic curation which can change the appreciation of art.

Keywords: word; another word; lower case except names

Introduction

The proliferation and influence of platforms has placed them at the centre of a so-called 'fourth industrial revolution' (Schwab, 2016). They come in many forms, offering a range of products and services for both producers and consumers as they (re)produce multi-sided markets and act as intermediaries, bringing together third parties to provide access to information, finance, content and networks. Although diversification and convergence can be seen amongst the largest media platforms, most rely on others to supply services not core to their primary functions. van Dijck (2013) highlights how the interoperability and interdependence, facilitated through technical linkages and shared operational logics, between platforms leads to increasing interpenetration across platform ecosystems. Through the examination of the Patreon and Subbable crowd-patronage platforms, this

paper illustrates how their intermediary functions are co-constitutive, enabled and constrained by interpenetration with other platforms. In so doing, I argue for the concept of interpenetration should be extended in two ways to better understand interconnections between platforms. To do this, I mobilise the structure of the platform stack (Choudary, 2015) to highlight the different types of interpenetration possible between layers of platforms and highlight the power relations between platforms.

Patreon and Subbable facilitate(d) patronage networks and regular payments from patrons to artist-creators. Both were established in 2013 to offer an alternative, more reliable source of income to people using the web to publish and distribute their work. In 2015 Patreon acquired Subbable, and by 2017 Patreon had over 50,000 artist-creators and 1 million patrons globally (Constine, 2017). Patreon is on course to transfer over \$150m from patrons to artist-creators by the end of 2017, more than the annual budget of the National Endowment for the Arts (McIntyre, 2017). These platforms perform plural intermediary functions, acting as financial intermediaries between artist-creators and patrons (akin to crowd-funding), as regulatory intermediaries through their terms of service which govern what their sites can and cannot be used for, and as cultural intermediaries through curation of their sites' content (see Swords, 2017). Neither platform specialises in hosting the work of artist-creators, but instead enables users to embed content from image- and video-hosting platforms. They further facilitate interpenetration through APIs (application program interfaces) and other tools connecting their platform to other websites, and they rely on third-party platforms to provide payment services. I illustrate below how these different types of intermediary functions of both platforms are shaped by and shape interpenetration with other platforms. In so doing, I outline the transformations which cultural work has to undergo as it is enrolled into a calculus of web metrics that allow for algorithmic curation. This analysis begins to answer Langley and Leyshon's call for more research to better understand 'how this particular coming together of socio-technical and business practices manifests itself in concrete terms for specific enterprises' (Langley & Leyshon, 2017a: 3).

The insights presented below are the result of a two-year research project supported by the British Academy and the Leverhulme Trust. The research involved a range of methods, including extensive social network analysis of patronage networks articulated through Patreon's website; discourse analysis of the Patreon and Subbable platforms and

related social media; online questionnaires with Patreon artist-creators (n=115); and 30 semi-structured interviews with patrons, artists, platform employees, ‘traditional’ arts funders and patrons, arts organisations and curators. This paper predominantly draws on the discourse analysis.

The paper begins by outlining the functions and characteristics of platforms, before introducing the concepts of the platform stack and interpenetration. Section 3 more closely examines the concepts of interpenetration and intermediation highlighting the need to examine the profound role played by socio-technical devices in processes of interpenetration. Sections 4 and 5 explore Patreon and Subbable as platform organisations, before demonstrating the effects of interpenetration on their financial, regulatory and cultural intermediary functions through different levels of their platform stacks. These sections examine the ways in which art is transformed into ‘content’ as it is enrolled into calculi or web metrics.

Understanding Platforms

The term ‘platform’ has risen to prominence over the last decade to describe Web 2.0 systems that connect multiple types of user. Analysis of platforms from a variety of disciplines has generated disparate typologies, with differing emphasis placed on constituent elements, processes and outcomes. For example, Srnicek (2017a) emphasises the role of platforms in generating, using and profiting from large quantities of data; Gillespie (Forthcoming) focuses on how platforms are regulated and how platforms themselves regulate content and users; and Langley and Leyshon (2017a) take their understanding of crowd-funding platforms from work on financial circuits of capital. However, as van Dijck (2013) points out in her examination of social media platforms, delineating types of platforms is difficult as they continually evolve and seek new niches. Examining platforms at a more technical level, Choudary (2015) identifies a common platform architecture found across platform types that he calls the ‘platform stack’. It is made up of three layers: a network-marketplace-community layer consisting of users, their connections and activities; an infrastructure layer made up of the ‘tools, services and rules’ that enable platforms to function (ibid: 61); and a data layer for the collection and collation of data about and from users, and the nature of the connections between them.

Algorithmic and human analysis of this data helps improve the infrastructure and in turn the user experience in the network layer. Layer thickness varies between platform types depending on their purpose.

The platform stack provides a useful organising tool to understand the structure of platforms, and examining this architecture reveals seven interconnected characteristics important for a deeper understanding of platforms, the significance of which varies between platform types and business models. First, platforms are intermediaries. Using Web 2.0 tools, early web platforms allowed users to connect more easily as part of a participatory and collaborative trend for online interaction with user-generated content at its centre (van Dijck, 2013). But as platforms have become more commercialised they are increasingly being designed to solve ‘coordination problems in market exchange by extending the distance-shrinking network capabilities of the internet’ (Langley & Leyshon, 2017a: 15). Second, platforms’ intermediary role is a result of their (re)production of multi-sided markets (ibid). Platforms connect two or more types of user and in the process generate value, or at least the promise of future value, for the platform owner from this connection. Third, to facilitate connections the nature of platforms is open, providing low barriers of use to increase participation through plug-and-play functionality (Choudary, 2015). The number of users, and in turn the density of connections between them, is crucial for a platform’s success with value frequently determined by the popularity principle (van Dijck, 2013). Fourth, platforms generate large amounts of data about and from users and the nature of the connections between them. This ranges from purchase history on Amazon to viewing preferences on YouTube to the collation of ‘known associates’, travel patterns and financial transactions collected through surveillance platforms operated by intelligence agencies (Amoore, 2017). Fifth, in the process of managing their services, platforms regulate data, content and participation through terms of service, community guidelines and calculative practices such as recommendation, search, filter and aggregation systems which are supported by direct and indirect human interventions through algorithms, rating systems and traditional curation (Napoli, 2014). These mechanisms are crucial for the efficient functioning of a platform, and understanding how they work enables a deeper understanding of a platform itself. Sixth, through data-driven enhancements, curatorial processes and platform toolkits, platforms evolve and therefore should be understood as being dynamic. Van Dijck (2013: 6) suggests that the oldest web platforms started as ‘indeterminate services

for the exchange of communicative or creative content amongst friends', but over time they have evolved in response to user demand, financial circuits, regulatory shifts and social change. Finally, platforms provide tools to enable users to create profiles, stores and products, and to access data about these (Srnicsek, 2017b). Allowing others to do business on a platform facilitates increased network effects and the opportunity to collect more data for the platform's owners.

These characteristics are mutually constituted within platform ecosystems through interoperability, which allows the internet to function through, for example, standardized protocols and shared coding languages (Bodle, 2011), and interdependence, as platforms share services (van Dijck, 2013). van Dijck refers to the effects of these processes as increasing interpenetration between platforms (2013: 21, 150). In her examination of social media platforms, she explains such interpenetration is made possible through technical linkages and shared operational logics. The former is facilitated by tools, such as application program interfaces (APIs) and complemented by other tools, such as templates and plugins that allow users to embed code and links from one platform service into another. Together these tools extend a platform's reach into other platforms and perpetuate the interpenetration of online ecosystems (van Dijck, 2013; Gerlitz and Helmond, 2013; Hempel, 2010). Beyond technical integration, interpenetration also occurs through operational logics. Gillespie argues that we should avoid conceiving of platforms, and the devices which enable them to function, as 'abstract, technical achievements, but [we] must unpack the warm human and institutional choices that lie behind those cold mechanisms' (Gillespie, 2014: 169). Over the last decade we have seen platform companies discursively position themselves as 'flat, featureless and open to all' through marketing, lobbying and legal argument (Gillespie, 2010: 350; Langlois, 2012). This allows companies to position themselves as neutral intermediaries inhabiting a middle ground, facilitating but not responsible for content on their platforms (Gillespie, 2018). This stance is common across platforms and such alignment of shared operational logic 'mutually enhance[s] each other's ideology and operating logic' and is advantageous for both parties (Gillespie, 2014: 150).

Interpenetration, then, can usefully be developed to understand the integration of platforms and online connectivity. But to fully understand how platform interpenetration occurs, I argue that two further aspects require examination. First, we need to understand

interpenetration in relation to the platform stack. Facilitating technical interoperability through the infrastructure layer is common and this allows for easier integration of the network layer. But given the value placed on user data by platforms, it is unlikely that interpenetration of this layer of the stack will be attractive to platforms without incentive. This leads to the second additional aspect we need to understand: power asymmetries. Not all platforms are created, nor behave, equally. Platform giants Google, Facebook, Apple, Amazon and Twitter have differential levels of influence over the platform ecosystem and can shape the possibilities therein. As Bodle (2011) highlights, platform giants deliberately provide open APIs as part of an explicit strategy to foster user dependency and in turn market dominance. Similar patterns of dominance can be seen in relation to smaller platforms who rely on the services of giants. Resisting their demands is difficult for smaller platforms, many of whom become reliant on the services of larger platforms. This form of interpenetration reinforces the position of key platforms, while increasing the reliance, and therefore vulnerability, of smaller platforms on those sites. Should a service provider fail or change its service (or the conditions of its service), the smaller platform will be unable to influence changes due to its asymmetrical relationship with the larger platform.

Work on economic ecosystems is useful to conceptualise these relationships. Drawing on ecological theory and its mobilisation by social scientists, Grabher and Stark (1997) use the ideas of adaptation and adaptive capacity to understand responses to economic shifts. Adaptation is understood as the adjustments made by an actor or groups of actors in response to some form of change, whereas adaptive capacity is having the ability, influence or power make changes. High levels of adaptive capacity provide multiple possibilities for change, while low levels limit the options. Applying this to the example above, using Facebook's login service provides a new platform with the opportunity to establish itself by saving costs and fostering trust, but failing to develop its own account management and login system reduces its adaptive capacity should Facebook make a change. Below I draw on these additional aspects of interpenetration to understand how Patreon and Subbable's places in the platform ecosystem have been shaped. These platforms predominantly act as intermediaries connecting artist-creators with patrons. And while there is the ability to post images, text and videos for patrons to see, artist-creators use other platforms to host their work. Thus, Patreon and Subbable are reliant on

other platforms and they facilitate interpenetration through various means to enhance the experience of artist-creators and patrons.

Intermediaries

As discussed in the previous section, platforms operate as intermediaries within multi-sided markets. Across the economy, intermediaries play important roles in facilitating interactions (Fitzgerald, 2004), providing access to or aggregating information (Čavlek, 2013; Leszczynski, 2016) and enabling the transfer of money between third parties (Krenn, 2017) amongst others. There is also a great deal of work explaining intermediation of cultural products, which has tended to focus on how cultural intermediaries ‘construct value by mediating how goods (or services, practices, people) are perceived and engaged with by others’ (Smith Maguire & Matthews, 2014: 2). Given the nature of Patreon and Subbable’s userbase – artist-creators and patrons – it is worth reviewing this literature briefly (see Swords, 2017 for a more in-depth treatment in this context).

The origins of cultural intermediation can be found in Bourdieu’s identification of ‘new cultural intermediaries’ as ‘occupations involving presentation and representation (sales, marketing, advertising, public relations, fashion, decoration and so forth) and in all the institutions providing symbolic goods and services’ (Bourdieu, 1984: 359). As Smith Maguire and Matthews (2012) highlight, work since Bourdieu has tended to follow his lead, draw upon work from actor network theory and economic sociology, or in some cases work falls outside these established schools of thought entirely. This has led to ‘confusion’ (ibid) and a failure to appreciate the breadth of activities involved in cultural mediation (Molloy & Larner, 2010). The conceptual elasticity of the term has created an ever-growing list of roles within and outside the creative industries defined as cultural intermediaries (Featherstone, 1991; O’Connor, 2015) and, on the one hand, this has led academics to better delineate occupations which can be classified as cultural intermediaries (Lizé, 2016). On the other hand, it has prompted examination of the very occupational conceptualisation of cultural intermediaries as mediating between producers and consumers (Negus, 2002; McFall, 2014). The former is useful in so much as it provides a starting point to trace occupations involved in mediating cultural production, the latter because it shifts the focus of meaning-making from key occupations to a wider

network of agents whose interactions shape a product's 'qualities'. For Hesmondhalgh (2006), the range of people attributed as intermediaries is problematic in and of itself, indicating a misreading of Bourdieu's work, and in turn indicates the narrowness of his original conceptualisation. Indeed, as Hesmondhalgh argues, '[i]t is simply astonishing how little Bourdieu has to say about large-scale, 'heteronomous' commercial cultural production' (p217) and therefore 'offers no account of how the most widely consumed cultural products – those disseminated by the media – are produced' (p218). It is little wonder, then, that scholars have sought to fill this conceptual hole as cultural products have increasingly become produced and/or distributed through large-scale mass media platforms.

The economies of qualities literature moves away from occupational perspectives by following the network of agents influencing a consumer's decisions to highlight those 'which are invisible when the transaction is made, but without whom the attachment between the buyer and the then objectified and individualized new good could not have been tied' (Musselin & Paradeise, 2005: n.p.). These actors include Bourdieusian cultural intermediaries, those outside the cultural economy and even artists themselves taking on the functions of cultural intermediaries as a result of disintermediation (Kribs, 2016). Actors also include sociotechnical devices such as trading systems and protocols (Muniesa, Millo & Callon, 2007), pricing systems (Caliskan, 2007), communication technologies (Preda, 2006) and algorithms (McFall, 2014), which in the process of communicating information make quantitative and qualitative qualifications about products that influence purchasing decisions and consumption behaviours. Widening the notion of who and what mediates products helps move away from 'the problem with cultural intermediary accounts...[that] get carried away with all that symbolism, signification and taste-making at the expense of the more mundane work involved in market-making' (McFall, 2014: 50). This work also opens up the possibility of cultural intermediation combined simultaneously with other forms of mediation (Negus, 2002; Cronin, 2004; Swords, 2017).

This work is useful for understanding platforms in two ways. First, operating in multi-sided markets means platforms frequently perform plural intermediary functions (Langley and Leyshon, 2017). As discussed above, loosely delineating a platform as 'flat, featureless and open to all' (Gillespie, 2010: 350) allows companies to position

themselves as neutral intermediaries inhabiting ‘the middle, rewarded for facilitating expression but not liable for its excesses’ (ibid: 356). Appearing featureless allows platforms to project and obscure in the same instance the services provided for different user groups when they may appear contradictory. For example, YouTube is a video-streaming service for viewers, a distribution platform for content creators (both individuals and multinationals) and it provides marketing opportunities for advertisers (Gillespie, 2018). The apparent neutrality of the platform label obscures the role of YouTube as an intermediary of production, supporting and in some cases commissioning content; a distributor of content; a curator promoting creators’ work; a regulatory intermediary determining what can and can’t be uploaded; and a financial intermediary distributing a proportion of advertising revenues to channel owners.

Second, the scale of the network-marketplace-community layer of platforms requires them to adopt sociotechnical devices to intermediate between users: monitoring and shaping their behaviour, curating content and communicating with users. Although platforms companies seek niches and perform a diversity of functions, they share operational logics in security protocols, terms of use and the ways in which search and recommendation algorithms operate. Sociotechnical devices such as algorithms used in these functions operate within and produce a calculus of web metrics, where data about and from users, and the nature of the connections between them, is quantified (Napoli, 2014). This leads to transformations of people and their behaviours into data derivatives (Amoore, 2011) and, as I demonstrate below, changes the nature of artistic products.

Drawing on the conceptualisation of platforms as plural intermediaries, the rest of the paper analyses how Patreon and Subbable’s interpenetration with other platforms shapes their intermediary roles. The next section introduces the platforms, before the intersection of intermediation and interpenetration is examined. Specifically, I analyse how technical interpenetration of services has shaped financial and regulatory intermediation, and how interpenetration through operational logics transforms curatorial intermediation.

Crowd-Patronage Platforms

Patreon and Subbable were two of the first patronage web-based platforms of their kind, facilitating regular payments between fans and artists. This form of crowdfunding is a new model of patronage, the latest in a long history dating back to at least the 12th Century in a patronage-like model (Williams, 1981; see Swords, 2017 for an examination of how crowd-patronage differs to previous modes). Both were established to address falling income streams for artist-creators using the web as a conduit for distribution, marketing and sales as a result of piracy, changing advertising monetisation algorithms and increased use of ad blockers. Musician Jack Conte experienced this problem and, with his old college roommate, Sam Yam, established Patreon in 2013 to enable a more reliable and sustainable way for creators to generate income. At the same time, YouTubers Hank and John Green established Subbable with the same purpose (vlogbrothers, 2013; Guigar, Kurtz & Casoni, 2014). In 2015 Patreon acquired Subbable, a point to which I return below, and as such the majority of insights are taken from research into Patreon.

Patreon and Subbable's model is akin to crowd-funding. It facilitates payments from a 'crowd' of fans to artist-creators, but the model differs from other forms of crowd-funding used by cultural producers in two significant ways. First, support is ongoing rather than the one-off 'all or nothing' (Langley and Leyshon, 2016) funding model used by sites such as Kickstarter and Indiegogo. Second, the focus is on allowing a creator to continue their practice, rather than supporting someone simply for a reward. As part of their pitch, artist-creators often seek patronage with the promise that they will be able to produce more content or make better work by quitting their job or purchasing better equipment. This model of crowd-patronage also differs from traditional forms of patronage in the scale and geographical scope of support networks, and a switch in the power relationships whereby artists are empowered to continue and improve their practice, rather than to meet a patron's demands (Swords, 2017). To better understand how Patreon operates, let us examine its platform stack and highlight how it forges interpenetration between platforms from different layers of the stack. Interpenetration is a necessary element of Patreon's operation as it is primarily designed to facilitate patronage, not to host, publish or distribute content. Artist-creators use other, more specialised platforms for the marketing, exhibition and distribution elements of their production process.

The infrastructure layer of Patreon was the first element to be written, and the first iteration was relatively primitive compared to other platforms. Its core functions were to

allow artist-creators and patrons to set up profile pages, to connect these groups and to facilitate the transfer of money between them. Updates and iterations of the infrastructure have created a thicker layer which includes a suite of tools for creators, such as data analysis, patron management and content control. Patreon also provides its users with a set of externally oriented tools. Branded ‘click-through’ buttons enable links to and from distribution and social media platforms, and an API allows creators to manage access to content on other sites, fetch data on their patronage network and communicate with patrons. Patreon also allows users to embed content hosted on other sites such as image and video platforms. These tools perpetuate interpenetration between platforms, but there are limits. Platforms which can be linked to on a creator’s profile page are restricted to Facebook, YouTube, Twitch and Twitter, and Patreon’s social media presence is limited to Twitter, Facebook and Instagram. This doesn’t stop creators publishing and distributing their work through other services, but such decisions reinforce the position of dominant platforms and increase Patreon and their users’ reliance on them. But at the same time by constraining their users presence on other platforms, Patreon is acting to reduce the potential impact of other platforms failing or altering their services. While this affords a certain degree of protection if a platform fails, it can also decrease the adaptive capacity of artist-creators when a key process relies on a particular service.

When Patreon launched in 2013 the network-marketplace-community layer was very thin, with only three artist-creators, but it has since grown to over 50,000 creators and 1 million patrons (Constine, 2017). Much of this network already existed, albeit in a different form, on other platforms where creators published and distributed work and interacted with fans. As more creators have launched on Patreon, this network has been stretched to include Patreon and has seen fans transformed into patrons. This again forges interdependencies between platforms, with connections reinforced through interpenetration of both the infrastructure and network-marketplace-community layers. With updates to the infrastructure layer, more interaction now happens on Patreon, but other platforms remain significant for wider interaction, marketing and distribution. Patreon explicitly encourages interpenetration from the network-marketplace-community layer by not forcing interactions to happen ‘on platform’, as seen on sites such as Facebook. For example, in a move rare amongst platforms, Patreon gives artist-creators the email addresses of their patrons, allowing interaction via email rather than via Patreon’s messaging system. This allows artist-creators greater freedom over when and

how they interact with patrons, and reinforces the idea that using other platforms is part of the process.

Patreon's data layer is rich with information about creator–patron relationships, such as who supports whom, levels of support and patron turnover. Despite a wealth of information, participants I interviewed from Patreon acknowledged data has been underused. This is unsurprising as the sequential development of the infrastructure, network-marketplace-community and then data layers reflects the development of platforms more broadly (Choudary, 2015). Establishing a data science department, however, has strengthened the value Patreon can gain from their data layer, which This knowledge has driven changes in the infrastructure and network-marketplace-community layers.

Patreon and Subbable as Intermediaries

With this background established, let us now turn to the intermediary functions performed by Patreon and Subbable. Here I highlight the ways in which interpenetration between platforms shapes the kinds of intermediation that is possible, and in turn shapes the adaptive capacity of creators and patrons. It does so by exploring financial and regulatory intermediation, together with the classic cultural intermediary role of curation. Together these examples illustrate each layer of the platform stack.

Infrastructure Layer: Financial Intermediation and Technical Interpenetration

Patreon and Subbable's primary intermediary function is facilitation of payments between patrons and artist-creators, and in the process a commission is taken. In 2016 Patreon facilitated \$100m of payments between patrons and creators (Conte, 2017), which is predicted to increase to \$150m in 2017 (McIntyre, 2017). In the context of financial intermediation, Patreon is tiny compared to banking, but it does rival the \$150m annual budget of the National Endowment for the Arts (albeit while operating at an international rather than national scale). The most successful creators have thousands of patrons, with the top 20 earning upwards of \$20,000 a month (Graphtheon, 2017).

Embedded within the infrastructure layer, payment processing is done using third-party platforms who charge a transaction fee. This is common across the economy for on- and offline platforms, with services offered by credit card companies as well as web-based platforms. Using third-party platforms reinforces interpenetration with the wider platform ecosystem which, as discussed above, reinforces the position of key platforms, while increasing the vulnerability of those using such third parties. This can be illustrated in the case of Subbable, where its choice of payment processor led to its eventual acquisition by Patreon. In 2015 Amazon discontinued the Flexible Payments Service used by Subbable. Migrating to a new payment system meant that all Subbable users would have had to repledge to the creators they backed, and the predicted rate of user attrition would have led to ‘a 30 to 40% decrease in their monthly income’ (Jack Conte, quoted in Patreon, 2015). Faced with this problem, the Green brothers accepted an offer from Patreon to acquire Subbable. At the time, Subbable’s size – c.38,000 users and \$1m in revenue (Pham, 2015) – meant it was unable to influence Amazon’s decision to change its payment products and thus its users faced huge decreases in income. Here we can see the vulnerabilities produced by interpenetration where smaller platforms, reliant on more powerful service providers, are unable to influence the powerful service providers’ decisions or make adaptations on their own terms. Subbable’s reliance on a single payment provider reduced its adaptability, as the only alternative was wholesale repledging.

Infrastructure and Network Layer: Regulatory Intermediation and Technical Interpenetration

Platforms use terms of service and community guidelines to regulate content and to ensure compliance with the legal requirements of the country in which they operate (Mackinnon, Hickok, Bar & Hae-in, 2014). For Gillespie, these rules perform discursive work as well as help to police content and behaviours, and ‘therefore reveal in oblique ways, how platforms see themselves as public arbiters of cultural value’ (2018: n.p.). A useful illustration of this is how Patreon and other platforms regulate nudity. Signalling their commitment to creators, Patreon’s community guidelines state:

Patreon is not for pornography, but some of the world's most beautiful and historically significant art often depicts nudity and sexual expression. Because of that, we allow nudity and suggestive imagery, as long as it is marked NSFW [not safe for work]. (Patreon, 2016b)

Other platforms used by Patreon artist-creators offer different guidance. YouTube's terms justify similar content for purposes including and beyond art, but limit its explicitness:

[s]exually explicit content like pornography is not allowed... A video that contains nudity or other sexual content may be allowed if the primary purpose is educational, documentary, scientific, or artistic, and isn't gratuitously graphic. (YouTube, 2017b)

Finally, Twitter's terms of service ask users to acknowledge that they may find offensive material on their platforms, placing the emphasis on the viewer rather than the producer:

You understand that by using the Services, you may be exposed to Content that might be offensive, harmful, inaccurate or otherwise inappropriate. (Twitter, 2017)

These vignettes of other sites are important when one considers the interpenetration of platforms through operational logics. Creators on Patreon frequently use these platforms for distribution and marketing purposes, so although Patreon's guidelines are relatively broad and open to artistic expression, content linked from other platforms will fall under different rules. Furthermore, where platforms use third parties for key processes – payment processing, for example – another set of guidelines and limitations becomes enrolled through technical interpenetration as the services form part of the infrastructure layer. PayPal's Acceptable Use Policy, for example, prohibits use of its service for, inter alia, 'items that are considered obscene...[and] certain sexually oriented materials or services' (PayPal, 2015). This clause is open to interpretation, but in 2014 this resulted in PayPal withdrawing its service from Patreon due to artist-creators producing adult content. To stop users' money from being frozen, Patreon had to change the URLs of NSFW artist-creators and make their pages private, and patrons using PayPal to support these artist-creators had to switch to pledging with credit cards (Patreon, 2014; Stryker, 2014). In contrast to Subbable, PayPal was just one way in which Patreon users could

make and process payments. This diversity facilitated greater adaptability, and disruption was limited to NSFW artist-creators.

In 2016 PayPal's decision was reversed after Patreon negotiated with one of its subsidiaries, BrainTree, and assured them:

Adult Content creators on Patreon are not a serious risk. Our content policy, and the nature of subscription payments, means that Adult Content creators on Patreon are less risky than most creators making adult content. We also have a very diverse mix of content types, so even if our Adult Content creators are higher risk than other types of creators, Patreon as a whole is less risky. (Patreon, 2016a)

In contrast to Subbable's lack of control over Amazon's payment products, Patreon was able to influence PayPal. Patreon had grown much larger than Subbable, was turning over more revenue, growing quickly, at the time it was in its third round of venture capital investment and had gained a reputation as the leading crowd-patronage platform. It had also managed to adapt to the withdrawal of PayPal's services two years earlier. This increased influence was enhanced by carefully developed and open terms of use, combined with robust systems of enforcement which together fostered adaptive capacity. This demonstrated Patreon's ability to act not only as a regulator of content on its site for itself, but the possibility to do the same for PayPal. In effect, Patreon's role as a regulatory intermediary allowed its indirect interpenetration with PayPal through its terms of use. When considering the regulation of content by platforms, it is crucial that we consider the multi-sided interconnections between them, as interpenetration of services potentially leads to interpenetration of regulation across online platform ecosystems. Here we can also see how more even power relations allowed Patreon to survive the withdrawal of PayPal's services and then act as an indirect regulator of PayPal users.

Data Layer: Curatorial Intermediation and Interpenetration through Shared Operational Logics

Terms of service and community guidelines regulate what is allowed on Patreon, but Patreon also undertakes curatorial functions which, in line with traditional ideas of cultural intermediaries, add value to a creator's work. Gillespie (2018) argues that

platforms curate content mainly for economic reasons, and even in the case of Patreon, a creator-first organisation, it is the user experience which directly influences the economic viability of the company and artist-creators, which can take precedence over artistic value judgements. To curate content, information from the data layer of the platform stack is mobilised through the infrastructure layer to alter the experience of users in the network-community-marketplace layer. For this to happen, a series of important transformations have to occur that enrol artist-creators and their work into a calculus of web metrics. This system is part of wider operational logic for online platforms which dates back to Web 1.0, where hits were key indicators of a website's quality (Rogers, 2002), and has evolved as major platforms attempt to imbue the web with increased sociality through 'likes' and similar mechanisms to monitor user behavior (Gerlitz and Helmond, 2013). Platforms use this information about users from the data layer of the stack to enhance other layers. How platform companies undertake these processes, the tools they use and the specific algorithms adopted varies. That said, there are popular algorithms that have proved successful, upon which companies base their own (see Birnbak and Carlsen, 2015). There is little technical interpenetration between sites at this level and proprietary algorithms used to recommend content to users are often closely guarded secrets. There is, however, overlap in the transformations which allow this form of algorithmic curation to occur.

The first transformation is the redefinition of what might traditionally be thought of as artists into what Patreon and other platforms call 'creators'. This label is a shortening of the term 'content creator' which is increasingly used to describe those involved in populating websites with text, images and video. The term 'content' is partly a semantic shift which fits the lexicon of web development and the need for sites to be filled with 'content', but it can be problematic for some who see it as devaluing their professional skill, judgement and expression. In other areas, Cramer (2015) highlights the culture shock for journalists when asked to produce content rather than news stories or journalism. Patreon users range from those who explicitly refer to themselves as (content) creators to those who define themselves as visual artists, musicians and writers, resisting the term 'creator' because, as one participant put it:

I don't create content, I write and perform songs...I want to move people. Content doesn't do that, art does. (Participant C4, musician)

The term ‘content creator’ also speaks to the medium of exhibition. Content is produced for the web, while art may primarily be performed or experienced in galleries, music venues, theatres and books etc. The term ‘creator’, then, signifies a particular purpose and place of work that privileges online media. This allows for a second transformation, as artistic value is transformed from qualitative appreciation and emotional reactions into quantifiable metrics that can be used to curate a website’s content or individual cultural producers using calculative devices. This has been done in television rating systems for decades where viewing figures are seen as key to success. For Gerlitz and Helmond (2013: 1358), the quantification of online activity through likes hides ‘a variety of affective responses such as excitement, agreement, compassion, understanding, but also ironic and parodist liking’ behind a simple click. The outcomes of these transformations can be profound are used for curation of art and content across platforms in different ways. To understand Patreon’s curatorial processes let us compare them to YouTube’s.

YouTube’s data layer is mature and thick, but that doesn’t necessarily lead to more sophisticated curation. YouTube is famous for its analytics dashboard, which provides users with an array of statistics about data it collects in relation to average view duration, audience retention, traffic sources, demographics of viewers, likes and dislikes and playback locations, amongst others. These metrics feed into algorithms which generate revenue for uploaders and perform curatorial functions by producing recommendations for individual viewers and overall trending lists based on the assumption that good content is popular content. A key calculative device for YouTube in this process is ‘watch time’, defined as ‘[t]he amount of time that a viewer has watched a video’ (YouTube, 2017a). This represents a shift away from a previous metric, which valued total views, to a more complex measure, because ‘we [YouTube] reward videos that actually keep viewers engaged, as opposed to videos that merely attract clicks’ (YouTube, 2013). What is valued here, then, is not artistic expression, but the time of the viewer as a measure of quality. Participants familiar with this metric explained that the emphasis on time-based engagement was with youtube.com, rather than an individual’s videos, with videos that keep a user engaged on the site being promoted above those that don’t.

Patreon take a slightly different approach. During the period of this research project (2014–2016) Patreon curated content in a ‘featured’ section on the website for everyone, and recommendations made to individuals. Both these methods use algorithms to aid

curation and make value judgements in the process, but in different ways. The 'featured' pages on patreon.com offer users a selection of creators to explore which can be filtered by genre. The list is updated periodically, but there is no individualisation in what users see. The process of generating the featured section involves a simple procedural algorithm which is executed by a member of Patreon staff. It begins when creators nominate themselves to be featured by completing a web form, then a member of staff removes artist-creators producing adult material, checks for fake or abandoned accounts and then adds them to a database which updates the featured page. There are no artistic value judgements made about the quality of a creator's work, their significance or their potential. The overriding principle is to ensure that this prominent part of the website does not include content which may deter users, while exposing creators to new audiences.

User experience is also central to generating recommendations for individual users, but in a more tailored way based on data about what they already support and who has been successful amongst the wider community. Confidentiality disallows inclusion of the full algorithmic procedures, but recommendations are generated from two processes. If Patron A and Patron B both support Creator X, n creators Patron B supports will be added to a potential list of recommendations for Patron A, and vice versa. This list is combined with a second output from an algorithm that filters out various users based on confidential selection decisions. A user will see five recommendations on their profile page which is refreshed from the pre-stored bank of recommendations the algorithm has generated. Judgements are written into these procedures based on various assumptions. Such judgements, then, are embedded into algorithms which reveals the very human nature of such tools, albeit human judgements are quantitative rather than qualitative. Despite the commitment to artist-creators, Patreon nonetheless relies on the transformation of creative work into a calculus of web metrics. Calculi such as these make sense given the scale of work published online, but they nonetheless mark a shift away from traditional curation based on the expertise of traditional cultural intermediaries and turn value judgements into quantifiable measures. This kind of interpenetration is enabled by technical devices, but alignment through shared operational logics mutually reinforces the metrics for content and creators. Data analysts and authors of code and algorithmic procedures become central to the process. Through these procedure the nature of artistic appreciation, and perhaps even art itself, is changed.

Conclusions

This paper has begun to answer Langley and Leyshon's (2017) call for further research to understand the particularities of platform capitalism. This has been done through an examination of the Patreon and Subbable crowd-patronage platforms, and three intermediary functions they perform: financial, regulatory and curatorial. Specific attention has been paid to the role of interpenetration between and across platforms in shaping platform operations and behaviours. In so doing I have sought to extend and develop the concept of interpenetration, arguing for explicit examination of where in the platform stack interpenetration occurs, and for appreciation of the power asymmetries between platforms. Further work is needed to flesh out the concept of interpenetration, however, not least the role of financial and strategic expertise that venture capital networks provide in fostering a platform's adaptive capacity.

Examination of the interplay between interpenetration and intermediation has also demonstrated the transformations necessary for algorithmic curation as part of cultural intermediation. This form of mediation requires cultural products to be enrolled into a calculus of web metrics for it to operate. Doing so shifts the emphasis of curatorial control from qualitative to quantitative judgement, and puts the process in the hands of data analysts and coders. While the processes may be different to traditional curation, these agents and the calculative devices they produce should be considered cultural intermediaries. In doing so, this paper has sought to move beyond 'abstract, technical achievements [of platforms to]...unpack the warm human and institutional choices that lie behind those cold mechanisms' (Gillespie, 2014: 169). This trend is not isolated to the online world, however, and has been used gauge audience reactions to film and television, and more recently as part of a controversial proposal from the UK's Arts Council to assess organisations they fund (Hill, 2017). More work is required to understand the transformations metrics creates in all aspects of cultural production on and offline.

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