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Platform affects of geolocation

Agnieszka Leszczynski

Department of Geography, Western University, Social Science Centre Room 2322, 1151 Richmond Street, London, ON N6A 5C2, Canada

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ABSTRACT

This paper engages the intensifying integration of digital location ('geolocation') and platforms via affect. I mobilize affect as both a theoretical framework and an analytic to engage with geolocation as an instrumentality of intensities that organizes affects for platforms, which I term *'platform affects'*. I theorize platform affects as individual and collective orientations of attunement, predisposition, and/or incentivization towards using, contributing to, remaining within, and/or returning to platforms. Drawing on select empirical examples identified as part of a qualitative study, I identify that geolocation organizes five 'platform affects' for digital platform ecosystems: (i) *affective space-times* of hyperlocality and real-timeness; (ii) experiential *affects of smoothness*; (iii) *affects of connectedness*; (iv) *affects of trust;* and (v) *affective value*. Theorizing geolocation affectively adds explanatory power to the "dynamics driving the integration" of geolocation and digital systems (Alvaren León, 2016, p. 1). Simultaneously, engaging platforms via affects (of geolocation) advances an understanding of the ways in which platforms have come to secure and sustain prominence within dominant contemporary socialities defined by configurations of bodies, technologies, and other materialities that are themselves captured within and expressed through theories of affect (Clough, 2007).

1. Introduction

From traversing the spatial fabric of the city to maintaining social and familial relationships, innumerable everyday practices are now pervasively mediated by digital platforms, and many of these digital mediations are themselves inherently spatial (Leszczynski, 2015). The merging of digital location with web content, services, and interfaces is pervasive to the extent that digital location – or simply 'geolocation' – now features as a native design, logistical, and organizational component of digital platform interfaces, utilities, and affordances. Users geotag their social media posts, whether this be via encoding their tweets with precise locational coordinates or marking-up their Snapchats with Geofilters. Ridehailing platforms such as Uber and Lyft are powered by digital map data and geologistics across many aspects of their service delivery, including in-route navigation, tracking drivers in real time, and identifying riders' pick-up and drop-off locations. The dating platform Tinder allows users to search for potential romantic partners within a distance of their choosing. Airbnb, the online short-term accommodation platform, displays available short-term rentals via an interactive map-based interface. An entire segment of the data broker industry has coalesced around the scraping, mining, repackaging, analytics, and sale of digital location data, especially that gleaned from mobile devices (Mitchell, 2019; Smith, 2019).

In the context of this tight coupling of geolocation and digital platforms, this paper examines what it is that geolocation 'does' for platforms and platform ecosystems. Initial work by geographers has begun to preliminarily attend to the factors actively underwriting the integration of geolocation with digital economies. Yet this work has been largely market-oriented, engaging geolocation as first and foremost an economic commodity (Alvarez León, 2016b; Alvarez León and Gleason, 2017; Thatcher, 2017). While an understanding of geolocation as both a commodity and as something that makes information markets (Alvarez León, 2018a, 2018b) begins the work of identifying the "dynamics driving the integration of geographic information into the digital economy" (Alvarez León, 2016b, p. 1), it does not fully account for the tight coupling of geolocation and platforms – a task that necessitates an engagement with geolocation as more than merely a market product that secures capital flows and the monetization of platforms (see for example Thatcher and Beltz Imaoka, 2018).

In this paper, I push past market- and commodity-centric engagements with digital location as a product with quantifiable monetary or market exchange value by positioning geolocation as a material-discursive technology that organizes affects for platform ecosystems. I draw on an empirical examination of the intensifying integration of geolocation and digital platforms to flesh out a theorization of *platform affect* that informs an understanding of digital platform ecosystems as affectively oriented and as expressing a capacity for orienting affects. Platforms generate, accumulate, and cycle affects within ecosystems;

E-mail address: aleszczy@uwo.ca.

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they also draw on the affective capacities of other techno-material formations, such as geolocation, to organize affects for digital ecosystems.

Drawing on Sedgwick's (2003) theorization of affect as an instrumentality of intensities that mobilizes corporeal and emotional sensibilities that may be aligned with "any number of things" (p.19), including digital platforms, I deploy affect as both an "approach to theor[izing the social,] and [as] a method" - or analytic - "that necessarily invites experimentation" with distilling, both theoretically and empirically, the "new configuration[s] of bodies, technology, and matter" that are themselves "express[ed] by affect" (Clough, 2007, p. 2–3). I engage specifically with the ways in which geolocation is operationalized as a discursive modality and technics for organizing what I term '*platform affects*'. I theorize platform affects as the material-discursive orientations through which individuals and collectives become attuned, predisposed, and/or incentivized towards using, contributing to, remaining within, and/or returning to platforms. *Platform affects* as such designate both the mechanisms by which corporeal subjects and embodied subjectivities become spatially, temporally, and affectively invested within platform ecosystems, as well as the affective nature of these investments.

Informed by the findings of a qualitative study of the intensifying convergence of the geospatial technology sector and digital platform enterprises, I identify that geolocation organizes five 'platform affects' for digital ecosystems:

(i) *affective space-times* of hyperlocality and real-timeness;
(ii) experiential *affects of smoothness*;
(iii) *affects of connectedness*;
(iv) *affects of* trust*;* and
(v) *affective value*.

I elucidate and empirically flesh out each of these affects in the sections that follow. I begin however by bringing together debates around geolocation, affect, and networks and platforms to build towards a formal theorization of platform affect. I subsequently detail the research study and its methodology, which serves as context for introducing the heuristic of five specific platform affects organized by geolocation. I substantiate both my theorization of platform affect and the heuristic of geolocational affects with key illustrative examples. I conclude the paper with a discussion of the significance of engaging both geolocation and platforms affectively.

2. Geolocation, affect, and platforms

2.1. Geolocation

Geolocation designates a broad socio-technical phenomenon associated with the contemporary proliferation of spatial big data (e.g., geotagged and geocoded content), the incorporation of locational functionalities and affordances as native features of digital technologies (e.g., GPS chips, gyroscopes, and accelerometers), and the positional awareness of 'smart' objects and connected devices that participate in the internet of things (IoT) as facilitated via technologies such as WiFi, Bluetooth, and low-powered wide-area networks (Leszczynski, forthcoming). Reflecting estimates that 80% of big data productions have a spatial component (see Leszczynski and Crampton, 2016), recent work by geographers has largely engaged geolocation in terms of data productions (geodata). Informed by industry-generated financial projections of the size, significance, and multiplier effects of geolocation in the digital economy (e.g., AlphaBeta Advisors, 2017; Henttu et al., 2012; Meeker, 2016), much of this work has been political economic in focus. Here, research has positioned digital location data as a commodity having monetary and exchange value in digital markets (Thatcher, 2017); prefigured the regulatory conditions that have been central to the social construction and sustenance of markets for spatial information (Alvarez León, 2016b, 2018a, 2018b; Alvarez León and Gleason, 2017); and identifyied markets for the sale of and trade in mined personal locational data through third-party entities known as data brokers (Kitchin, 2017; Smith, 2019). These studies emphasize the ways in which the political economies of geolocation-as-data are made, either through the individual actions and decisions of software developers and/or data brokers who inform how digital location commodities come to be imbued with value, or through policy practices and property regimes that structure markets for digital location data valuation, exchange, and circulation.

Yet to date, in addition to engaging with geolocation in terms of market economies, no research has looked at what (else) it is that geolocation *does* beyond acting as a site of valuation and as a commodity put into economic circulation. For as Ahmed writes (2004), we must acknowledge that things that are put into circulation "*do* [other] *things*" (p. 62). In this sense, as geolocation is put into circulation, it expresses a capacity to *affect* – perturb, animate, align, mobilize, organize, dis/assemble – other things, both human and other-than-human alike. Affect is useful for grappling with what geolocation 'does', how it 'does' what it does, and to what ends.

2.2. Affect

In mobilizing the language of affect, I intend affect in the sense of an instrumentality of intensities that may be attached to an array of phenomena and which may, depending on the intensity of these attachments, align other affective capacities of/for both objects and subjects alike (Sedgwick, 2003; see also Ahmed, 2004). This conceptualization of affect is situated within broader transdisciplinary engagements with affect theory across the humanities, social sciences, and philosophy, where affect has emerged as a contemporary placeholder for 'the social' in the context of the "changing cofunctioning of the political, the economic, and the cultural" in which this "cofunctioning" is itself "render[ed] affectively as change in the deployment" of a reciprocal capacity to simultaneously affect and be affected (Clough, 2007, p. 3). My specific use of affect is intentionally circumscribed to the extent that I abstain from assuming a position within now well-rehearsed and rather dated debates over the pre-cognitive/non-cognitive nature of affect, or the distinctiveness of affect from emotion (in Geography, see for example Anderson, 2006; Pile, 2010; Thien, 2005; Thirft, 2004; Tolia-Kelly, 2006). Instead, I draw on Clough's (2007) positioning of affect as an "experiment[al]", "transdisciplinary approach to theory and method" (p. 3). In so doing, I accept as axiomatic and privilege two tenets of affect theory. First amongst these is the aforementioned understanding of affect as the capacity to simultaneously mobilize and be mobilized by 'intensities', a term that captures both the "stickiness" and acuity of sensations or perturbations that emanate from and act upon corporeal bodies as well as objects and their states (Ash, 2013, 2015; Massumi, 1995; Hillis et al., 2015, p. 14; Sedgwick, 2003). Second is the commitment affect theory makes to interrogating not "what structures feeling", but rather "*what feeling structures*" (Richard and Rudnyckyj, 2009, p. 62, emphasis added), where, for the purposes of this paper, it matters less whether 'feeling' is accepted as synonymous with a conscious emotional state or with pre-cognitive corporeal sensations than what affect *does*.

These two tenets inform my instrumental use of affect as both an analytic *and* a theoretical framework (Clough, 2007) for grappling with the intensifying intersection of geolocation and digital platforms, and with the significance of this integration. In raising questions around 'what feeling structures', affect specifies a methodological entry-point for investigating the nature, affective propensities, and effects of the convergence of geolocation and platforms. It is from the stance of interrogating 'what feeling structures' that in this paper I invoke Ahmed's provocation (2004) to interrogate what it is that geolocation 'does': what does it align, organize, attune, orient, put into circulation?; and, how does it express these capacities affectively? As a theoretical framework, affect is particularly significant in that it is motivated by and

explicitly engages new forms of sociality underwritten by "re-configuration[s] of technology, matter, and bodies" that are expressed through/as affect without overdetermining in advance what those re-congifurations are or how they come about (Clough, 2007: 3, 2008). This radical openness of affect-oriented approaches to potential configurations of bodies/technologies/materialities makes them ideally suited to identifying and theorizing what it is that geolocation 'does' in service of platform ecosystems. At the same time, mobilizing affect as an analytic for reading and making sense of empirics lends cohesion to my analyzing and theorizing platforms, geolocation, and affect together.

2.3. (Networks and) platforms

In her work on affect, Patricia Clough (2000, 2007, 2008) emphasizes information and communication systems, including media technologies, in considering how emergent techno-material-embodied socialities are co-constituted, identifying these as sites of an intensifying self-reflexivity whereby technosocial "processes [turn] back on themselves to act on themselves" (i.e., affect themselves; Clough, 2007: 3). This thread is picked up vis-a-vis expressly *digital* media in more recent work on 'networked affect' (Hillis et al., 2015), which engages affect as itself networked and simultaneously positions digital networks as generative of affects, "allowing us to experience sensations of connectivity, interest, desire, and attachment" (Paasonen et al., 2015, p. 3). Yet much of the emphasis in this work is on how networks – as a particular topology of connectivity consisting of nodes and the linkages between them – put affect into circulation. In other words, 'networked affect' is, in many ways, primarily concerned with how affects are *distributed* between nodes in networks (of bodies, technologies, other objects, non-human corporealities).

But as digital platforms have more recently become equally dominant socio-technical formations, this requires that their orientation vis-à-vis affect is considered independently of the schematics of the network. 'The platform' has captured both popular and academic imaginations of late as a term that has purchase on pronounced transformations in everything ranging from the fabrics of cities, societies, and economies writ large, to the natures of work, consumption, and social interaction (see e.g., Fields et al., 2018; Guyer, 2016; Kenney and Zysman, 2016; Rodgers and Moore, 2018; Rosenblat, 2018; Sadowski and Gregory, 2017; van Dijck et al., 2018). Though 'platform' remains a loose designator (Leurs and Zimmer, 2017), scholarly efforts to theorize and provide definitional specificity have emphasized three related facets of digital platforms' characteristics and capacities, prefiguring platforms as sets of enterprise discourses and/or logics (e.g., Andersson Schwarz, 2017; Gillespie, 2010); as new modes of capitalism coincident with nascent business models and intermediations (e.g., Dal Maso et al., 2019; Langley and Leyshon, 2017; Srnicek, 2017); and, as unique technological architectures and infrastructural forms and arrangements, such as 'the stack' (Bratton, 2016), recombinant architectures (Barns, 2019), and platformized infrastructures/infrastructural platforms (Helmond, 2015; Plantin et al., 2018). In this paper, I am specifically concerned with *platform enterprises* such as Uber, Airbnb, and Deliveroo "whose core product is the foundation for an ecosystem of other products and services" (Yu, 2019, n.p.). The 'ecosystem' has emerged as a business and organization model which serves as a foundation for monetizing the digital brokering of access to products and services (e.g., a ride, a short-term rental, or a bikeshare), often via a digital software interface, and which extracts rents by making these services – and sometimes even the entire ecosystem - available to other ecosystems ('recombinant architectures'; Barns, 2019).

2.4. Platform affect/s and geolocation

Building from theories of networked affect (Hillis et al., 2015), if networks are seen to put affects into circulation between nodes, then platforms may be thought of as formations which internally organize affects for digital ecosystems (constituted by the platform itself). While like networks platforms may also be considered to be generative of "sensation[s] and potentialit[ies]" (Paasonen et al., 2015, p. 10), platforms are oriented around the accumulation of affects rather than their distribution between nodes (Prybus, 2015), capturing and (re)cycling intensities within ecosystems. I flesh out this theory of platform affect by mobilizing geolocation as an entry point for both engaging with and substantiating a conceptualization of platforms as affective. Simultaneously, I use affect as an analytic for empirically unpacking further the nature of the intensifying intersection of digital location and platform ecosystems. Through identifying specific *platform affects* of geolocation, I demonstrate the ways in which geolocation organizes affects for platforms by investing users within platform ecosystems through individual and collective attunements towards using, participating within, contributing to, remaining within, and returning to these ecosystems. Geolocation, in other words, serves as an instrumentality of *platform affect*. This instrumentality may be discerned in terms of the specific affects that geolocation aligns for, within, and through platform ecosystems.

3. Geolocation and platform affects

3.1. Methodology

The theorization of the integration of geolocation and digital platforms via affect advanced in this paper is informed by the analysis of qualitative data collected as part of an 18 month long empirical study that investigated the links between contemporary developments in the platform economy and those in the geospatial industry. This study involved two components. The first consisted of attendance as an audience member at a number of international spatial technology industry conferences and expos in 2017 and 2018, at which I attended numerous sessions, noting the kinds of geospatial products and services being featured, as well as their utilities (affordances, functionalities). The second component involved tracking and archiving online media, marketing, and press materials pertaining to geolocation and digital platforms. Data collected via both of these approaches served to identify a swathe of technology instances as well as the broader technical, social, and market discourses in and through which these instances were framed. Through the iterative, recursive coding of these materials using Braun and Clarke's (2006) thematic analysis method, I identified key facets of the ways in which geolocation and platforms are integrating, focusing on the ways in which geolocation expresses a functionality for, and within, platform ecosystems.

In this analysis, affect emerged as a key instrumentality of geolocation, organizing affective capacities for platforms. I identify these in terms of five specific 'platform affects': (i) *affective space-times* of hyperlocality and real-timeness; (ii) experiential *affects of smoothness*; (iii) *affects of connectedness*; (v) *affects of trust*; and (vi) the *affective value* of geolocation. Drawing on select illustrative examples, I elucidate and substantiate this heuristic by taking up each of these affects in turn immediately below.

3.2. Affective space-times of hyperlocality and real-timeness

The integration of geolocation in the form of positional awareness as a native component of digital platform design invests individuals in highly structured yet simultaneously ontogenetic hyperlocal micro-geographies that solipsistically spatially and temporally centre the user. Hyperlocality is a concept that has emerged in both online journalism (Metzgar et al., 2011) and in mobile advertising circles (van 't Riet et al., 2016) to designate community-oriented digital content endemic to small geographies such as neighbourhoods, streets, or single post-codes. Here, I use hyperlocality to designate a spatiality that is endemic – i.e., locationally specific - to the individual, real-time positionalities of

digital platform users. One of the most immediate examples of hyperlocality is the 'blue dot' on the mobile Google Maps interface, which visually centres the map data on the real-time location of the user. The Uber mobile ridehailing app uses Google Maps to organize the visual interface experience for its users (riders). Upon opening the app, Uber centres in on a user's real-time position, providing them with an up-to-date picture of service availability by displaying the number of dispatchable drivers – in the form of car icons on the map – proximate to their location.

At the same time that geolocation assembles solipsistic spatialities for Uber's users, it simultaneously aligns these with temporalities of real-timeness. Once an Uber has been hailed, riders can watch as their Uber is routed to their position, with the en-route movements of the car icon captured on screen accompanied by a numerical indication of estimated time to destination updated on-the-fly as the dispatched driver encounters traffic, hits stoplights, or is rerouted. These space-times invest users within platform ecosystems by literally positioning them at the centre of their own platform-mediated universe, affectively attuning users towards returning to the platform to regain access to a service brokered solipsistically to their hyperlocalities and real-times.

Certainly, the instantaneousness and hyper-locality of platform mediation is significant to the competitiveness of platforms such as Uber in increasingly crowded platform economy marketplaces. Commenting on Uber in a piece posted on the Uber Newsroom in 2015, Myhrvold notes that "[t]he longer Uber has been in a city, the less willing to wait for a car everyone becomes" (n.p.). One reason for this may be that if users do not find an available ride "quickly [enough] with one service, they'll hail a traditional cab or try another like Lyft" (Zand, 2015). But beyond understanding these space-times in terms of the business strategies that they may underwrite, affect theory also captures the ways in which once users are affectively invested in these ecosystems via geolocation-organized space-times of the ridehailing platform, these platform-mediated affects 'turn back' on themselves in ways described by Clough (2007), organizing an affective frame of reference which conditions user's expectations of future experiences of the platform: a potential ride available from every possible location within minutes of being requested. In other words, the hyperlocal real-times of geolocation affectively invest riders within ridehailing as a form of digitally-mediated mobility, making them inclined to repeat-consume ridehailing services via platform ecosystems precisely because of the hyerlocal, on-demand nature of service delivery. Yet simultaneously, these space-times also affectively mobilize the assembly of hyperlocality and real-timness at greater speed and scale by the platform in order to sustain the affective attunements by which riders return to ridehailing ecosystems, expecting near-immediate service dispatched on-demand to their real-time locations.

The organization of affective space-times is not unique to the brokering of services such as ridehailing, but also applies to how platforms organize access to and delivery of consumer goods. Drone delivery programs such as Amazon Prime Air,[1] which began trials in the UK in 2016 (Anthony, 2016), and Google-founded X Development's Wing,[2] which has been granted permission to begin fulfillment in the U.S. state of Virginia in the second half of 2019 (Stewart, 2019), similarly align spatio-temporal affects of hyperlocality and real-timeness for users: goods delivered near-instantaneously – in the case of Prime Air, within 30 min or less[1] of online purchase (real-timeness) – to a user-specified locations on the ground (hyperlocality). The ability of platform enterprises to operationalize these space-times for consumers through drone delivery is contingent on a complex of geolocation affordances, data, hardware components, and software technologies operationalized in concert, including but not limited to the mapping of airspace up to 400 ft[3] above ground to supply spatial data for drone flight, GPS for in-air navigation, and proximity sensors to enable object detection and initiate on-the-fly positional and flight path changes.

Here too this involves the speeding-up of the timescales on which these hyperlocalities and real-times may be assembled for consumers to within a half hour of purchase in the case of delivery times advertised by Amazon Prime Air.[1] But furthermore, for an online retail ecosystem platform such as Amazon, adding drone delivery as a component of their Prime[4] membership program also expands the range and possibility of modalities through which Amazon may organize affects that retain consumers within its ecosystem. As reported by Cheng (2018),

> The biggest contributor to Amazon's growth, Prime members spend more, buy more often and are more likely to purchase across various product categories than non-Prime member. Once hooked into Amazon's ecosystem of products and services… they stay loyal, the key to the retailer's success. (n.p.)

In the instance of drone delivery, one of the ways in which affects orient users to remain within and return to platform ecosystems is through the leveraging of geolocation to organize the desired hyperlocal real-times that align both online and offline consumption experiences with the expectations of consumers.

3.3. Experiential affects of smoothness

In assembling affective space-times for online platform retail ecosystems through programs such as Amazon Prime Air, geolocation also expresses an affective capacity as an instrumentality that organizes and aligns *experiences* of platform ecosystems. This especially pertains to consumptive experiences (of goods and services), which are affectively smoothed through the leveraging of geolocation as a coordinating force that produces seamless digital consumption experiences not only within but also across platform ecosystems.

These affects may be realized in one of two ways. The first involves streamlining the retail consumer experience across all stages of a purchase, from shopping online through to last mile[5] fulfilment. Drone delivery programs are emblematic of this, but there are other digital platform enterprises active in this space as well. Curbside[6] for instance offers a technological solution for digitally connecting mobile consumers with brick-and-mortal retail outlets by coordinating the delivery of online purchases (consumer goods, restaurant meals) to consumers (or designated delivery partners) at physical points of retrieval. Curbside's ARRIVE™[7] technology streamlines the online-to-offline shopping experience. Where a customer has made an online click-and-collect purchase from a participating brick-and-mortar retailer, Curbside's ARRIVE™ technology leverages the real-time location of the customer's or selected delivery partner's mobile device to alert retail/restaurant personnel of their impending arrival, notifying them of when to

[1] https://www.amazon.com/Amazon-Prime-Air/b?ie=UTF8&node=8037720011; accessed 28 April 2019.

[2] https://x.company/projects/wing/; accessed 28 April 2019.

[3] In the United States, the maximum allowed altitude for the operation of unmanned aerial vehicles, also referred to as drones, is 400 ft (Federal Aviation Administration, 2018).

[4] Amazon Prime is a subscription service whereby members pay an annual free to gain access to services unavailable or available at extra cost to non-member consumers, such as free fast shipping speeds on all online purchases, discounts at Amazon-owned brick-and-mortar retailers such as Whole Foods Market, and access to streaming entertainment via Amazon Prime Video.

[5] The 'last mile' describes a classic problem of getting goods from points of sale (e.g., retail outlets) to consumer destinations (homes, workplaces, local pick-up points). The growth of the 'on-demand economy' describes the flourishing of digital platforms services (Deliveroo, Grubhub, Postmates, as well as drone delivery programs) which close the 'last mile' by delivering goods to consumers on-demand rather than requiring consumers to travel to points of sale.

[6] https://curbside.com/.

[7] https://curbside.com/arrive/.

dispatch orders to a designated hand-off location as consumers/delivery partners arrive to retrieve purchases, enter a physical retail venue to pick-up online orders, or walk into a retail location to try on clothing items they may have selected in advance online (Curbside Inc., 2019). Here, geolocation is leveraged as a real-time coordinating force that links and streamlines multiple stages of an online-to-offline retail transaction so as to render the consumption process as experientially seamless as possible for the end consumer.

Geolocation is also leveraged to organize affects of smoothness across platform and application ecosystems through practices of digital aggregation. An example of this is multi-modal trip-planning platforms such as Transit.[8] Transit integrates shared urban mobility services within a single digital application, allowing users to plan journeys using a variety of modes of transport via a map-based interface (see Transit App Inc., 2019). Depending on the city and participating mobility/transportation partners in each market, these transport modes include bikeshares, e-scooters, carshares, ridehailing, as well as public transit (see Transit App Inc., 2019). The map-based interface spatially aggregates service and asset locations (e.g., a bikeshare dock or train station), shows users the availability of shared transportation assets and services proximate to their real time locations, displays travel times to user-specified destinations by multiple available modes of transportation, and allows assets and services – such as some bikeshares and rides with select ridehail partners – to be booked from within the Transit application itself (Transit App Inc., 2019). In late 2018, Transit launched Transit+, a routing utility that synchronizes ridehail trips with public transit journeys by bus ("bus + ridehail") or train ("rail + ridehail") in select cities. Where available, Transit+ allows users to choose between participating ridehail operators, informing them of travel times to public transit transfer points/hubs via different providers such that they may choose one that will deliver them to their connection point in time for the scheduled departure of the mass transit (train or bus) leg of their journey (Transit, 2018). In addition to coordinating multimodal trips by ridehail and bus/rail, it furthermore integrates ridehail booking and payment within the Transit app, creating a "fully-native experience" for users (Transit, 2018, n.p.).

Applications like Transit smooth the experience of platform-mediated urban mobility by operationalizing geolocation as a coordinating force to intermediate urban mobilities *across* platform ecosystems (e.g., all available ridehails proximate to a user's real-time position across a number of ridehail operators, or all shared transportation assets that may be utilized from a map-centred location in a given city). By integrating multiple urban transportation asset providers, infrastructures, and operators within a single app ecosystem, Transit smooths urban mobilities by investing users within a singular, cohesive, integrated digital platform experience that mitigates the impracticalities of switching between multiple branded apps of mobility actors both *across* transportation modalities (for example, toggling between a public transit journey planning app and a ridehail app) and *within* a modality class (for example, toggling between different ridehail apps to determine which one may dispatch a ride the fastest or at the best rate).

Inarguably, digital location has become central to quotidian experiences of digital platforms, be it through the ways in which content is accessed and interacted with (location-aware search, spatial interfaces); the ways in which we generate and contribute content (geotagging, personal location data mining); the ways in which we rely on location-aware devices such as sensors and digital assistants to produce 'smart' environments for us (smart cities, smart homes); and also the ways in which we interact with the world (augmented and virtual realities). Yet in refocusing on how it is that platforms attract and retain users within digital ecosystems, geolocation is more than simply the hardware or technical affordances that make experiences of the digital possible from an engineering perspective. Digital location is also an affective instrumentality that organizes how platforms and platform ecosystems are encountered and experienced by end users, and where the *smoothness* of these experiences – as underwritten and facilitated by geolocation – is central to the ways in which users themselves become affectively invested in platform ecosystems, coming to see platforms as indispensable to how they get around cities.

3.4. Affects of connectedness

Geolocation has been advanced as a basis for digitally brokering in-person social interaction since the beginning of the ascendance of social media and mobile platforms in the mid-late aughts. Originally, this was popularized in the form of 'check-in' apps such as Foursquare (whose geosocial application has since been rebranded Swarm[9]), Foursquare's now long-defunct competitor Gowalla, and even Instagram, which grew out of Burbn, an image-based check-in app developed by one of Instagram's co-founders (the image-sharing functionality was retained while the check-in utility was eschewed; Systrom and Krygier, interviewed by Raz, 2016). These early incarnations of geosocial platforms would require users to check-in by virtually declaring their location via one of these apps, and that location would be broadcast to other members of the social network, notifying friends and contacts of a real-world place where they could meet up with users in person.

Today, Find My Friends,[10] Apple's location sharing app, is natively installed on iOS devices. Footprints,[11] Family Tracker,[12] Life360,[13] Glympse[14] and other applications that support the sharing and/or monitoring of real-time locations amongst family members are routinely promoted as connected parenting platforms (Singer, n.d.; Tynan-Wood, n.d.). In line with this discursive positioning of platform ecosystems as ecologies of social connectedness, Uber riders are able to share their real-time trip status and estimated time of arrival (ETA) with their contacts (Uber Technologies, Inc., 2019). In a post on Uber's Newsroom blog in 2016, this trip status sharing funcionality was similarly positioned as being oriented around bringing users "peace of mind while [their] nearest and dearest ride on Uber" (Hagman, 2016, n.p.). These affects of connectedness are not limited to family relationships. Millennials for instance report that open location sharing with romantic partners – in which significant others are given unrestricted access to their partners' real-time digital location traces via apps – are the new normal in intimate-partner relationships, comprising an ultimate expression of commitment and trust (Grimm, 2017).

Elsewhere, Google's Trusted Contacts[13] organizes location sharing by allowing select contacts to be 'trusted' with access to a user's real-time location, where access is brokered in the form of on-demand requests which must be accepted by the user in real time rather than being granted on a continuous basis (Henry, 2016). Promoted as an app for maintaining *connectivity* during emergencies, the description of Trusted Contacts mobilizes location as an instrumentality of affects of *connectedness*. As per the website, the using Trusted Contacts, one remains "[f]indable in an emergency"; "[e]ven in situations where you're unable to get to your phone, your trusted contacts can find you" (Google, n.d., n.p.). Similarly, users may cultivate affective sensibilities of connectedness by sharing their locations with trusted contacts when they "feel unsafe or want somebody to watch out for [them]" (Google, n.d., n.p.). Frequently, such digital location-sharing and -tracking utilities are framed within discourses of the erosion of privacy which give precedence to the ability of third parties to scrape, mine, and intercept users' personal location data (e.g., Kitchin, 2015, 2017; Leszczynski,

[8] https://transitapp.com/.

[9] https://www.swarmapp.com/

[10] https://itunes.apple.com/ca/app/find-my-friends/id466122094?mt=8

[11] http://www.footprints.net/

[12] https://myfamilytracker.com/

[13] https://www.life360.com/

[14] https://glympse.com/get-glympse-app/

2015, 2017). But as the Trusted Contacts example underscores, geolocation also functions as a techno-discursive instrumentality that underwrites the affective expression and enactment of social, familial, and romantic relations of connectedness performed through the sharing and monitoring of personal locations via digital platforms and their affordances of connectivity. Building on Hjorth et al.'s (2018) conceptualization of practices around mobile location in female same-sex relationships as forms of 'care at a distance' whereby location sharing and monitoring are a means of performing care for and of being cared for amongst intimate partners, location sharing and monitoring through geosocial applications may also be understood as affective performances of 'connectedness at a distance' through which individuals both express and experience sensibilities of continuous technologically-mediated connectivity. These affective sensibilities occur across distance in both the spatial sense (physical separation) as well as in the metaphorical sense of sociality in an emerging reality increasingly characterized by norms of communicating and interacting digitally even when physically co-present with others in the same space.

3.5. Affects of trust

Geolocation not only leverages interpersonal trust to organize affects of connectedness for platforms by, for instance, organizing access to location sharing around 'trusted contacts', but digital location is itself also being leveraged as an instrumentality of securing trust *in* platform ecosystems. An example may be found in the use of mobile location to secure financial transactions. Zumigo[15] for instance supplies a technological solution that leverages the real-time position of customer mobile devices to authenticate the legitimacy of financial transactions. For example, if a credit card transaction is attempted within the proximity of the customer's real-time mobile location signal, it is considered likely legitimate; if, however, a transaction is attempted at a significant distance away from the customer's real-time smartphone position, it may be flagged as potentially fraudulent (The Associated Press, 2015). Location is also being used to secure against the spread of misinformation on digital platforms. In a bid to "increase authenticity and transparency" on its platform by "prevent[ing] organizations and individuals [from] mislead[ing]" its users about "who they are and what they're doing", Facebook for instance now requires administrators of Pages (business, organizational, and celebrity profiles) with large audiences in the United States and the European Union to confirm the primary country location from which these pages are managed (Facebook, 2019, n.p.).

Mobilizing an understanding of location as implicated in arranging transparency and security for platforms informs a nuanced understanding of how it is that users become invested in platform ecosystems *despite* the ways in which platforms themselves undermine user confidence in digital systems through practices such as psychometric profiling and microtargeting (e.g., Cambridge Analytica; Catwalladr and Graham-Harrison, 2018), covert user experimentation (e.g., the manipulation of potential romantic partners shown to users by online dating platform OKCupid; Hern, 2014), and regular data security breaches, including those involving the theft of personal location data (e.g., a 2018 hack of Facebook in which the location data of 14 million Facebook users was stolen; Franceschi-Bicchierai, 2018). In other words, everyday negotiations of the "uncertainties about how data might be used or accessed in the future" and "anxieties" around the loss of personal data and data privacy require an instrumentality through which platforms become affectively re-oriented for users as spaces of certainty in which they "[feel] and [know] enough to be able to take the next step" by joining, contributing to, participating on, and/or remaining within or returning to the platform in the face of the complexities of the "digital mess" of everyday life (Pink et al., 2018, p. 1-3). Pink et al. (2018) name this affect of "feeling and knowing enough to take the next step" *trust* (p. 3). As an affective capacity to invest users in digital ecosystems, geolocation is leveraged to build trust in platforms by organizing technics and discourses of authorization (digital transactions), and of securitization (against misinformation).

3.6. Affective value of geolocation

In thinking through affects of geolocational space-times, experiential smoothness, connectedness, and trust, the emphasis has been on platform end users. But geolocation is also leveraged to organize affects for platform ecosystem designers, developers, marketers, and entrepreneurs. Specifically, geolocation is operationalized as an instrumentality for structuring and quantifying user engagement - interaction and contribution - on platforms. An example may be found in the map analytics platform Mapticks,[16] which allows developers and marketers to quantify user interactions with digital map interfaces, embedded map objects, and web map applications built using, amongst others, Google Maps, Leaflet, ArcGIS Online, and OpenLayers (Mapticks, 2018a). These metrics – which include map loads, bounce rates,[17] average duration of map interaction, and the most interacted-with sections/objects of a digital map – are aggregated and made accessible to marketers, designers, and developers via a dashboard interface that summarizes how inclusion of a map element in a digital product (website, app) increases user engagement while simultaneously capturing how users interact with these map objects (e.g., through zooming, scrolling, panning, etc.) (Mapticks, 2018a, 2018b).

In giving "companies rich insights about their web maps, their audiences[,] and potential customers" (Mapticks, 2018a, n.p.), Mapticks mobilizes the *affective value* of geolocation for digital marketers and developers. As advanced by Cockayne (2016a), affective value captures the significance of content generated through user engagements with social media wherein the reams of data being produced have no immediately discernible monetary value as a commodity and do not generate revenue for these platforms in and of themselves (Cockayne, 2016a). Rather, the 'affective value' of geolocation becomes understood instead as immanent to geolocation's capacity to organize the capture, "appropriation[,] and circulation of user attention" within digital ecosystems more broadly (Cockayne, 2016a, p. 1). Geolocation, in other words, invests developers, marketers, and entrepreneurs in the speculative potential of geolocation – in the form of embedded interactive map objects and interfaces – to organize attention economies for end users. These attention economies are predicated on investing users themselves in digital platforms by "attract[ing] 'eyeballs'" (Marwick, 2015, p. 138), expanding opportunities for user engagement by providing additional interactive elements (interactive map objects), and extending the duration of user visits (how long users remain within a digital ecosystem).

The mobilization of the affective value of geolocation may similarly be evidenced in the ways in which Snapchat's[18] geofilters have been written about and promoted in online coverage. Geofilters may be described as stickers or stamps – often including the name of a place/location (such as a city, district, or landmark), venue, or commercial brand – that are attached as overlays with images ('Snaps') shared via the app. Several years ago, Snapchat partnered with Foursquare to gain access to its database of over 105 million named places (Foursquare, 2019), and extended marketers the opportunity to sponsor custom branded geofilters as instruments through which to raise brand

[15] https://zumigo.com/

[16] https://maptiks.com/.

[17] Bounce rate refers to the percentage of users who exit an application or leave a website directly from the first page or interface rather than remaining within and navigating to other resources (pages, interfaces, etc.) within the digital ecosystem of an app or website.

[18] https://www.snapchat.com/.

awareness and to drive consumer conversion (whereby digital activity within a platform ecosystem translates into an online or offline purchase and/or visit to a commercial venue such as a store or eatery) (Farber, 2016). According to Francis (2016), it only takes "3 Easy Steps" to "Win the Battle of Attention" with geofilters. Elsewhere, per Herlihy (2016), geofilters are a brand growth strategy realized through mobilizing real-world location – Snapchat's geofilter pricing is based on the location, geofence size, and duration of the filter (Snap Inc., 2019) – at a time where the geofilter will have the greatest exposure and thereby the greatest influence across the Snapchat platform. Here again digital location is being discursively mobilized to affectively attune digital developers and advertisers to the capacities of geolocation to both organize spatio-temporally contingent user attention economies and to ultimately convert that attention into both online and offline consumption.

Importantly, the affective value of geolocation as it is discursively mobilized to invest developers, advertisers, and entrepreneurs in the affective potential of digital location to assemble attention economies is further illustrative of the ways in which affective processes turn back on themselves within information/communication systems (Clough, 2007). These affective values are (re)cycled within the platform ecosystem by driving the curation of "modalities" of "affective engagement" (Fisher, 2016, p. 100) – in the form of affordances such as native geotagging or abilities to add geofilters to Snaps - that attract, circulate, and sustain user attention, affectively orienting end users towards remaining within platform ecosystems (by, for example, extending visit duration).

4. Towards an affectively-oriented theory of geolocation and platforms

This paper has linked scholarship on geolocation, affect, and platforms to engage with the intensifying integration of digital location and digital ecosystems outside of political economic narratives. In order to get at what it is that geolocation 'does' for platforms beyond serving a commodity or market-making function, I have mobilized affect as both theory and method (Clough, 2007): as a framework for situating geolocation and digital platforms within contemporary configurations of 'the social' constituted by bodies, non-corporeal materialities, and technology; and as an analytic to capture the instrumental capacities of geolocation and platforms alike to express, orient, and be oriented by intensities (sensations, perturbations) that individually and collectively invest users in platforms via attunements, predispositions, and/or incentivizations towards using, participating on, contributing to, and/or remaining within and returning to platform ecosystems. I theorize these orientations as *platform affect*, using geolocation as an entry point to identify specific *platform affects* organized for platform ecosystems (affective space-times; affects of smoothness, connectedness, and trust; and affective value), further identifying the specific technics (mechanisms and affordances) that underwrite these affective orientations (including but not limited to map-based interfaces, interactive map objects, locational awareness of devices, geodata, and mobile location sharing).

Theorizing platforms and geolocation affectively advances debates in digital geographies and geographic information science (GIScience) as well as platform scholarship across a number of corollary fields, including media studies, science and technology studies, geography, and urban studies. First, conceptualizing geolocation as *affective* – as expressing capacities for organizing intensities for digital ecosystems – informs an understanding of digital location as more than simply a suite of planimetric techniques and technologies in the sense of applications of scientific methodologies for placing and visualizing digital content, objects, and persons in Cartesian space, or positional and tracking technologies in the sense of hardware/software devices such as GPS chips, routers, beacons, etc. (e.g., Chen and Kobayashi, 2002; Crampton et al., 2013; Djuknic and Richton, 2001; Fargas and Petersen, 2017; Miklós et al., 2005). Rather, affect informs a conceptualization of geolocation as a technology in the Foucauldian sense of a discursive-material capacity that "molds, adapts, triggers, and stimulates" bodies and objects alike (Behrent, 2013, p. 60). As theorized and empirically substantiated in this paper, geolocation expresses a capacity to align and attune corporealities and inorganic materialities in ways that work to invest users in platform ecosystems by organizing and orienting affects for platforms. In theorizing geolocation affectively, this intervention advances now decade-old efforts within GIScience to engage spatial information and technologies via theories of affect by broadening the emphases of this antecedent work beyond its exclusive concern with the (geo)visual (Aitken and Craine, 2009; Kwan, 2007). Concurrently, this intervention also advances current efforts within digital geographies to identify the "dynamics driving the integration of geographic information into the digital economy" (Alvarez León, 2016b, p. 1) by identifying dynamics (affects) beyond those of economic markets and commodity functions.

Leveraging geolocation and its affects as an entry point for engaging with digital platforms also does work towards placing platforms at the centre of contemporary socialities comprised of "configuration[s] of bodies, technology, and matter" (Clough, 2007, p. 2). This advances platform-oriented research agendas by opening up a new horizon of theorization that engages with platforms as themselves affective, i.e., as both organized by affects (of geolocation), and as systems that organize affects in particular ways – namely, through recombinant architectures (Barns, 2019) that underwrite the (re)cycling and accumulation of affects rather than merely their distribution between nodes in networked topologies of digitality. Understanding platforms as affective adds explanatory power to their rapid ascendance to dominance at the centre of these contemporary configurations beyond solely their capacity to exploit network effects or to intermediate multi-sided markets (Langley and Leyshon, 2017), their ability to capture and monetize user attention (Cockayne, 2016a; Marwick, 2015), their successes in positioning themselves beyond the reach of regulation while appearing as regulatory actors in their own right (Ferreri and Sanyal, 2018), or their disruptive casualization of labour (Rosenblat, 2018). All of these capacities are arguably contingent on platforms' abilities to *invest* users in digital ecosystems via expressing intensities that affectively orient users towards participating on, contributing to, and remaining within and returning to platforms. Geolocation helps to identify how such affects – and what kinds of affects – are (re)cycled within and across platform ecosystems linked through recombinant architectures (Barns, 2019).

This paper has intentionally emphasized how geolocation organizes affects for platforms. It has not, however, engaged with the myriad ways in which affects are also organized *for* geolocation within platform ecosystems through, for example, digital nudges meant to prod users into accepting lax locational privacy setting that give platforms access to personal spatial big data productions by default (Mitchell, 2019), or via the gamification of contributing volunteered geographic information to platform ecosystems (Payne, 2019). In addition to examining what geolocation 'does' for platforms, examining what it is that platforms 'do' for geolocation would prove a fruitful corollary for future engagements similarly working at the intersections of debates around affect, platforms, and digital location.

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