

The Circulation Game: shifting production logics and circulation moments in the digital games industry.

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Introduction

Over the last two decades digital game companies have had to compete against internet companies, grapple with online distribution and rethink games as a free to play service. Change came incrementally. In the early 2000s the Xbox One and the PlayStation 2 (PS2) consoles shipped with internet capabilities while a few years later the Xbox 360 (2005), the PlayStation 3 (PS3) and the Nintendo Wii (2006), were wifi enabled. Digital game consoles moved from being ‘walled gardens’ for playing games on physical artefacts to networked environments where players could both access and create a range of content and communication services. PC games have long been networked to some extent, but during the 2000s online digital distribution stores like Steam were launched. They were followed shortly after by the Apple and Android mobile application stores. By 2012 industry data in North America revealed that revenues from digital distribution had surpassed sales of games on physical artefacts (ESA 2013). The revenues of successful mobile start-up game companies quickly surpassed the annual revenues of well-established game companies. Internet and communication giants like Google, Facebook, Apple and TenCent began to report significant

revenues from distributing mobile and social networking games. Indeed, these companies are now regularly amongst the top ten publicly listed game companies by revenue (Kerr, 2017).

From the current vantage point we see evidence of significant change but also adaptations and resistance. Slowly many of the successful new game developers have been acquired by legacy game publishers. Some legacy game publishers have launched their own online retail stores. Consumers in some markets have resisted “online only” game consoles and attempts to suppress second hand markets in physical game artefacts. Some countries have introduced new regulations restricting the spread of transnational game services. These countertrends are what media historian Brian Winston (1998:11-13) referred to as brakes, or the “suppression of radical potential”. This chapter takes the view that technological change is part of a broader process of innovation. Innovation is punctuated by choices, and the push and pull of various factors. As such, we need to empirically examine how individuals, organisations and existing institutions and cultures shape, adapt and resist technological change.

Understanding contemporary cultural production structures also requires us to evaluate our existing conceptual frameworks. The ‘production logics’ approach emerged within the cultural industries tradition in the 1980s. Initially each media industry had a single dominant production logic based around the institutionalisation of a particular socio-technical system. The production logics approach has recently been applied in studies of television (Lotz 2017), music (Meier 2019) and digital games (Kerr 2017). A key strength of this approach is that we can begin to identify similarities and differences across the cultural industries. It prompts us to identify who are the key brokers who capture most of the economic value in the cultural production circuit, and who are the key creative personnel who produce it. It distinguishes the key market characteristics underpinning particular industries, and attends to innovative processes as well as innovative products.

This chapter uses the production logics approach to examine the digital games industry over the past decade. It proposes that the concept of ‘circulation’ is more useful than distribution in understanding recent innovations within the key characteristics of these production logics. Circulation and distribution are not used synonymously in this chapter. Circulation was a core concept for Karl Marx who used it to describe when value was realised from the sale of commodities. Circulation was also a distinctive moment for Stuart Hall (1973) in his encoding/decoding model. The production logics approach draws upon these critical theoretical traditions but updates it to examine where both economic and cultural value is created in contemporary two way interactive online services, including by consumers and amateur producers (Bødker 2016). In emerging production logics we can identify moments in the economic chain when exchange value becomes use value, but also where use value becomes exchange value. Circulation as a concept is used to describe the two-way nature of both implicit (data) and explicit (communication and content) flows where there is a clear exchange of value and influence on professional content generation. Changes in circulation are evident in both existing and new production logics.

In this chapter I will first briefly outline the production logics approach and then introduce the key production logics in the digital games industry, including adaptations and new logics. The final section will focus on three moments of circulation in contemporary production logics, namely: the influence of implicit user data on professional content production, the role of community managers in supporting online communities, and finally the development of live performance forms of user generated content. The chapter is informed by two decades of projects examining the circuits of production in the digital games industry in Europe.

Production Logics in the Cultural Industries

Production logics are an established approach which identifies the core industrial, market and social characteristics of production processes in the cultural industries. Production logics have been defined as the “dominant institutional forms and relationships assumed by the commodification and industrialisation of culture at a given historical moment” (Lacroix and Tremblay 1997:53). For Lacroix and Tremblay each production logic identifies key institutional forms that defines the “field of constraints and possibilities” (1997:53). Each logic is based on five characteristics: the economic value chain, the dominant power brokers, the creative professions, the revenue stream, and the overall market structure. While production logics are dependent on the state of technology at a given moment, production logics do not list technology as a key characteristic.

Miège (1987) identified five logics across the cultural industries: editorial, written press, flow, live entertainment and electronic information. He noted that there were three dominant production logics: a publishing logic, a written press logic and a flow logic (1989:12). The book publishing, magazine and early music industry best exemplified the publishing logic epitomised by the direct purchase by users of media products from specialist retail outlets. The artist was compensated through a royalty system. Publishers were the key brokers and captured much of the economic value in the system. The relationship between publishers/editors and creators were a key aspect of production but knowledge of, and engagement with, consumers was relatively limited. Retailers played an important role in mediating the relationship with consumers and capturing value. The uncertainty of demand for publishers was offset by the development of a catalogue of content, the use of intellectual property licenses and the cultivation of ‘stars’. The press logic refers to the mass production of highly ephemeral products such as newspapers and magazines. In these industries companies employed a large salaried workforce of content producers, worked with hundreds of organisations to distribute this physical commodity as widely as possible, and the

consumer role was restricted to the regular purchase of the physical good from a retail outlet. Direct sales and advertising were the main revenue sources.

The flow logic characterises traditional broadcast radio and television with programmes centrally broadcast and received by dispersed reception devices. The flow logic is characterised by an uninterrupted flow of content and the key challenge for broadcasters was the creation of a programming schedule. Broadcasters were the key broker in the value chain. Maintaining audience loyalty and ratings while providing audience information to advertisers was key. Consumers paid for their content via license fees (in some countries) and indirectly through ratings and advertising. Across these logics the distribution of cultural commodities to audiences was mostly one way and involved physical devices, networks and retail outlets. Table 1 summarises the three dominant production logics outlined by Miège and others.

Characteristics	Publishing (e.g. books, records,)	Press (e.g. newspapers)	Flow (e.g. Radio, TV)
General	One off commodities	Regularly purchased commodities	Continuous flow of content
Central broker	Publisher	Editor	Programmer/Broadcaster
Economic chain	Project by project production by small companies, payment via royalties and copyright, irregular employment, a physical distribution network, retail outlets	Mostly waged writers, and journalists, a physical distribution network, retail outlets	Quasi-industrial organisation, wage labour but some royalties and copyright, purchasing of catalogues and formats, a physical distribution network. Reception devices.
Creative professions	Authors, composers, directors, artist and specialised technicians	Journalists, specialised technicians,	Authors, journalists, hosts, performing artists, directors and specialised technicians
Sales revenues	Direct revenues from the sale of individual products	Revenues from subscriptions and indirectly from advertising	Indirect revenues from license fees and advertising, ratings important

Market characteristics	Segmented mass market	Segmented mass market	Undifferentiated and indirect mass market
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Table 1 Principal Logics Underlying the Production of Culture and Information (Miège 1989 pp.146-147). Edited by the author.

When Miège was first writing, the publishing logic was dominant with professional cultural workers directly employed in the creation of content and other workers employed in its reproduction and distribution. New media such as videotext and cable television were mentioned by Miège, and placed within the flow logic. While these three logics were dominant, Miège also refers to two more in passing, a computer programming logic and a live performance logic. The computer programming logic included home computer games (1989: 141-143 and 150) and he distinguished computer games from other types of software. At this point digital games were mostly sold on cassettes through retail outlets and he stated that early ‘videogame inventors’ were often salaried workers and dependant on royalties. For him the digital games industry operated according to the publishing logic. For years the flow and catalogue concepts provided a useful shorthand for understanding production in the cultural industries. In these logics the challenge was to produce, programme and distribute content to mass audiences, manage a mixture of sources of finance including sales, subscriptions, advertising and in some cases license fees, and keep attuned to audience and consumer trends (Garnham 2000:52).

An early attempt to extend the production logics approach to take account of distribution innovations was made by Lacroix and Tremblay (1997). While acknowledging that the publishing logic was the “classic mode of commodification and industrialisation”, and that the flow logic still existed (1997:60), they proposed that a new ‘club logic’ had developed, which shifted power towards the distributor and reflected increasingly interactive

communications technologies. This new logic created a “hegemonic position for distributors” (1997:64) which they argued would only advance with the development of broadband networks. The club logic attempted to capture the ways in which some companies have harnessed telecommunications to make available a vast catalogue of content to their subscribers (or club members) – thus combining the individualised commodity form of the publishing logic and the continuous programming of the flow logic. In this logic content access is ‘metered’ and users are regularly billed, although a variety of financing modes are possible. They connect to a computerised server, from which they can select their content. For these authors, the club logic has not replaced the other two logics, but instead competes with them.

By the early 2000s Bustamante (2004) noted that there was a tendency for companies to ‘hybridise’ elements of the publishing and flow logics and to offer both direct and indirect payment options. Miège (2011:64) has argued that while publishing and flow logics persist, new logics such as neo-club, online portals and brokerage have emerged. He argues that to really establish themselves these new logics need to leave a mark on content conception. Lotz (2017) suggests that internet distributed television is a new portal logic that has established itself. The portal logic is characterised by a subscription model whereby users can access a curated catalogue of programming over the internet at a time of their own choosing. Netflix is a key example for her, and of course they have moved into original content development. Meier (2019) draws upon production logics in her analysis of the contemporary music industry and notes that while publishing and flow still exist in that industry, they are now joined by club and live logics. Finally, Miège (2019:77) identifies six contemporary production logics: print news, online documentary products, a club logic, brokerage, online specialist portals, and online social networks/platforms. The characteristics of these logics are

poorly delineated and work remains to be done on the key characteristics of these logics in different cultural industries.

Thus contemporary studies of the cultural industries suggest that there is a persistence and hybridisation of some production logics, the emergence of new logics and the decline of others. While the publishing and flow logics continue to exist in many cultural industries, new production logics like neo-club, portal and social network/platform have emerged. Some logics have declined (press) and some have had a resurgence (live performance). What is clear is that today we can identify more than one production logic in each cultural industry and there are similarities and differences across the industries. What is also clear is that in this literature we rarely see detailed analysis of the digital games industry.

Production Logics in the Digital Games Industry – Adaptation and Innovation

The digital games industry emerged as a commercial home entertainment industry in the early 1970s in North America and Europe. Originally games were distributed on cartridges, disks and CDs via both specialist and generalist retail outlets. They required a home console, a personal computer or a handheld device to play. By the mid 2000s the latest home and handheld console devices came with built in network capabilities and while initially these connections were used for downloading game updates, quickly more interactive possibilities emerged (Nieborg 2014). Physical distribution of games still exists, but digital distribution revenues now supersede physical revenues in many markets. Digital distribution can range from players downloading game updates, downloading full games or accessing online multiplayer games. Digital distribution is dominant on mobile devices, but is common in the PC and console markets also. Boxed content is important in sustaining second hand and developing markets. Attempts by the industry to launch “online only” gameplay via consoles have been resisted by consumers and most consoles still allow a hybrid of offline and online

forms of gameplay and distribution. However, these facts about digital distribution only get us so far. To understand the wider impact of these changes we will now turn to examining production logics in the digital games industry.

We can identify at least five production logics in the digital games industry, four of which are familiar from other cultural industries, and one which is influenced by social media and the internet industries. In the early 2000s the production of console and personal computer games largely conformed to the publishing logic. In interviews game developers spoke of pitching ideas to publishers, securing a publishing deal, and receiving royalties after launch (Kerr 2006). There were virtual stars, like Lara Croft, and significant licensing of intellectual properties from real world sports and music. The most successful publishers often acquired the most successful game development studios while the key hardware owners - Nintendo, Sony and Microsoft – were fully integrated from hardware into development, publishing and distribution. The console market had an oligopolistic structure and the dominant companies used hardware as a ‘loss leader’. Exclusive game titles for these proprietary game systems were used to drive sales and profits. While developers might hope to capture \$5 from each game sold for \$55, publishers might take \$30, with \$10 each for the retailer and the distributor. Some large game companies established their own distribution divisions but specialist retail shops, like Game in the UK, had a lot of power to negotiate the shelf life of a game (Williams 2003).

Commercial online games first emerged in the 1990s on personal computers. Massively multiplayer online games (MMOGs) like *Ultima Online* (Origin, 1997) became a successful game genre and demonstrated that subscription based online games could be a successful business. These games had to be purchased as ‘boxed products’ in retail shops, but to play them one needed a monthly subscription (often \$15), a personal computer and a good internet connection. These computers were expensive, internet connections were often slow,

and the technical know-how required to play them meant this segment of the market remained small. Countries with high speed internet connections, like South Korea, were pioneers in MMOGs and online games (Jin and Chee 2008). Yet MMOGs had flow like characteristics. MMOGs are persistent which means the game continued even as individual players log out. Companies maintained a large salaried development staff and there were scheduled content updates. MMOGs had millions of subscribers, could support hundreds of simultaneous players, and had a transnational internet based infrastructure. It gave rise to rich online and offline cultures (Taylor 2006), and significant governance challenges for game companies that drove the development of community management processes. These early genres of networked games combined physical and digital distribution and pioneered the socio-technical and occupational innovations evident in today's services.

One decade later fully digital 'games as a service' have emerged (Kerr 2017). Games as a service provide more predictable revenues for game companies and enable them to bypass the revenue cut demanded by retailers. During the early 2000s Microsoft and Sony, developed their own digital distribution and multiplayer networks: Xbox Live and the PlayStation Network (PSN). A core strategic goal was that these services would turn game consoles into networked entertainment devices for games, video and music content. In 2003 Valve, developed a specialist online retail and distribution service for computer games called Steam. This service emerged initially as a service to distribute game updates for their own games, but over the next decade Steam developed into a service for distributing games and related services across multiple devices for other companies. Steam, takes a 30% revenue split and some reports claim that Steam is responsible for 70% of digital game sales (Statt 2019). These reports are hard to verify but the evidence points to significant market dominance (Joseph 2018). Steam is both a consumer facing and a developer/publisher facing service supporting content, communication and business services. They had few competitors

until the launch of the Epic Games Store at the end of 2018 which proposes to take a significantly lower 12% cut in revenues.

Games as a service are enabled by digital distribution but constitute a much broader set of organisational and socio-technical innovations. These digital services offer a catalogue of games for sale but in many cases they are crucial to the player accessing the multiplayer version of the game. They also provide a range of communication, matchmaking, ranking and streaming tools to players. Crucially they enable publishers to take advantage of digital rights management technology to tackle piracy, monitor IP violations, and manage player behaviour in their games. Finally, they have developed into services to curate and distribute independent and amateur created game modifications and content. Steam for example offered the *Steam Greenlight* service until 2016 which allowed subscribers to vote on which new games should be published. *Steam Workshop* allows players to upload game modifications and *Community Market* is where players can buy and sell virtual items. The same company also offers a range of services to developers. *Steamworks* includes security services for managing digital rights management, monitoring IP violations, and managing player behaviour during gameplay. It also offers real time data analytics, payment and language support.

The production logics concept provides one way to evaluate these changes and to highlight where digital game services converge and diverge from other cultural industries. By 2012, while a publishing logic still existed, there were also a significant number of subscription based massively multiplayer online games which conformed more to a flow production logic. In addition, more club or portal services have emerged but these have been slow to take off in many markets due to the bandwidth demands of playing multiplayer games. However, new entrants to games, Google, will launch a cloud based games subscription service in 2019 in some countries and both Google (Play Pass) and Apple

(Arcade) have announced cloud based game subscription services are in development and will launch towards the end of 2019 or in 2020.

While these three production logics (i.e. publishing, flow, club) seem to conform to established production logics in other cultural industries, the emergence of e-sports and live streaming by amateur and professional gamers sees the re-emergence of a live performance logic. Esports is growing rapidly in some countries with new central brokers emerging and a range of new creative professionals. Games are designed so that teams can compete online as part of tournaments which borrow heavily from North American sports leagues with the development of professional player contracts, team franchises, broadcasting collaborations and university scholarships. They are also designed to work as spectacles to be viewed in sports stadiums. *League of Legends* (Riot, 2009) and *Overwatch* (Activision Blizzard, 2016) have major leagues in many countries and full time professional players competing for significant prize money (Taylor 2012). Semi-professional and amateur players are also engaging in online performances and monetisation of their gameplay on YouTube Gaming and Twitch. The key brokers here vary, but legacy game develop/publishers play a key role through their ownership of the underlying intellectual property rights. We can call this a performance logic – but one where professional and amateur players are playing a crucial role in value generation and circulation.

Finally, the last decade has seen the emergence of a new production logic based around free to play games on social, mobile and online platforms. The launch of the iPhone App Store (2008) and Android Market (2008) standardised the digital distribution process for mobile game developers, replacing the hundreds of competing phone handsets and channels which posed significant cost barriers to mobile game developers in the 1990s and 2000s. In Asia, Chinese Internet technology companies like TenCent and NetEase now offer similar services. This emerging logic has these internet companies as key brokers. Most take a 30%

cut on cover price or in-game purchases. Crucially this production logic has seen the reimagining of games into shorter more casual types of games, requiring less technical or gaming knowledge from game players and designed specifically for the affordances of social and mobile technologies (Leaver and Willson 2016).

A key characteristic of this new production logic has been the focus on indirect revenues and a shift away from premium up-front payments towards freemium. The freemium, or 'free to play' (F2P), business model has come to dominate the production and circulation of games on social media, mobile and to some degree on PC. In this model content is made available for free to a player and at various points in the game players are prompted by the game to engage in micro-transactions. F2P games make money through a combination of behavioural data driven advertising, in-game purchases of content, cosmetic items or extra powers, and in some cases extra downloadable content (Nieborg 2016, 2015). Crucially, freemium value chains are characterised by ongoing dataveillance of players and core gameplay 'mechanics' designed to monetise gameplay. Many legacy game developers and publishers resisted the development of freemium business models as they viewed the business model as having a negative impact on the gameplay experience (Whitson 2012). However, over the last decade more and more legacy game companies have launched F2P games.

We can trace F2P games back to browser based massively multiplayer online games, including *Runescape* (Jagex, 2001). However, it was when F2P became available on mobile devices, integrated with real time advertising networks and started to exploit the pre-existing online social networks of players that this logic really started to develop. In 2006 Facebook introduced its Facebook Development Platform and became a more programmable social platform for third party companies (Helmond 2015). Companies, like Zynga, made significant revenues with games like *Farmville* (Zynga, 2009) by designing their games to

optimise Facebook users social media friend networks and infrastructure. Other successful F2P mobile games were *Clash of Clans* (Supercell, 2012) and *Angry Birds* (Rovio, 2009). When *Pokémon Go* (Niantic, 2016) was released they were able to combine a much loved pre-existing intellectual property with the F2P revenue mobile, geolocation and mobile devices. It was a huge market success. More recently *Fornite Battle Royale* (Epic Games, 2018) has dominated the charts across multiple devices. *Fornite*, is now developing an esports infrastructure.

Over time a set of characteristics have emerged and stabilised which involve internet companies as key brokers, a dominance of data driven indirect revenue sources and a large number of small development companies developing highly tailored games for particular social media and mobile platforms. The list of core creative professionals in this logic has expanded beyond design and programmers to include data scientists and community managers. While players are core to any interactive gameplay experience, the role of game players in this logic expanded beyond play to content generation, rating, reviewing, commenting and sharing – and arguably they should be thought of as core creatives. This logic can be called a platform production logic (Kerr, 2017) and it may conform to Miège's online social networks/platform logic (2019).

To recap, there are at least five production logics in the digital games industry. The first one is the publishing logic and this continues to exist and develop. In this logic new games take a significant time to come to market and large development teams are usually contracted by game publishers to develop a game. The key brokers are a small number of vertically integrated game publishers and computer companies like Microsoft. The second logic is the flow logic, and this is epitomised by subscription based massively multiplayer based games. For example, *World of Warcraft (WoW)* (Blizzard, 2004) has millions of subscribers and a vast human and technical infrastructure supporting ongoing gameplay. It is

significant that the game has been in development continuously for over ten years and that salaried or contracted full-time developers develop scheduled content updates to keep top level players engaged. In a persistent MMOG the role of the community manager has become professionalised and both drives player engagement and responds to player harassment. The production of MMOGs has much in common with traditional broadcasting services but in most cases players have to buy the game and then pay an additional monthly subscription in order to play the game. We see some games mix elements of both these logics, but the core characteristics remain.

Since 2012 performance and platform logics have developed into institutionalised logics with a strong influence on content development. In these logics we can identify new central brokers from outside of the digital games industry, distinct revenue models, and the extension of creative roles to include players. The new central brokers include Apple, Facebook, Google and Tencent who are intermediating between content creators, advertisers and players. Valve’s Steam is also significant here. In addition, a range of new professional occupational roles have been developing ranging from technical roles in network operation centres, to data scientists and community managers. New technologies support the F2P model by gathering data, serving advertisements, offering personalised rewards and governing unacceptable player behaviour. These processes have had a significant impact on the design and lifecycle of games, on the generation of revenues and on the relationship between game developers/publishers and their players. In the next section we will examine the creation and exchange of value in three different circulation moments. Table 2 summarise the evolving and new production logics in the digital games industry.

Characteristics	Flow	Platform	Performance
General	Continuous flow of content, audience loyalty	Continuous flow of user data, professional and amateur created content	Regular live streamed events, both professional and amateur created content

Central broker	Publisher	Internet intermediaries	Publisher/Tournament producer
Economic chain	Quasi-industrial organisation, regular work, wage labour but some royalties and copyright. Boxed and digital distribution.	Programmers, engineers, data analysts, customer relations and support. Wage + freelance labour but also amateurs. Digital Distribution.	Project by project basis, irregular work, both professional and amateur players. Digital distribution.
Creative professions/workers	Designers, artists, programmers, audio specialists, quality assurance, localisation, network operations, data analysts, community management	Designers, artists, programmers, audio specialists, quality assurance, marketing, data analysts, community managers, game designers, players	Players, producers, technicians, casters, trainers, managers, data analysts
Sales & revenues	Direct: Sales and subscriptions, also merchandise	Indirect freemium from advertising, data, monthly active users, Some direct - DLC, micro-transactions, merchandise	Direct sponsorship, merchandise and indirect advertising,
Market characteristics	Niche	Niche, personalised	Niche,
Examples	subscription MMO & client online	F2P Social, mobile and MMO games	e-sports, gameplay streaming

Table 2 Distinctive Logics of Cultural Production in Digital Games.

See full table (Kerr, 2017:77-78)

Circulation Moments in Contemporary Production Logics

Circulation as a concept has a long history in studies of capitalism and cultural production. Karl Marx described the circulation of commodities moving from the production to the consumption spheres and from surplus to use value (Marx 1995). Stuart Hall distinguished between production/circulation and consumption/circulation in television production (Hall 1973). Certainly the development of online participatory practices has focused attention on the productive roles of media consumers. Some scholars note that informational capitalism exploits both the immaterial and affective labour of digital media users to create economic value (Jarrett 2016). Most recently the literature on surveillance capitalism details the extraction of value from ‘behavioural surplus’ (Zuboff 2019). This

section focuses on aspects of emerging value chains and creative work where distinctions between production and consumption spheres are blurred, and where economic and social values are created, exchanged and circulated. In what remains we will reflect on: the use of player data to continually adapt the design of digital games, the professionalization of community management as a new occupational role, and the commodification of gameplay as live performance.

In the emerging platform logic gathering data on player behaviour is crucial to indirect revenue generation and is having an important impact on content development. The gathering and analysis of aggregate and targeted data of player activity is hardly unique to digital games, but it is core to the F2P business model. The platform production logic relies upon a variety of technologies to capture the creative and communicative activity of players of game play. Internet intermediaries like Facebook, Steam and the App stores mediate access to player data and advertising networks. They also extract significant value, usually 30% of sales revenues. My interviews in game companies identified the increasing use of player data to inform ongoing content development. In addition, an increasing number of data analytics job ads are appearing on game industry websites (Kerr, 2017).

Designing F2P games require different skills and tools from those used in older production logics. Because F2P online games can be frequently updated developers can run real time experiments on design options (Leaver and Willson 2016). Data analytics is viewed by game companies as a tool for reducing risk. Interviewees noted that aggregate player data can be used to identify which game avatars were the most popular (Kerr, 2017). If these avatars are based on licensed intellectual properties companies can save money by removing unpopular avatars. On the other hand, play data can be used to reduce game difficulty in areas which are proving difficult for players. As in other cultural industries, we are only beginning to understand how data analytics and metrics are being used to inform, direct and adapt

content generation and mediate the circuit of value generation between professional game developers and their players. Much of the data gathered by professional developers goes unnoticed by the game player.

Community management is a second important example of a new creative professional role which is core to contemporary circulation and provides an important insight into the exchange of value between game developers and game players. Community management in games used to be performed voluntarily by experienced game players who would respond to questions from other players. However, in the last two decades the growth of online multiplayer games with transnational communities has meant that the role has developed into a professionalised role which is either housed in house or sub-contracted to specialist agencies in near to market locations. Today community managers play an important intermediary role between game developers and game players, employed both to drive user engagement and act as advocates for game players. Community managers communicate directly with players, answering queries and informing them of major service updates. They also communicate to game publishers or developers if players have grievances. They play a crucial role in maintaining the social value of the game community for game players, and thus sustaining the revenues of the game companies.

While this role is clearly important in terms of understanding online games this work is mostly hidden from view. Interviews with community managers located in Ireland, and analysis of job advertisements, found that employees were hired for their passion for games and their linguistic and cultural knowledge (Kerr and Kelleher 2015). Community managers are often game players themselves and thus have translated their game playing expertise into an employment opportunity. Hundreds of community managers had moved from around Europe to Ireland in order to support European players of North American or Asian developed online games. Ireland's community management centre for the *WoW* European

market for example had up to 800 employees. They operated in a multi-lingual environment and were called upon to mediate complex social situations between game players. This type of work seems crucial to the economic success of online games but we found that it was poorly paid and community managers in our sample felt they often had little opportunity to advocate on behalf of gamers, and indeed often became the target of online harassment, homophobia and sexism.

A final example of a circulation moment in contemporary production logics is how the digital games industry and its players create value from player generated content. The digital games industry has a relatively long history of making tools available to game players to modify professional game content (i.e. called modifications or 'mods'). *Doom* was one of the first games to embrace player modifications and some of the earliest modders went on to work in the games industry, turning their modding knowledge into jobs. Modding may occur at the level of the hardware, the software, the code, the interface, the graphics and game companies may exert considerable control over the creations of modders, through the tools they make available and restrictions in legal contracts (Nieborg and van der Graaf 2008, Kerr 2011). While some game companies explicitly rule out player monetisation of their modifications, other companies provide ways for game players to monetise their work.

So far these examples seem very similar to fan creations in other cultural industries. However, recently game players have started recording and streaming videos of themselves playing digital games and sharing them on services tailored to games, including Twitch, which was launched in 2011, and YouTube's Gaming channel. Today Twitch has over 2 million player broadcasters and about 15 million daily viewers. Most of these broadcasters are live streaming themselves playing a small number of games daily from their PC or console while also chatting or commentating on their play. The most successful game streamers can earn sufficient revenues to become full time professionals, and are courted by

game publishers and other brands for their market influence. Many of the most viewed streamers are current or former professional esports players. These game players are performing their games expertise online and earning money from advertising, sponsorship, subscriptions or donations. They are playing popular games such as *World of Warcraft*, *Fortnite* and *League of Legends*. As this new form of player generated content becomes professionalised we can identify a moment of circulation where the meaning and economic value of cultural productions are negotiated.

These three moments of circulation – datafication, community managers and player generated content – illustrate important moments in the interaction between game developers and game players where explicit player activity (making content, commenting or reacting to content) and implicit player activity (gameplay tracked though datafication) are being used to shape content generation. They also offer a spectrum of player agency, from passive tracking to active content generation. These roles expand both the value chain and list of creative workers involved in contemporary production logics, and prompt us to rethink the role of circulation. The professional roles of community managers and data scientists are rarely examined in relation to contemporary cultural production. The monetisation of gameplay for others to view challenges our conceptualisation of user generated content and shifts the consumer gamer more explicitly into the role of producer gamer. Indeed, in the current social media platform logic, popular gamers on Twitch with millions of followers become a key moment in the circuit of cultural production, and are able to capture economic value for themselves, create value for the professional developers of the game, and for the hosting platform. While these players are far from key brokers, my work would suggest that identifying and paying attention to innovative circulation moments within different production logics is crucial to understanding continuity and change in contemporary cultural production.

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