



Selected Papers of AoIR 2016:
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APP STUDIES: PLATFORM RULES AND METHODOLOGICAL CHALLENGES

Panel overview

The panel engages with conceptual and methodological challenges within a specific area of 'internet rules', namely the space of mobile apps. Whereas the web was set out to function as a 'generative' and open technology facilitating the production of unanticipated services and applications, the growing popularity of social media platforms, and mobile apps is characterised by proprietary services that facilitate accessibility but obstruct transparency, tinkering, adjustment, and repurposing. This broader development from 'generative' technologies to 'tethered' devices and services has been referred to as 'appliancization' by Jonathan Zittrain (2008). In addition to Zittrain's focus on the proliferation of proprietary technologies, we suggest that platform infrastructures create specific conditions for the emergence of app ecologies and that apps and platforms are mutually dependent on a technological and economic level.

From this perspective, the panel explores a number of novel methodologies for app studies. So far, methodological approaches for studying apps have focused on end-user interfaces and how users interpret app affordances (McVeigh-Schultz and Baym 2015), qualitative analyses of their political economies and the politics of location (Dyer-Witford 2014; Wilken and Bayliss 2015), their social norms of use (Humphreys 2007) or their affective capacities (Matviyenko et al. 2015). The empirical investigation of apps and their ecologies currently faces multiple challenges: First, in contrast to most data collected from web sites and platforms, user activities can neither be simply observed or scraped from front-end interfaces nor easily be collected via APIs. In order to access app data, researchers may need to participate in using the app, which only affords a partial view (e.g. in the case of Tinder, Snapchat, and messaging apps) thereby opening up a number of ethical concerns. Second, method development has to respond to apps' fast update cultures. Like other internet-enabled technologies, apps are considered as services rather than products and have frequent development cycles, including design and features changes, which do not only require researchers to constantly adjust their tools and approaches, but which also make it particularly difficult to reconstruct the history of an app or its features.

This panel responds to these methodological challenges by advancing methodological approaches that all share a common device or medium-specific perspective, departing

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from the specific features of each app to attend to its data ecologies, political economies, practices, or histories, whilst reflecting critically on the relations between method and medium. One contribution advances digital methods for app analysis by mapping larger platform ecosystems in which apps emerge and thrive. It explores how apps reinforce, alter, and interfere in the interpretation of social media platforms and their features. Engaging with Facebook's mobile app and its political economy, the second paper attends to the difficulties of getting access to historical app information whilst tracing relations between the introduction of new features and the advancement of the platform's business model. A different approach to writing a microhistory of apps is offered in the third paper on the Twitter's retweet button. Bringing together historical and ethnographic insights, this paper offers a detailed narrative of the becoming of a platform feature at the intersection of technicity, use practices, third-party apps and platform politics. The fourth and final paper focuses on the WeChat app and draws on ethnographic methods to explore the affordances of entanglement when the only way to study an app is by joining and participating in it.

All four papers approach apps not as discrete technologies, but as being situated and subject to distributed accomplishments of technicity, economics, practices, data, third parties, and platform politics. They connect platform studies and app studies by drawing attention to their intricate relations, e.g. in the case of platforms offering apps, apps built on top of platforms, apps facilitating practices that inform platforms, and apps functioning as platforms. The papers outline relations between and gaps in app and platform studies, as the study of platforms has identified the relevance of data circulation and the involvement of third parties, but has not explicitly asked how apps capitalise on platforms and vice-versa, or how they reinvent and inscribe into each other. From the perspective of app studies, adding a focus on platforms allows researchers to map the ecologies in which app data circulates as well as the regulatory rules and conditions for their development. The panel thus advances the field of app studies by exploring novel methods for empirical app research which allows to attend to the technicity, political economy, history, and enactment of app ecologies.

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1. APP ECOLOGIES: MAPPING APPS AND THEIR SUPPORT NETWORKS

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This paper offers a contribution to app studies by approaching apps through the lens of, and in dialogue with, platform studies. In the majority of contributions to studying apps, their front-end interfaces and affordances (McVeigh-Schultz and Baym 2015), their political economy (Goldsmith 2014; Dyer-Witthford 2014; Wilken and Bayliss 2015), their affective and sensory capacities (Matviyenko et al. 2015) or app-based labour (Dyer-Witthford 2014; Gregg 2015) have been discussed, whereas the wider ecologies and economies of data within which apps thrive and interfere have received little attention. However, a growing number of apps have been built to repurpose existing social media data, devices or features as these platforms facilitate such repurposing by offering their data and functionality to developers via public Application Programming Interfaces (Bucher 2013). In the context of Twitter for instance, the majority of tweets is no longer produced within the Twitter web end-user interface, but are issued through a proliferating array of Twitter clients, alternative access points, tweet automators, cross-syndication apps, and games connected to Twitter accounts, to name only a few (Gerlitz & Rieder 2014). This paper thus sets out to explore the entanglements between platforms and apps by devising a novel method to empirically study app ecologies by repurposing the calculative and ordering capacities of app stores. It advances a strand of empirical app studies which considers apps not as discrete media objects, but as relational objects situated in larger data ecologies.

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Platforms, features, and apps

Platforms are often approached in two ways. Some researchers consider platforms in terms of their capacities to be built upon (Bogost & Montfort 2009), as well as the ways in which platforms enable and constrain how their features can be implemented and how their data can be retrieved and recombined (Helmond 2015). A second strand attends to the politics embedded in managing the various relations platforms enter with their users, advertising clients, and developers amongst others (Gillespie 2010). These stakeholders pursue different objectives and the role of the platform is to negotiate these potentially conflicting interests whilst pursuing their own. Central to both strands is the fact that platform data is both pre-structured and adjustable to multiple use contexts. Users can only interact on a platform through a structured set of standardised activities, or to draw on Agre's (1994) 'grammars of action', which enables platforms to make their data amenable for constant recombination and to make external web data 'platform ready' (Helmond 2015). However, the standardisation of platform activities (e.g. liking, sharing, tweeting, and tagging) does not entail a standardisation in meaning and intention, as platforms cannot fully control how users or third-party apps built on top of platforms, interpret or deploy their pre-structured actions. The focus of this paper is the extent to which apps tap into and deploy the 'interpretative flexibility' (Pinch & Bijker 1984; Van Dijck 2012) of platforms and their features – and whether their interpretations align or misalign with those of the platforms themselves.

Methodology

This paper advances the field of digital methods for app studies by making use of the capacities of app stores to organise apps and their relations to each other. We focus on the Google Play Store mainly because of its size with 1.6 million Android apps (Statista 2015) and proceed in two steps. First, we map and explore apps that have been built on top of major web-based and app-based platforms – specifically Facebook, Twitter, Instagram, Snapchat, Periscope and Tinder – and the relations between them. We explore which platform features these apps support, what user practices they advocate, and whether they advocate new or existing interpretations of these platforms. This approach limits itself to apps that support platforms and their specific features but acknowledges the existence of other software and devices that may redeploy and reinterpret platform data. In the context of Twitter, our initial findings show an app-support space that is mainly comprised of third-party clients that offer alternative access points. In contrast, the Instagram support space consists of apps for follower building, strategic hashtag use, and for using the platform for dating purposes. Additionally, we examine how these app ecologies have evolved over time and in response to (or not) major changes in platform features. Second, we map and explore apps that repurpose platform features, focusing both on the platform-specific grammars of action (e.g. retweets, mentions) as well as those that exist across multiple platforms (e.g. likes, shares, followers, hashtags). We examine to which extent third-party apps redeploy and reinterpret these platform features. Initial results indicate both a proliferating field of interpretations and redeployment as well as the sharing of features across platforms. This raises questions concerning the cross-platform deployment of likes, followers, and hashtags, and how this might undermine or alter platform-specific use practices.

Towards app ecology studies

The paper concludes with a reflection on apps as situated in dynamic and complex ecologies. Exploring the mutual entanglements and dependencies between platforms and apps, it strives to offer both a methodological approach to map such ecologies and to account for the specific entanglements between apps and platforms. It aims to show how apps thrive and capitalise on platforms and in doing so also inform the practices and interpretations proliferating on these platforms. Apps, platforms, and their associated use practices emerge as a dynamic assemblage, a perspective that calls for extending platform studies to take into account the app ecologies around them, as well as for advancing app studies by considering apps as situated and ecological entities.

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2. FACEBOOK IN THE APP ECONOMY: FROM WEB TO APP(S)

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In recent years, Facebook has become a dominant player in the growing mobile app economy. With its suite of mobile apps, consisting of Facebook, Messenger, WhatsApp and Instagram, it occupied the top four of the most downloaded apps of 2015 worldwide in the iOS and Google Play app stores combined (App Annie, 2016). In February 2016, Facebook hinted at integrating ads into Messenger and announced Canvas, a new platform for creating fast-loading interactive mobile ads, as part of its mobile monetization efforts (Facebook for Business, 2016). In this paper we examine the evolution of Facebook's business model in the age of mobile media and investigate how changes in Facebook's advertising strategies have been reflected in their suite of mobile apps. We operationalise this inquiry by proposing a methodological contribution to the emerging field of app studies by combining a critical political economic approach to Facebook with methods from software and platform studies.

Facebook's evolution in the app (advertising) economy

The history of Facebook, often framed either as a Silicon Valley start-up or as an emerging social network site, has been well-documented (e.g. boyd and Ellison, 2007; Brügger, 2015; Goggin, 2014). We aim to build on this body of work by studying the evolution of Facebook's platform in the wider app economy. In 2007, around the same time of Apple's launch of the iPhone, Facebook started its transformation from a web-based service into a mobile-first enterprise (Goggin, 2014: 4). Yet, at the time, the mobile ecosystem, and the mobile advertising ecosystem in particular, was still considered a "sleeper advertising medium," kept back by a lack of bandwidth, fragmented hardware (Wilken and Sinclair, 2009), and the absence of technologies that allowed advertisers to track and target mobile users. Since then the industry has evolved and grown tremendously and in January 2016 more than 1.44 billion users visited Facebook's mobile apps, generating 80%, or US\$4.5 billion, of the company's advertising revenue, (Facebook, 2016).

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Critical political economy meets software and platform studies

Critical scholars have shown considerable interest in social media platforms (Fuchs, 2014), either by critically engaging with the issue of privacy and surveillance (Cohen, 2008), or by drawing on Smythe's (1977) notion of the "audience commodity" to debate the extent to which social media usage constitutes a form of "immaterial labor" (e.g. McGuigan and Manzerolle, 2014; Fisher, 2015). While such critical interventions offer an important counterweight against the utopian and one-sided rhetoric of social media's business manifestos (Van Dijck & Nieborg, 2009), the aforementioned studies pay less attention to the technological dimensions of platforms. We aim to contribute such a technical sensitivity by connecting two bodies of theory that so far have seen little synergy: critical political economic studies of social media and software and platform studies.

Software studies analyzes the relation between software and culture (Fuller 2008), and in the case of software platforms such as Facebook, the related field of platform studies connects the technical specificity of platforms as computational infrastructures to culture (Bogost and Montfort 2009). This entails analyzing its end-user facing interface (i.e. front-end, the website, apps, and their features), as well as its developer facing interface (i.e. back-end, the Facebook APIs and SDKs). By doing so, we consider Facebook's infrastructural model in tandem with its underlying economic model (Helmond 2015) as a way to investigate its "platform politics" (Gillespie 2010). Notwithstanding the ways in which Facebook users constantly (re)negotiate their position within "the ecosystem of connective media" (Van Dijck 2013), we are primarily interested in the interaction between Facebook's business model vis-à-vis its evolution as a technological platform.

Method

Political economic analysis is conducted, first, via a financial analysis of Facebook's mandatory Securities and Exchange Commission (SEC) filings, and, second, via a textual analysis of Facebook's quarterly investor calls outlining high-level managerial strategies (Facebook, 2016). Studying the technological development of Facebook's app suite, however, poses methodological challenges as app stores do not offer historical versions of apps, and platforms constantly update their own platform documentation. Inspired by Ankersson's software studies approach to writing histories of the web (2009), in this paper we make use of the Internet Archive Wayback Machine to uncover Facebook's historical platform documentation to analyze its development as a computational software platform via its archived developer documentation in conjunction with its evolution as an advertising platform via its archived advertising documentation. Taken together, the proposed mixed-method approach moves beyond a genealogy of Facebook as a company and instead studies the transformation of Facebook's platform with a focus on its mobile products (i.e. apps) in tandem with its underlying business model.

Discussion

Facebook's app suite is in various stages of development and we expect to find differences in the ways individual apps, or "products" as Facebook calls them, are "monetized". As noted by Van Dijck, Facebook first facilitates "connectivity" (2013), as a starting point for the commodification of sociality and data. In this paper we trace this

process over time by critically and empirically inquiring into Facebook's transformation as a mobile software platform.

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3. RETWEET BUTTONS BEFORE 2009: SYSTEMS AND PRACTICES

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The history of the retweet and its button has been utilised by various actors for many different purposes. The company Twitter for instance established a narrative of the retweet button as a “bottom-up innovation” in 2009, most likely to improve their position in, or before, a possible copyright argument with third-party service Tweetmeme, which also posed a threat as it had almost become bigger than Twitter itself. Another narrative about Twitter’s history that is still in circulation is that retweeting as a practice (writing “RT @username” and pasting the retweeted tweet) was established through the protests around the Iranian presidential election in June 2009 (the so-called “green revolution”). This narrative is diffuse enough to not being attributed to a specific author, yet strong enough to remain prominent in the Twitter article on Wikipedia until today. These two narratives—neither true nor a mere invention—have largely contributed to Twitter’s image as “the good platform” in contrast to the story of the more top-down Facebook or YouTube, as grassroots-medium, finding its shape through protests in the orient, which makes its way back to the west as a post-colonial re-import. However, there is more than just “a wrinkle in this story” as Alexander Halavais puts it (2014, 30).

In its endeavour to retrace the history of the retweet, this paper cannot detail its entire history and therefore focuses on one specific aspect. Before Twitter introduced the retweet button in November 2009, several retweet buttons had already been popularly used on third-party platforms and Twitter clients, most prominently Tweetmeme’s retweet button, which had been introduced in February 2009 (Paßmann, Boeschoten, & Schäfer, 2014). But there were already other retweet buttons before 2009 that might not only be “more important” for Twitter’s history (and a couple of other histories of events making use of Twitter at that time), but also shed a new light on how media-practices develop in an app ecology around platforms. This paper focusses on these early retweet buttons, that have been “invented” in the German province of Schleswig-Holstein (late 2007) and developed further in the English county of East Sussex (2008).

Most importantly, this history of early retweet buttons does not only demonstrate how distributed Twitter’s app ecology was in its early years, but also how practices and meanings can establish, unfold and transform (interpretatively flexible and stabile) on a large scale. Here, the paper discusses its findings in the light of Marshall Sahlins’ (1981, 1985) notions of cultural practices and their relations to systems, that have later been

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developed further by the historian William H. Sewell Jr. (2005). These concepts have a long tradition in the history of Historiography and also in Anthropology (Ortner 1984, Geertz 1973 and of course Sahlins, as mentioned) as well as in Sociology (Parsons/Shils 1951, Parsons 1959)—to name only the most prominent positions.

Still, the case of the retweet button makes a fundamental difference here: Parsons, Geertz and Ortner discussed these systems as cultural systems, whereas systems were thought of as a cybernetic metaphor. Sahlins and Sewell thought of semiotic systems in the sense of Ferdinand de Saussure, that are already a bit less metaphorical insofar as these systems are institutionally organised as systems. In the case of Twitter, there is not much left of the systems-metaphor, as its systems are cybernetic systems in a technical sense again—in other words: the metaphor returns to its origin here.

This discourse marks the theoretical horizon towards which the development of practices can be understood in its specificity, as the focus on systems enables a paradoxical observation: technical systems do play a strong role in the development of retweet practices, way more than the “bottom-up narrative” cares to admit: the retweet has not developed as a “sheer practice” (whatever that is supposed to be...), but retweet buttons as software have existed and widely been used before the first retweet has ever been written in its later stable shape “RT @username”. Still, the retweet practices in these early years were (and still are today) way less organised into systems in the sense of Parsons, Geertz, Sahlins and the rest.

To conclude—and here, the paper points to a paradox which shall be put up for discussion—technical systems such as Twitter seem to be very successful in organising practices into stable forms, but very unsuccessful (and that, ultimately paradoxical, makes up their popularity) in organising them in to systems of meaning. On the contrary, their achievement seems to be to exactly not to close the interpretative flexibility of use practices and their associated features (Pinch/Bijker 1987—a notion that media scholar José van Dijck (2012) also alludes, when stating “[...] Twitter’s meaning has not stabilized yet” (ibid.) or boyd et al. (2010) concluding that retweeting “[...] has not yet stabilized as a practice”), but to preserve their flexibility in the long run; i.e. precisely because its form is stable and its meanings remain flexible. Or as William H. Sewell puts it: “Part of what gives cultural practice its potency is the ability of actors to play upon the multiple meanings of symbols—thereby redefining situations in ways that they believe will favor their purposes” (Sewell 2005, 168).

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4. WECHAT AND THE INTEGRATION OF ACTIVISM IN EVERYDAY LIFE: TRACING INSTANT MESSAGING PRACTICES ON AIR POLLUTION IN BEIJING

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Chinese citizens use WeChat (known as WeiXin in China) for everything: from booking a show to making new friends, and from exchanging pornography to gossiping. The popular Chinese mobile text and voice messaging service, with its 650 million active users, has in a short time become an integral part of everyday life. Inevitably, the exchanges through the service also touch on contentious issues, such as freedom of speech, political and corporate corruption, and the rising levels of air pollution. This paper explores how WeChat is used for contentious communication, and how it, in turn, shapes this communication.

It specifically examines the practice of instant messaging on Beijing's rampant air pollution problem. Especially during heavy smog days, Beijing's citizens use WeChat to share and discuss air quality index statistics, pictures of smoggy skylines, and information regarding the temporary shutdown of schools because of bad air quality. When the highly discussed 2015 air pollution documentary *Under the Dome* was published online, WeChat was one of the prime platforms through which the documentary was circulated and discussed (Custer 2015).

These mobile-app-based instances of contentious communication are particularly interesting in the light of current research on social media and activism, which suggests that a more general integration of activism in everyday life is taking place (Poell, Kloet, & Zeng, 2014; Bennett & Segerberg 2012; Papacharissi & de Fatima Oliveira 2012; Valenzuela 2013). As social platforms are intensively used in personal exchanges about a wide variety of topics, activism and protest become part of daily online conversation. Furthermore, as these platforms enable immediate widespread content sharing, such

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daily chatter pervades and affects public communication at large. WeChat is an interesting example of this trend because it is a very popular mobile app, which is deeply integrated in daily practices. And, it is interesting because it is used for contentious communication in China, a country characterised by far-reaching state efforts to control online contention.

Data collection

As a mobile app that operates within a complex political and commercial environment, WeChat poses major methodological challenges for the study of online contention. WeChat's business strategies and the Chinese state's control efforts are deeply inscribed into the application's architecture, which affects how content circulates on the platform and how it can be collected. The platform's publicly available APIs are geared towards enabling data exchanges with a broad range of other online services, including major social media platforms such as Facebook and Tencent's own QQ, as well as a rapidly growing number of apps that use WeChat's payment system. Thus, WeChat's APIs are geared towards integrating external apps into its platform, but are not set up to facilitate the collection of public user data for research purposes. A second limitation is that WeChat does not offer a search feature to find specific types of accounts or messages, like those concerned with air pollution. Instead, relevant public accounts and group chats are spread through online word-of-mouth. In the light of these challenges, we have chosen to adopt an ethnographic approach. The paper reflects on the limitations of this approach, which only provides a partial view of WeChat activity, as well as on the ethics of collecting public social media data for research purposes.

Building on a network of local experts, six popular WeChat group chats have been selected. These chats are each dominated by a specific group of Beijing inhabitants, including artists, bicycling enthusiasts, and environmentalists. In typical WeChat fashion, these users discuss a wide variety of topics, frequently touching on air pollution. To observe the interaction in these chats and collect relevant material, two researchers from our team have joined the six selected groups and have followed the group activity on a daily basis for a period of six months. Subsequently, all public chat messages (texts, photos, and videos) on the topic of air pollution have been examined and categorised through emergent coding. In addition, the research draws on 15 semi-structured interviews with active users from the selected groups.

Discussion

The analysis of this material suggests that as contentious personal and public communication becomes inextricably entangled, the character of activist discourse fundamentally transforms. As other authors have already observed, this discourse is injected with humor, emotions, and gossip, and sex. And, it is thoroughly intermingled with popular culture and intimate personal concerns. Our case study shows how on heavy smog days, WeChat channels a steady stream of jokes, air-pollution-mask selfies, before-and-after pictures, and funny photoshopped images. At the same time, the examined group chats are spaces where users express their anxiety about rising pollution levels.

The consequences of this intermingling of personal and public communication for the dynamic of popular contestation in the Chinese context are highly ambiguous. On the

one hand, WeChat, with its billions of daily messages that circulate in sudden and unpredictable ways, constitutes a potentially explosive and hard to control element in Chinese public communication. Yet, on the other hand, it allows the state to continuously track, monitor and silence contentious voices. Precisely because WeChat accounts are tied to smartphones it becomes easier to determine a user's identity and GPS location. Censorship research shows that WeChat, like all other major Chinese platforms, is certainly not exempt from systematic practices of keyword filtering (Ng 2015). These forms of surveillance and censorship, in turn, inform how self-expression takes shape, resulting in different levels of self-censorship, given that users are well aware of state monitoring practices.

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