2 Free-to-play Games and App Advertising

The Rise of the Player Commodity

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The global diffusion of mobile devices—smartphones and tablets—has fundamentally changed the way consumers interact with brands and vice-versa, how companies are using marketing strategies to position their products and services. On an average day, US consumers spend more time using mobile apps than they spend watching television. Tellingly, the two major digital advertising behemoths, Facebook and Google, derive the majority of their revenue from their mobile products, instead of their desktop services. As a subset of digital advertising, mobile marketing is a particular catalyst for growth. And within the wider mobile domain, app advertising is spearheading the transformation of advertising tools, technologies, and strategies.

More so than Fortune-500 companies, the game industry (i.e., game studios, game publishers, and associated marketing service providers) is keen to leverage the accessibility and ubiquity of mobile devices. Game developers are widely considered to be ahead of the curve in terms of exploring and exploiting mobile marketing related innovations. On the one hand, mobile games are played by hundreds of millions of players on a daily basis and can therefore offer advertising inventory (i.e., highly trafficked in-app real estate for advertising banners and videos). On the other hand, the market for game apps is extremely competitive. As thousands of new mobile games are released *every day*, effective app advertising has become a key competitive advantage for game developers and publishers. This chapter focuses on this second instance of mobile marketing: game developers using in-app advertising for their freemium or "free-to-play" (f2p) games to generate new installs or in industry terms, to "acquire users."

User acquisition as a form of mobile marketing raises important critical questions pertaining to the emergence of mobile platform-based advertising, the position of players, their data and, in the end, their play. To gain a deeper understanding of the political economy of app advertising my approach takes an institutional perspective on the advertising ecosystem and the commodification of audiences (Turow 2011; Meehan 2014; Napoli 2014). In the era of connective platforms (Van Dijck 2013), app advertising, one could say, closes the loop. As opposed to the inherent "waste" associated with mass-marketing campaigns, app advertising promises an ecosystem

where every action, or "event," is fully attributable. For f2p games this means that every step of the "funnel"—from player acquisition, to player engagement (i.e., playing), retention, and, potentially, player monetization—can be tracked, analyzed, and optimized and comes with an array of highly granular metrics or "key performance indicators" (KPIs). This data-driven approach to advertising has historical roots and builds on technologies and practices rooted in desktop-based digital advertising. At the same time, app advertising for f2p games goes far beyond digital advertising of physical products as mobile games are *contingent cultural commodities*: they are constantly altered, sometimes in real-time, to improve KPIs based on player actions.

The reason to focus specifically on f2p games is not so much their popularity or the US$30 billion generated in global annual revenue (Newzoo 2015). Rather, my interest lies with the implications of the freemium business model and its inherent inequalities. Popular mobile games, such as *Clash of Clans* and *Candy Crush Saga*, predominantly generate revenue via optional virtual consumption; on average a percentage ranging between 1 and 10 percent of players are also payers. Because of this structural imbalance of payers-versus-players, f2p games favor economies of scale, requiring game studios to focus on mass-scale user aggregation. For f2p games to effectively generate revenue, every aspect of their production, marketing, and usage has to be measured and optimized (Voigt and Hinz 2015). In this sense, they are to be considered services rather than products as the instances of game development, distribution, and advertising constituting cultural commodities, which were previously relatively distinct, are fully intertwined (Nieborg 2015), up to a point where it is difficult, if not impossible, to tell where one phase starts and the other ends.

The chapter is organized as follows: First, I will position mobile marketing against relevant historical innovations in digital advertising. Attention is then paid to the economics underlying the f2p business model, with a particular focus on the relationship of app advertising to the configuration of the app stores operated by Apple and Google. Following this discussion, the third section unpacks the advertising practice specific to the f2p business model known as "user acquisition." In a nutshell, by using mobile marketing platforms, game developers are able to "buy players" (Luton 2013, 135) via complex performance-based advertisement campaigns aimed at transferring players from one app to another. This seemingly straightforward process masks a growing sub-segment of the app economy that relies on mass-scale data aggregation and the individual tracking and targeting of players, thus tying into my argument of f2p games as contingent commodities. The fourth and last part of this chapter connects user acquisition with critical political economic theory and builds on Smythe's (1977) conceptualization of the "audience commodity" to introduce the concept of the *player commodity*. The chapter ends with a review of the political economic implications of user acquisition for players and developers.

The analysis in this chapter is informed by three complementary sources of qualitative data. One is a close reading of industry material, including white papers, company brochures, blog posts, and seminar material. The second source consists of 25 semi-structured interviews conducted between 2013 and 2016 with industry professionals working at app advertising firms, including ad networks, app marketing platforms, app tracking providers, and app analytics firms. The final source was participation observation conducted at a game app developer and at key industry events in the US and Northern-Europe, the geographic breadth of which is a necessary move due to how global the app economy is, especially when compared to other segments of the game industry. This chapter begins a study of the globalization of the app economy by focusing on app stores operated by Google and Apple and on mobile marketing and app development in North America and Europe.

Online Advertising: From Click to Tap

The emergence of the free-to-play business model is fully intertwined with the evolution of online advertising strategies, the global diffusion of mobile devices, and the political economy of ad-supported social media platforms. Before offering deeper insight into the market structure of the mobile marketing ecosystem, let me briefly reflect on the recent history of online advertising as current app advertising efforts, and user acquisition in particular, find their roots in both digital and non-digital advertising. Digital advertising, and app advertising by extension, should be seen as a mix of both old and new companies, tools and technology, regulatory institutions, business models, and industry practices (Stole 2014).

The first instances of web-based advertising were fairly simple and consisted of banner ads that were sold on a "cost per mille" (CPM, with a "mille" indicating a thousand views) basis. Two subsequent innovations in the history of online advertising worth singling out are the implementation of browser-based cookie technology and the "click" as a mechanism to measure individual ad interaction (Turow 2011). Together, these developments helped advance advertising strategies involving behavioral targeting: "the monitoring of people's online behaviour to use the collected information to show people individually targeted advertisements" (Zuiderveen Borgesius 2014, 21). For targeting to work, intermediaries need to collect, store, analyze, and disclose data on an unprecedented scale. As will be discussed in more detail below, user acquisition strategies build on behavioral targeting tools, technology, and practices by successfully adapting them to the app-based mobile ecosystem.

By all accounts, the online advertising ecosystem is highly complex. While, from a neoclassical economic perspective, online advertising is still a market consisting of buyers and sellers of advertising, the arrival of new intermediaries, the changing role of incumbents, and the adoption of

Internet-enabled mobile devices resulted in an increasingly opaque multi-sided market structure. Its complex value network consists of thousands of individual actors roughly divided among three groups: advertisers, advertising "publishers" (i.e., ad-serving websites), and a myriad of intermediaries (i.e., media buying agencies, ad networks, ad exchanges, ad trackers, and data providers). To add chaos to complexity, marketing professionals routinely invent sometimes-obscure new terms for common business practices. One way to comprehend the sprawling power dependencies is through work in the field of management on "multisided" or "platform" markets (Rochet & Tirole 2003). In its embryonic 1990s form, online advertising constituted a straightforward two-sided market where intermediaries operated platforms that connected two "sides": ad publishers and ad buyers. However, during the last decades, the ability to track, store, analyze, sell, resell, and auction advertising "inventory" through cookie technology and various kinds of behavioral data has entangled company roles and data flows even more.

A number of key developments in the evolution of this complex marketplace should be noted. First, throughout the 1990s, search-engines introduced cost-per-click (CPC), which produced pricing models for ad inventory that were sold via online auctions (Evans 2009). Search engines evolved into platforms themselves, adding an extra side to the advertising market. For example, Google Search operates in a three-sided market, bringing together users, content providers (web pages), and advertisers (Rieder and Sire 2014). Second, in the realm of web-based display advertising, the introduction of real-time-bidding (RTB) and programmatic buying technology added new levels of sophistication and aggregation to both the ad publisher side and the intermediary side. RTB protocols operating with demand-side platforms (DSPs) constitute buyer-driven ad-exchanges that conduct real-time auctions on ad impressions. Supply-side platforms (SSPs) do essentially the same on the publishing side by offering access to ad inventory (Turow 2011). Fed by various forms of data (e.g., a current location), a DSP predicts, evaluates, and optimizes ad bids to engage in an automated (i.e., "programmatic") bidding process. As such, real-time-bidding markets advance behavioral targeting by facilitating billions of parallel auctions on individual ads. This most recent instance of digital advertising signals a shift from probabilistic models to deterministic ones, a changing emphasis from delivering impressions to prompting actions, and the resulting ascendance of a performance-based approach to individually targeted advertising.

Mobile and social media platforms expand forms of data collection, storage, analysis, and disclosure. However, mobile platforms handle data gathering and user tracking differently than the more open desktop environment. Instead of relying largely on cookies, mobile marketing relies on other forms of fingerprinting technologies such as device IDs and IP addresses. For example, every mobile device running Apple's iOS is outfitted with a unique advertising identifier, described as "an alphanumeric string unique to each

device, used only for serving advertisements" (Apple 2014). As most mobile user activity takes places outside the mobile browser and in individual apps, these more persistent identifiers are vital components for mobile marketing campaigns and thus replace web-based tracking technologies. New identifiers such as these help solve the "attribution issue" (who served which ad to whom?), aid in tracking users across apps, and make behavioral targeting on mobile devices many times more effective.

These advantages were not fully recognized at the start. Mobile marketing has only recently seen widespread adoption. As late as 2009 it was considered a "sleeper advertising medium" that demonstrated enormous potential but was faced with a number of challenges such as lagging mobile Internet technology, a lack of user-friendly devices, and a dysfunctional relationship among key actors in the mobile ecosystem, chief among them mobile operators or "telcos" (Wilken and Sinclair 2009). Despite these challenges, mobile marketing soon expanded, due not only to innovations in tracking tools already noted, but also to the consolidation of technology. Indeed, one of the reasons advertisers embraced the iPhone is that Apple solved many of these structural issues by integrating Internet connectivity, introducing app stores, and offering user-friendly interfaces (Goggin 2009). The last two years have been a turning point for mobile advertising.

App Store Politics

Global app usage is soaring and mobile Internet penetration is reaching all-time heights. Yet, advertisers as well as app developers are faced with a trade-off as Google and Apple altered the game industry's competitive dynamics by creating a central role for the app store that has emerged as a key means of game distribution and user aggregation. During the last decade, the global market for games ballooned into a globally diverse market of players and platforms. More accessible tools for game production and the accessibility of app stores of widely diffused mobile devices constitute in one sense the on-going democratization of game production and distribution. At the same time, the requirement for upfront monetary investments has been lowered significantly and, with it, barriers to market entry. As a result, app developers face fierce competition in a highly competitive and hit-driven ecosystem, made even more dynamic by, in the case of free-to-play games, user choices driven by whim and game availability instead of price.

The advent of integrated application stores has been a crucial development in the evolution of the game industry. Coupled with the introduction of freemium business models (revenue models that offer basic functionality for free and complementary access or features at additional costs), these virtual stores lower transaction and search costs for consumers (Rietveld 2016). Their emergence has benefited game developers due to the stripping away of power in mobile game value networks from network operators.

Instead, platform holders increasingly exercise key power in a much more fragmented and rather impenetrable ecosystem (Feijoo et al. 2012). App stores make this possible by providing developers with a secure and integrated payment and billing system, as well as a broad range of first-party (i.e., platform-provided) and third-party development tools and services, such as game-related software, social network integration, analytics, and remote computing and content hosting (Cuadrado and Dueñas 2012). This integrated approach includes a wide range of tools, technologies, and services necessary for in-platform advertising and thus user acquisition. More importantly, mobile platforms grant both developers' and third-party marketing companies' access to crucial advertising related innovations, allowing for large-scale user tracking and targeting.

Despite organizing and streamlining app distribution, the current configuration of app stores is both a blessing and a curse for app developers. The integrated, unified storefronts lower a user's search costs by offering tools to navigate hundreds of thousands of apps via search capabilities, rankings, and other algorithmically or hand-curated sections. Yet, despite these mechanisms, many industry insiders consider app discovery fundamentally broken. Consider the layout of Apple's App Store, which feeds into risk-averse consumer behavior. For example, Apple biases consumer selection by anointing some games as an "editor's choice" in its Featured section. More generally speaking, app-store rankings and ratings skew consumer choices. A recent study on app selection by Dogruel, Joeckel and Bowman (2015) found that the vast majority of users tend to deploy "take-the-first" decision-making heuristics and take their cues mainly from app store ratings and rankings. Yet, aggregated user choices also drive others' choice, in ways such as how the heavily frequented Top Charts section, particularly the Top Grossing category, heavily favors incumbents.

The accessibility for consumers of mobile games is further boosted by the ability to download games free of charge. Compared to the more straightforward and fixed transaction-based model of pay-before-play, the "free-to-play" (f2p) model covers a combination of post-release monetization strategies that are still very much in flux. In many respects, the political economy of the free-to-play business model is organized by the Pareto principle (a rule of thumb that states that 80 percent of the output is generated by 20 percent of the input). Key elements such as app usage and revenue are disproportionally distributed. A handful of developers generate the majority of app-related revenue (Hyrynsalmi, Suominen, and Mäntymäki 2016). App usage is highly concentrated because of habit formation and network effects (Jung, Kim, and Chan-Olmsted 2014). In addition, only a small number of users interact with in-app advertisement or spend money on in-app-purchases (IAPs). Despite so few paying players, those who do pay tend to spend, on average, significant monthly sums. This dynamic of disproportionality requires developers to invest significantly in advertising campaigns that aim at not only acquiring high-spending users (known as "whales") but

also enticing lapsed payers to return. This brings us back to the domain of user acquisition and reconnects app development with advertising.

User Acquisition

On the face of it, creating a company to develop, produce, and distribute a free-to-play game appears to be a losing proposition. However, it generates value by simultaneously gathering and analyzing data on players and using app advertising as a revenue source as well as a user acquisition strategy. A common formula used by industry professionals, LTV > CPA, captures this economic rationale for free-to-play games. Where LTV denotes the average revenue from a player over her/his lifetime, CPA is the price paid to get a player to install the game, which ranges between 50¢ to US$12 or more during holiday seasons or in competitive markets. Only when a player generates revenue (LTV) that exceeds the cost of getting a player to play (CPA) does it make sense for developers or game publishers to invest in paid-player advertising campaigns. But campaigns in this environment differ immensely from even the most targeted campaigns in conventional media. Access to the services of demand-side advertising platforms offer developers the tools to simultaneously set up thousands of highly granular campaigns, targeting hundreds of discrete audience clusters and user actions. When a user taps on an advertisement and subsequently downloads the advertised app in the app store, a series of transactions takes place among intermediaries. A demand-side advertising platform can automatically bid on players who not only installed an app but also opened it or finished the first level of a game. These interactions determine the cost of acquiring a player, with the more targeted and the more specific the player action or the more specific a player profile the higher the Cost Per Acquisition, requiring in turn revenue off that player that exceeds this cost in order to fit the imperative of LTV > CPA.

Whether such a business is sufficiently profitable depends heavily on a developer's ability to accurately measure the value generated by existing players and accurately forecast the spending patterns of future players. As a result, developers must try to track players over multiple play sessions and see how they play, when, and how often they come back. In addition, developers must create either predictive or real-time analytics with which to do this, which means in turn that getting consumers to download and play a free game is part of a much larger effort by game developers to use actionable data to optimize player engagement and to heighten a player's "willingness-to-pay" (Voigt and Hinz 2015).

To make their data as dependable as possible, developers use a number of tactics for gathering key metrics and thus actionable intelligence. One such tactic is to "soft launch" an app, which means distributing in a few selected countries a test version from which the developer formulates and pre-tests data strategies prior to a release worldwide. A soft launch is typically kicked off with a "burst campaign" (a brief in-app campaign) in order to quickly

attract a sizable player base and gain actionable data. Soft launches can generate insights on key financial metrics, as well as a related set of "engagement metrics," such as the Opens or Events Per Install (OPI/EPI), and use that information to model player profiles. For example, there might be a correlation between app installs and men in their thirties owning an iPhone who "like" *The Daily Show* on Facebook. This would entice developers to invest heavily in an acquisition campaign specifically targeting that user profile (or have Facebook find "lookalike audiences").

More recently, industry attention has focused on retaining players and getting them to play habitually. Doing so is made more difficult due to the fact that players tend to lose interest in free-to-play games fairly rapidly. As a result, free-to-play apps have a very short life cycle, which requires developers to formulate new ways to battle user attrition. One solution to this dilemma is pushed by mobile marketing agencies who, due to it being cheaper to focus on player retention than on player acquisition, argue that app advertising is particularly useful in reaching lapsed players. In order to target them, developers run retention campaigns that rely even more heavily on behavioral targeting that uses the wealth of data already gathered on existing players.

An example of what a typical re-engagement campaign might look like can help clarify these complex institutional pressures and relationships. Voigt and Hinz (2015) found that app users represented higher future Lifetime Values (LTVs) if they made early in-app-purchases and spent significantly on those early purchases. Armed with this knowledge, while also leveraging existing player data such as e-mail addresses and device IDs, developers can use demand-side advertising platforms to set up campaigns that target such players with a specialized advertising message. Tailored ads can be served to each individual. For example, a game studio can serve a specific player who made an early in-app-purchase with an advertisement in, for example, the Facebook app, offering a 20-percent discount on a future in-app purchase. Using app deep-linking technology, once this ad is clicked or tapped, the device goes to the targeted app, and the player is taken to the in-game store then greeted by a customized prompt that encourages the player to buy discounted virtual items. In this way, the f2p model finishes what Turow (2011) calls "the long click." In addition to pinpointing a specific player and presenting a specific offer, app advertising tracks the holy grail of online advertising: the final purchase.

The Evolution of the Audience Commodity

For those journalists and industry insiders who championed the implementation of the "free" business model in all segments of the cultural industries (Anderson 2009), the dominance of the f2p business model seemed to reify their thesis. In the app economy, the lower barrier to market entry has indeed resulted in the proliferation of hundreds of thousands of free

games. With this abundance, however, "comes a new scarcity: that of attention" (Lovell 2013, 22). A burgeoning mobile marketing ecosystem populated by hundreds of companies specialized in app analytics, re-engagement, ad-tracking, real-time bidding, programmatic ad buying, incentivized app discovery, customer relationship management, and ad yield (i.e., optimization) management stands at the ready to convince app developers about the spoils of data collection, user profiling and the power of predictive analytics. Or as the title of an industry brochure reads: "Mobile Games: Now You Can Predict the Future" (App Annie 2015).

Yet, the very existence of this massive marketing apparatus makes the notion of "free" in free-to-play disingenuous. Indeed, app advertising and user tracking at the heart of the f2p game is what produces users as commodities. Indeed, the highly individualized, performance-based nature of user acquisition as an emerging mobile marketing practice raises questions pertaining to the commodification of players. The institutional application of Smythe's (1977) work on the "audience commodity" to television by critical scholars Meehan (2014) and Napoli (2014), and recent work on the nature of the audience commodity for connective platforms such as Facebook (Cohen 2008) and Google (Rieder and Sire 2014), is particularly helpful for a critical materialist analysis of this process. In the same way that audiences were manufactured and being sold to advertisers in the golden age of broadcast television, the advertising strategy of user acquisition should be seen as a continuation, intensification, and individualization of the commodification of audiences.

Just like data generated by TV audiences, players of f2p apps are tradable commodities whose exchange value is determined by the complex interplay among third-party advertising intermediaries. In the case of broadcast TV, rating firms make the audience commodity visible by translating "viewers into a verifiable audience" (Meehan 2014, 81). Meehan's TV-based argument maps quite well on the app economy. Developers of f2p apps want players; app developers capture players; ad intermediaries and social media platforms measure (i.e., track and target) players, and demand-side platforms "deliver" installs or engagements for app developers. Seen in this way, players along with their data and their in-app actions constitute the *player commodity*. Similar to Facebook, f2p games do not dictate desires or player behavior as much as they shape and organize players' activity in order to meet the needs of business models (Cohen 2008, 17).

Despite these similarities, game apps, online ad networks, and social media platforms work at a granular level much finer than conventional audience commodity production. They produce intricate metrics about individual players based on behavioral data that make possible individual targeting through app-based advertising. Conventional aggregated exposure-based audience ratings are turned into individual profiles that measure a player's willingness to play, share, and pay, with players tracked, targeted, and sold on a per-person basis. Good illustrations of a player's

exchange value are the monthly indexes for the Cost Per Install (CPI) and Cost Per Loyal User (CPLU) published by Fiksu. The CPI "measures the cost per app install directly attributed to advertising," whereas the CPLU stands for the average cost paid by brands for an in-app advertising targeted at a "loyal user," which is defined as a person who opens "an app three times or more" (Fiksu 2016).

As of early 2016, the Cost Per Loyal User hovered between US$3.50 and US$4, suggesting how precisely values can be assigned to audience commodities produced through this system. As the Fiksu example indicates, players generate exchange value, however small, through in-app interactions. But this value is increased by a persistent and likely pattern of interaction made possible by the ubiquitous and habitual use of smartphones, readily available identifiers such as IP addresses, device and advertising IDs, and location data. While game play is in once sense voluntary and highly engaging, by being integrated with the political economy of both mobile and social media platforms (Fisher 2015; Van Dijck 2013), f2p games commodify user sociality and connectivity through constant surveillance.

Discussion and Conclusion

At this early point in the development of f2p games, it is increasingly hard to imagine what the f2p business model would look like without recent developments in (big) data storage and analysis, online advertising, and mobile media. While not universally popular among either players or developers, the f2p model has become a seemingly natural choice for all but a handful of mobile studios. Regardless, the model holds significant short-term and long-term implications for players and developers. The most notable concerns for users relate to privacy and discrimination through (dynamic) pricing, with these challenges mirroring in many ways those in the online advertising ecosystem at large (Turow 2011). Free-to-play ad intermediaries and technology providers have been at the forefront of implementing dynamic pricing strategies that focus on affluent users, thus creating the potential for mass-scale (price) discrimination. The passive and ubiquitous nature of data collection raises concern about privacy. Compared to cookie-based tracking, which happens on the client side, app tracking and targeting occurs largely on the server side. While cookies can be deleted or disabled, few clear opt-out mechanisms exist for user tracking and commodification through mobile apps.

In the foreseeable future, changes are unlikely. As Peacock notes, "currently, incentives for transparent, limited and consensual personal data extractions are low, while profits for invisible web tracking and unlimited data storage are high, all the while costs for storage are decreasing" (Peacock 2015, 5). Even though Apple-device users can limit ad tracking via resetting the advertising ID, or make use of Apple's recent decision to allow ad-blocking technology, these options only affect a small part of mobile

app-tracking practices. And ad-blocking plug-ins only affect browser-based mobile advertising, which works on the client side.

The potential for unlimited in-app-purchase revenue presents an unmistakable siren call to investors, policy makers, and new market entrants, helping spur a vibrant developer ecosystem in which hundreds of mobile games are published on a daily basis. Yet, because of competitive entry, the seemingly great accessibility of app stores is highly deceiving. Even though players are more diverse and plentiful than ever before, Rietveld's (2016) recent analysis shows that, when compared to premium games, freemium games may attract twice as many players who play less, translating to lower revenue compared to up-front payment models. In practice, app development is fraught with uncertainty, and the ecosystem is populated with mostly small teams that are able to exert a minimum of influence over the terms of distribution. After disintermediating the role of "telcos," the duopoly of Google and Apple has had little trouble setting technological standards and platform governance structures that benefit their own business models and interests.

The issue thus becomes to what degree user acquisition acts as a catalyst for inequality or as an opportunity for renewed competitiveness and diversity. I would argue that app advertising's high-capital requirements and knowledge-intensive nature suggest the former. Already we see a growing divide between two classes of f2p app developers. By far the largest group (let's call them "The 99%") consists of app developers that serve as ad publishers and rely on advertising as a source of income. Then there is the very select group of "Net Advertisers": well-capitalized start-ups, superstar game publishers, and studios that rely primarily on in-app-purchases as a source of income and have the know-how and monetary capital to engage in user acquisition campaigns of a mass, often global, scale. The f2p hit *Clash of Clans* is a suitable example of a game that is heavily advertised online and offline and that generates substantial revenue solely through the sale of virtual currency. As a member of a small inner circle of incumbents, the game shows remarkable staying power. It has been on top of the Top Grossing segment of the Top Charts section in Apple's App Store for years. Similarly, King Digital Entertainment, Machine Zone, and a handful of others have been quite skilled at long-term player retention.

In other words, Net Advertisers such as Supercell are becoming the "dust busters" of the app economy by vacuuming up as many players as possible while simultaneously looking for players that show a propensity to pay. Ironically, by serving as player aggregators, The 99% are sowing the seeds for their own demise. For the Net Advertisers, user acquisition serves as a means to an end, the goal being finding those players that are willing to spend lavishly on in-app-purchases. Yet, because both parties are active in the same ecosystem and their games are commonly outfitted with the same analytics and tracking tools, The 99% help pinpoint loyal p(l)ayers of whom there are so few. The premium price of loyal users makes

app advertising increasingly competitive, creating a two-tiered system that reinforces power asymmetries in a growing segment of the game industry. Lastly, the arrival of "big brands" (such as retailers, travel companies, and movie studios) in the app ecosystem is likely to drive further demand for ad inventory. As mentioned previously in this chapter, the Cost Per Loyal User and Cost Per Install indexes have been rising steadily over the course of 2015. And while there are billions of mobile devices, the pool of loyal users, let alone "payers," is finite. The ability of The 99% of app developers to remain competitive in the marketplace for app engagement is already severely compromised.

To conclude, the great majority of players quite vocally loathe spending money on in-app purchases and, by doing so, they sustain the notion of f2p games as free. The integration of in-app advertising, and the emergence of user acquisition strategies in particular, turn the free-to-play descriptor into an inherently deceptive proposition. Just as advertising-supported broadcast television should not be considered free, f2p games should not be either. App advertising transforms, extends, and intensifies the process of audience commodification and the structure and nature of the cultural commodity form in multi-sided markets. The dynamic we see playing out in the realm of free-to-play app advertising—the contingent nature of cultural commod-ities and the inherent disproportionality associated with app stores and the freemium business model—is a harbinger of a future that is increasingly dominated by advertising-driven platforms and apps. Going forward, vital questions remain pertaining to the concentration of capital and power in the app economy as well as the long-term sustainability of new revenue models given the increasingly complex and capital-intensive nature of app advertising.

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