The Platform Economy and Geography: Restructuring the Space of Capitalist Accumulation

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ABSTRACT

Digital online platform firms are reorganizing the geography of how value is created and who captures it and where. This essay argues that economic geographers have underestimated the power of platform and the firms that control them. We further demonstrate the remarkable concentration of these firms on the U.S. West Coast even while they organize global ecosystems. We suggest that a new spatial fix for the core of the global capitalist economy is emerging. We build upon a taxonomy of platform economy labor types and the location of the various types of labor and the implications of the ability of platforms to extract value from this labor. To illustrate, the impact on the geography of value creation, we undertake cases studies of two platforms, Amazon and Google Maps to explicate their effects upon the location of economic activity. Platforms are increasingly reorganizing labor and the location of value creation We argue that platforms are a new organizational form that is the result of an asymmetric power relationship between a platform and an ecosystem of complementors and users that interact and transact through platform. These platform leaders have the largest data sets and have created enormous teams of the best AI, machine learning researchers, and, finally, have enormous reservoirs of capital with which to capture new technologies that may threaten them.

Keywords: Platform Economy, Amazon, Google Maps, labor, power, geography
1. Introduction

Digital online platform firms are reorganizing the geography of how value is created and who captures it and where. This essay reflects upon what the emergence of the digital platform as the organizational center for an increasing amount of economic activity means for geography. The platform economy is recasting spatial relationships that will certainly generate and, perhaps, already has generated a new spatial fix that reflects the geographical location of key firms (Harvey, 1981). We argue that platforms are a new organizational form that consists of a relationship between the platform and the ecosystem of complementors and users that interact and transact through it. This is giving rise to what many have termed the “platform economy” (Kenney & Zysman 2016) or “Platform Capitalism” (Srnicek, 2017). These platforms, with their enormous amounts of data, are the leaders in using artificial intelligence to optimize their business models, as their operations are a combination of algorithmically-driven processes and, of course, human decision-making.

The first section starts by reviewing economic geographic thinking about digitalization and suggests that the literature has largely focused upon websites and software and has not made the distinction between this and online digital platforms. We provide a brief definition of a digital online platform, and then discuss the power that digital platforms have accumulated over the last approximately fifteen years as they have come to intermediate ever-increasing segments of social and economic life. This sets the ground for the next sections. The second section discusses how platforms are reorganizing work. That reorganization means that it is as important to think about “income generation” as about more traditional categories such as employment. The third section poses the question of whether the adoption of platforms will be different in the business-to-business area than it has been in the business-to-consumer field. These issues are then explored further in a case study of Amazon, which is ideal because Amazon is impacting both labor organization and
industry organization – effectively, Amazon exemplifies so many of the critical issues raised by the emergence of a platform economy.

2. Analyzing Digital Platforms and Economic Geography

The online digital platforms with which we are concerned, act as intermediaries connecting people and objects to people and/or objects. Digital platforms have been defined in a variety of ways (Parker et al. 2016; Evans et al. 2008). For this paper, we adopt Gawer’s (2014) definition “that platforms are evolving organizations or meta-organizations that: (1) federate and coordinate constitutive agents who can innovate and compete; (2) create value by generating and harnessing economies of scope in supply or/and in demand side of the markets; and (3) entail a modular technological architecture composed of a core and a periphery.” Online digital platforms have a powerful generative potential, that is, their ability to create new output, structure or behavior (Zittrain, 2008).

To encourage use, platforms provide users with various social and technical boundary resources, such as application programming interfaces that provide access to data, software development kits, and various templates that dramatically lower the cost of usage (Gawer, 2009; Ghazawneh & Henfridsson, 2013). What is significant is that a successful platform must attract and connect some combination of users (e.g., those using Facebook), customers, service or product providers, advertisers, and other actors that collectively form the platform’s ecosystem. Thus, to be successful, platforms must be designed in ways that attract ecosystem participants by providing services or resources that they want (Caillaud & Jullien, 2003; Parker & Van Alstyne, 2005; Rochet & Tirole, 2006). A platform can be as “simple” as Google Search, connecting a searcher with a site, as Facebook connects people to other people and delivers their information to advertisers, or as Amazon that sells not only directly to customers, but, more important, through its Marketplace connects third-party connecting vendors to customers; all of these core functions are
already being optimized using AI and, as AI improves will have it further integrated into their core algorithms and businesses.

Platforms have other important features. As we will demonstrate below, successful digital platforms are often the beneficiaries of network effects that result in winner-take-all or, at least, most of the market, thereby creating quasi-monopolies. To initiate these network effects, initially it may be necessary to subsidize one or more sides of the platform with resources that can include software, services, and free use of the site in order to incentivize adoption and later lock-in. When successful, the platform creates an ecosystem of actors that are profoundly dependent upon it (Cutolo & Kenney, 2019) and can attract 100s of millions and even billions of users around the world.

Economic geographers studied the impacts of the digital technologies but the bulk of this research was undertaken during or in the aftermath of the 1990s Internet Bubble (Castells, 2000; Malecki, 2002; Zook, 2000). After the collapse of the Internet Bubble interest in the geographic consequences of digital technologies waned, though Rob Kitchin and Martin Dodge (2005) argued that software, through its ubiquity and indispensability in an increasing number of activities, was blurring or even determining the use of space. Bruno Moriset and Edward Malecki (2009: 271) concluded that the “main effect of IT-enabled informational ubiquity is to provide individuals, enterprises, and communities, wherever on Earth, with a greater choice for shaping an enterprising future.” This conclusion was prescient and suggested that the digital technologies allowed a greater dispersion of economic activity and increased the ability of producers to reach ever more distant consumers. Effectively, a liberation of commerce from the previous bonds of the friction of spatial discoverability.

While Moriset and Malecki (2009) believed that the Internet would change the role of distance and thereby impact the organization of capitalism. Their perspective was not shared by all geographers. For example, Matthew Zook and Taylor Shelton (2016: 9) conclude:
The Internet has undoubtedly played an important role in the evolution of global capitalism over the last two decades. While the changes are significant, they are best characterized as a reconfiguration or intensification of existing structures and processes, rather than a wholesale creation of new forms of economic organization that are somehow qualitatively distinct from previous eras.

Reiterating this position, Zook and Mark Graham (2018: 382) conclude from a study of how a few travelers game airline frequent flier programs “that some analyses of code in everyday life have over-emphasized” the power of software and code. \(^1\) The prevailing view regarding the constitutive powers of the software and code was that, while important, the changes driven by the internet reinforced the existing business structures and arrangements (see Ressig, 2009). \(^2\)

Some labor researchers also share the view that the changes the internet has caused are incremental. For example, in 2018, the International Labour Organization concluded “work on these platforms resembles many long-standing work arrangements, merely with a digital tool serving as an intermediary” (Berg, Furrer, Harmon, Rani, & Silberman, 2018). This conclusion understands platforms as being merely an “intermediary.” Their conclusion, as was the case with Zook and Graham, is true, in the same way, as the fact that the introduction of the moving assembly line did not change the fact the workers in factories were employed in producing and received payment for the labor time. Yet, such a conclusion would be short-sighted, as the assembly line allowed the reorganization of production, created entirely new work categories and led to a new geography of capitalist accumulation and transformed consumption patterns. In addition, the terms of competition also changed.

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\(^1\) Parenthetically it should be noted, that gaming of airline frequent flier programs or, in fact, algorithms and platforms such as Google Search, Facebook, or other ranking and reputation algorithms does not appear to have affected their earnings or overall success, as witnessed by remarkable profitability, valuations, and rapid growth. As an illustration, in 2019 Google earned over $120 billion per year and continued to grow at 17% per year. As Burawoy (1982) observed, gaming systems under normal conditions does not disrupt, but rather reinforces the regime of control.

\(^2\) In contrast, in their earlier paper on GM and Earth suggested that the power of these digital platforms was far greater in being able to frame action (Zook & Graham, 2007).
The mistake analysts made is to treat websites and networks as the same thing as platforms. They have consequently missed the importance of platform power on spatial organization. While economic geographers have made enormous progress analyzing the relationship between space, digitalization and the role of networks, they have focused far less attention to the fact that certain key Internet firms are not just websites or even massive multinationals, but rather platforms connecting enormous numbers of users/customers with service providers, advertisers and/or other users. In other words, they have been less concerned with the power that these platforms wield and, thus have missed the impacts of their power on the spatial organization of this new way of organizing the economy. Koen Frenken et al. (2018) suggest that platform dynamics are a new institutional logic, neither markets or hierarchies, but organizational forms that reroute an increasing portion of economic (and political and social) activity through digital platforms (van Dijck et al. 2018). Whether this is understood as new institutional logic or, to revert to the terms of the regulation school of political economy, as a new regime of accumulation, we argue that the platform economy is already shaping the geography of economic activity (see also Langley & Leyshon, 2017).

The apex platform giants such as Amazon, Apple, Facebook, Google, and Microsoft are becoming increasingly central firms in capitalist economies -- in October 2019 these five platform firms – and two Chinese giants, Tencent and Alibaba, constituted seven of the ten most valuable firms in the world. Along with a number of sectoral platform firms, such as, Airbnb, Expedia, Priceline, Salesforce.com, Shopify, Uber, etc., they have become the intermediaries organizing, reorganizing or even transforming a host of industries (Parker et al., 2016; van Dijck, 2013). It is important to note that this paper does not include, the largest single internet market in the world, China, because it is largely self-contained, but where a similar dynamic is underway (Jia, Kenney, 3 Microsoft was, of course, the platform owner during the personal computer era, but its dominance never reached beyond the personal computer itself. More recently, its cloud computing platform, Azure, has become significant. Its increased importance in the platform economy comes through its purchase of platforms such as Skype, LinkedIn, and, most recently, GitHub, and its Office 365 platform.
Increasingly, digital platforms are inserting themselves into industry value chains and labor markets and thereby transforming them and the location of value capture (in terms of labor, see Kenney and Zysman 2019a; Kenney, Rouvinen, & Zysman, in press; for entrepreneurship see Cutolo & Kenney, 2019). Not only are platforms organizing markets by disintermediating incumbents and providing opportunities for new entrants but, in many respects, they have become private regulators (Bearson et al., 2019).

3. **Locating Power in the Platform Economy**

   Digital platforms have developed enormous power through their role as an intermediary and connective agent. The orchestration of that power is concentrated while its consequences are dispersed. The reach of these platform firms is staggering and perhaps only rivaled by the oil giants such as Standard Oil, Royal Dutch Shell, and British Petroleum at the peak of their power. However, in contrast to the oil industry giants, these platforms have virtual presence and are able to integrate anyone with a computational device and telecommunications access into their business logic, despite having only limited or even no physical presence.

   The concentration that we illustrate in this section has two components with one result. The *first* component is that in each sector one or two firms control the preponderance of the market and the dominant players are constantly expanding into adjacent markets. The *second* component is that the headquarters of these platform giants is overwhelmingly concentrated in the San Francisco Bay Area and Seattle – roughly resembling the role of Detroit in an earlier era, but for the entire world ex-China. This means that the logic of the platform economy is largely being dictated by the business imperatives and ideology of the West Coast and that an increasing share of the globe’s wealth is being rerouted to these two locations.

   The dominant digital platforms have enormous reach. In **Figure One** we list the platforms outside of China that have 300 million or more users every month. Because the global telecommunications infrastructure already exists and, in particular, the availability of smart phones,
the rapidity with which these platforms add users is astonishing. For example, in 2012 Google launched Drive and by 2018 had one billion users. If we consider that the 1.4 billion located in China are largely unavailable to the Western platform giants, then there are approximately 6 billion people available to be connected. Of course, most important is that, in theory, each connected user can be monetized.

Figure One: Global Monthly Active Users on Various U.S. Platforms

The implications of their reach and dominance are revealing. For example, the Google search engine, which has in excess of 80% of the market, is available in 149 languages and Google
As the librarian of the Internet, if Google cannot find a website, then, in many respects, the website does not exist. Similarly, if Google Maps (GM) cannot find a business, in important respects, it does not exist (for a perspective on GM, see, Graham & Zook, 2011). In some respects, Google has the power of ratifying existence. Facebook controls the world’s social communications, while LinkedIn (Microsoft) controls professional social networks.

The dominant platforms are not just intermediaries; rather they are powerful actors shaping markets, market rules, and attitudes. To illustrate, if advertisers wish digital connections with potential customers, there are only a few primary paths – Google, Facebook, or Amazon. There are two dimensions that this section explores, namely the number of human beings that the various mega-platforms serve (or aggregate) and the market share of each platform. These two dimensions, size and market share, is a rough gauge of their power. The market size captures one dimension of the amount of time users spend on a platform or what some have termed the “attention economy” (Davenport & Beck, 2001).

The markets that these firms operate in are extremely concentrated by comparison to traditional industrial businesses. To provide a few comparisons, despite enormous consolidation there are still 14 significant-sized auto makers (ex-China), at least 6 large private petroleum industry firms (and many more if one considers the national oil firms), and even larger number of steelmakers. In contrast, as Table One shows for the digital platforms the markets are remarkably concentrated. Outside China, there is only one dominant search engine, one or two dominant social media sites, one dominant e-book seller, one or, perhaps, two dominant online merchants, one dominant mapping program, two smart phone operating systems, and three online travel sites (though Google Travel is threatening these two). The concentration is remarkable.

**Table One:** Estimated Current Market Share for Various Platforms, Most Recent Estimate, and Firm Location

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4 Consider the problem when someone searches, for, for example, “Ford pick-up trucks,” if General Motors bids more for the advertisement, it will be seen by the searcher for the Ford. This means that Ford must bid for the Google or Facebook advertisement to prevent its competitor from intercepting a potential customer.
If the sectoral concentration is remarkable, the geographic concentration of control is even greater as the headquarters for these firms is almost entirely concentrated on the West Coast of the United States (See Table One). There is only one exception, the largest single market, China, is closed to these firms. The few platform markets within which non-West Coast firms are significant are vertical markets, such as travel and music. Moreover, the travel and music sectors are experiencing encroachment from the mega-platforms, Apple, Google, and Amazon. For example, in music, YouTube is far larger than Spotify, and, recently, Google Travel has gained market share in hotel and airline search results.

The success of Silicon Valley startups in securing a dominant position in the digital platforms is, in part, a function of the fact that Silicon Valley already dominated the earlier wave of internet commercialization (Kenney, 2003; Mowery & Simcoe, 2002). Seattle, with three leading platform firms, Microsoft, which is a legacy of its dominance in personal computer operating systems, Expedia, which was a Microsoft spinoff, and Amazon, is the other pole of the internet industry. In the most recent wave of investment, made possible by the adoption of the smartphone, Silicon Valley venture capitalists invested enormous sums into firms such as Airbnb, Lyft, Slack, Uber, and Zoom in the hopes that they would disrupt and dominate particular market segments (Kenney & Zysman, 2019b). In 2019, Silicon Valley and Seattle are the centers for the study of big data,
AI, and all manner of advanced computational techniques; both inside existing platform firms and at a myriad of startups.

There also was an ideological aspect to this movement as Silicon Valley firms, in particular, nurtured a culture articulated by Mark Zuckerberg who advocated “moving fast and breaking things”, while venture capitalists suggested that entrepreneurs should “not ask permission, but rather forgiveness.” This was motivated by the belief that a new platform could be created to dominate a particular market and it would benefit from network dynamics and result in a winner-take-all outcome (Shapiro & Varian, 1998). Assuming this outcome, meant that the overarching goal was to “tip the market”. After the market was tipped, one could deal with legal and consumer objections from a position of strength. These beliefs were not simply ideological, as Table One indicated in nearly all sectors for a specific service, one or two firms control greater than 50% and, in many cases, in excess of 75% of the entire market. Such market concentration, it was hoped would provide the successful platform an opportunity to secure monopoly-like profits.

The location of the significant internet platform firms is more concentrated in two regions, the San Francisco Bay Area and Seattle, than any electronics technology in history. Even in semiconductors, computer networking equipment, and general software, there were significant competitors from outside these two regions. In 2019, in terms of power, earnings, revenues, and any other metric, when one excludes China, there are no significant platform firms located outside these two regions.⁵

Often that these platforms have replaced activities that were previously local and centralized them onto a platform in the “cloud.” Consider, for example, one of the earliest platforms, San Francisco-based Craigslist, which absorbed classified advertisements from newspapers, while it only charged for employment advertisements, it destroyed the classified advertising – one of the

⁵ The LA firm, Snapchat, is a smaller competitor in the social media market, Booking.com located in the Netherlands is a powerful online travel agency, Spotify is a globally significant music platform.
mainstay income sources for local newspapers. Similarly, the rise of online travel agencies such as Expedia and Booking.com control approximately 39% of all online bookings (Kelly, 2017), and thereby replacing local travel agents. Amazon, which we discuss later in more detail, is directly leading to an ongoing shake-out in bricks-and-mortar retail globally (LaVecchia & Mitchell 2016). Finally, Google, the global giant, is increasingly important in finding merchants locally, thereby forcing them to advertise on its platform and thereby extracting value from the local market and centralizing it.

4. Geography of Work and Value Creation in the Platform Economy

New paradigm-shifting technologies often have reshaped the geography of labor and work. In keeping with Zook and Graham, some geographers concluded, perhaps correctly at the time, that the locational impacts of “e-commerce remains bound by geography to a far greater extent than is often suggested” (Wrigley, 2000:309). What Wright could not see is that what was e-commerce in 2000 would evolve into multi-sided digital platforms for sales. The platform economy has ushered in a complex division of labor that affects the geography of work and value creation. We illustrate this by introducing a taxonomy of the types of work generated by platforms (see Table Two) and briefly explore the implications of this division of labor for the reorganization of space of work.

Table Two: Labor Force Taxonomy and Location of Value Creation in the Platform Economy

<table>
<thead>
<tr>
<th>Type of work</th>
<th>Employment type</th>
<th>Typical examples</th>
<th>Headquarters location</th>
<th>Labor</th>
<th>Value creation process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform firm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venture labor -- Salary and stock options – excellent</td>
<td>Full time</td>
<td>Google, Amazon, Facebook, Snap, Airbnb</td>
<td>Silicon Valley and Seattle</td>
<td>Silicon Valley and global</td>
<td>Create and maintain platform</td>
</tr>
<tr>
<td>Contractors to platform firm – salary by task – precarious</td>
<td>Full or part time</td>
<td>Dynamex, LeapForce, Cognizant</td>
<td>Proximate and global</td>
<td>Proximate and global</td>
<td>Routinized</td>
</tr>
<tr>
<td>Platform-dependent work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market intermediation</td>
<td>Independent compensated</td>
<td>Amazon, Craigslist, eBay,</td>
<td>Silicon Valley, Seattle, New</td>
<td>Global</td>
<td>Sell products</td>
</tr>
<tr>
<td>– by sales – precarious</td>
<td>by sales revenue</td>
<td>Etsy, Booking.com, Expedia, Airbnb</td>
<td>York</td>
<td>online</td>
<td></td>
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</tr>
<tr>
<td>In-person service provision – by job – gig</td>
<td>Service contracted through platform</td>
<td>Uber, Lyft, PostMates, GrubHub</td>
<td>Silicon Valley</td>
<td>Global but local</td>
<td>Provide service, can monetize assets</td>
</tr>
<tr>
<td>Remote service provision – by job – gig</td>
<td>One-time project contract</td>
<td>Upwork, Fiverr, InnoCentives, AMT</td>
<td>Silicon Valley</td>
<td>Global</td>
<td>Project work</td>
</tr>
<tr>
<td>Digital content creation – by download or view – share of sales or advertising</td>
<td>Independent by sale</td>
<td>YouTube, Apple App Store, Google Play, Twitch, Spotify</td>
<td>Silicon Valley and other locations</td>
<td>Global, some clustering of creators, e.g., YouTubers in Los Angeles</td>
<td>Content creation and sale online</td>
</tr>
</tbody>
</table>

Platform-monetized content

| Internet website producers – salary or contract – varies widely | Employed or contractors | All organizations with a website | Silicon Valley | Global | Build websites, etc., for their organization |
| User-generated content – use of platform – free content creation | Free labor | Google, Facebook, Yelp!, Snapchat | Silicon Valley and other locations | Global | Contribute content data from which value is extracted |

Source: Adapted from Kenney and Zysman (2019a).

The entrepreneurial and managerial core of these firms is concentrated in their home bases, Silicon Valley and Seattle. While these firms operate globally and have enormous staffs in cities such as Bangalore, Dublin, London, and New York, their total headcount remains remarkably concentrated in these two cities. This elite, termed by Neff (2012) as “venture labor” work directly for the platform and are expected to work long hours in opulent environments, which receiving excellent pay and receiving remarkable benefits, such as, meals, and many personal services – all provided by contractors. The remarkable wealth these firms have generated and the compensation, in particular, the capital gains has dramatically affected the composition and character of their host cities and, in particular, the San Francisco Bay Area and Seattle, by driving up housing prices (McNeill, 2016).
These core employees are augmented by an enormous number of largely invisible contract employees; some of whom work side-by-side with the core employees. Others work at anonymous facilities proximally close to headquarters and remotely, while yet others work from home. Recent estimates suggest that the platform giants have as many or more contractors working for them as regular employees (for Google, see, for example, Wakabayashi, 2019). Employed by various labor contracting firms, these workers discharge any number of tasks ranging from on-site manual work such janitorial, bus driver, and cafeteria jobs to coding, content moderation, search and AI training, and many other tasks. For some of the most mentally grueling tasks such as content moderation; many of the contractors are located in the developing world (Gillespie, 2018).

As we mentioned earlier, one of the largest impacts of these platforms is how they vastly expanded the market, in terms of the geographic reach and allow far more people to transact in the market. Customers to discover distant merchants, while the platform’s brand and reputation and ranking systems provide the basis for sufficient trust to undertake a transaction. Further, now anyone can transact from their residences or any other location. This is contributing to transformation of physical retail that is leading to relocating sales from the mall stores to warehouses and individual residences, while logistics is being reformulated (this is discussed in greater detail in the Amazon section).

Platforms have also been introduced for service provision, both in-person and remote. The in-person provision of services has often been inappropriately termed “the sharing economy” (Schor, 2016). The best-known, in-person service providers are transportation network firms such as Uber and Lyft and their delivery service cousins that include DoorDash and GrubHub. Uber and Lyft have become significant components of urban mobility systems and have changed the way Americans think about transportation. In a similar manner, there is an increasing expectation that of food delivery on demand. The immediate spatial impacts are that these services are contributing

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6 All of these services are provided for a fee and thus nothing is being “shared” in the normal meaning of the word.
to even greater traffic congestion and redirecting some riders from mass transit (Erhardt et al., 2018; Rayle et al., 2016).

Platforms such as Upwork, Freelancer, Fiverr and others, make it possible for anyone having a project that can be done remotely to contract freelancers located anywhere in the world (see, for example, Huws, 2016; Huws et al., 2018; Popiel, 2017). For well-defined tasks including training artificial intelligence software and search engine optimization, these platforms provide labor, but they remain relatively small when compared to the platform giants. While Upwork is headquartered in the San Francisco Bay Area, the headquarters of these labor platforms are not concentrated in a particular location.  

A number of platforms such as the Apple Appstore, Google Play, YouTube, Twitch, and many others provide independent developers, creators, and influencers the opportunity to create virtual goods to be consigned to a platform to monetize. In 2018, the largest of these, the Apple App store based on the iPhone, paid $34 billion to its developers (Kelleher, 2018). It was followed by the Android-base Google Play store, which paid out roughly half that of Apple. In 2018 YouTube is estimated to have had income of between $9.5-$14 billion, which, if 55% is shared with the creators, would amount to between $5.2 and $7.7 billion (Iqbal, 2019). These digital platforms a global market for creators. However, this observation is complicated by the fact that there is evidence that creators concentrate in a few places. For example, Los Angeles has attracted many of the most prominent YouTubers, but also has spawned an ecosystem of suppliers of services to creators in both Los Angeles globally. It is also the location of the largest video blogger’s convention, Vidcon (Craig & Cunningham, 2019). App developers are concentrated in San Francisco, Beijing, Tokyo, and Seoul (Pon, 2016). Paradoxically, while creators can be based

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7 On reason that the growth of these platforms is limited may be that the tasks their freelancers undertake must be quite simple. They are not amenable to outsourcing complex tasks that require hierarchies to manage and are ongoing. For example, to outsource a business process that will be ongoing does not lend itself to one-off contracts.
anywhere, there continues to be a centripetal “pull” of geography in this apparently “space-neutral” activity.

The final two categories, internet website producers and user-generated content are the basis of many of the most powerful and transformative platform firms. The advent of Internet meant that all organizations everywhere had to build websites – it is impossible to calculate the human labor power that has gone into building those websites. However, for that work to be valuable the website must be discoverable. Google has captured this role as it is librarian of the Internet– and monetizes its role by delivering advertisements. Quite simply, this means that means that for every search against which Google places an advertisement creates income. Whether that search be in Bangkok, Kankakee, or Berlin, if there is an advertisement Google receives income. As we discuss later, increasingly, GM is about search for a physical location and is becoming a powerful platform for advertisement.

The final category of value creation is user-generated content, which is provided by users to platforms, in a variety of ways (Terranova, 2000). At the most basic level, the use of a platform generates data that Mark Huberty (2015) termed “digital exhaust” as we move from page to page or website to website. However, the highest value UGC likely comes from the enormous amount of content that is uploaded by users to Facebook, Instagram, LinkedIn, Snapchat, and other websites and the remarkable amount of content in the form of user-generated ratings and opinions that create reputation and trust. This content is at the core of the business models for many platforms. The sheer mass and variety of content being created is remarkable when one considers the billions of monthly active users; all generating content that can potentially be monetized.

The geography of value creation and capture are in a fundamental flux, as the integration of ever more businesses into the various platform’s ecosystems continues. At the local level, to be discovered ever more firms are dependent upon Google Search and Maps, Yelp, and Facebook to entice customers and for this must buy advertisements, thereby transferring value from the local
economy to the platform. Built upon the ubiquitous networks that Castells (2010) documents, the scale, pervasiveness, and reach of the platforms is accompanied by a remarkably granular localness. The effect of these transfers is to drive and reinforce ever-greater spatial inequality.

5. The Cases -- Amazon and Google Maps

In this section, we use two case studies to illustrate the complex and multi-scalar ways that digital platforms are reorganizing the geography of economic activity. While the results reported here are partial and temporary, we suggest that the impacts are already profound – and largely underestimated. The contemporary press is full of reporting on Amazon’s remarkable growth and apparently increasing stranglehold on online retail, but we will suggest that power Google Maps has developed may become as dominant in organizing and “taxing” local business, as all firms, to be successful, must be found – and maps are vital for discovery.

5.1 Amazon – The Economic Geography of a Platform Giant

Let us turn from the analytics to consider the dynamics of one of the dominant giants. Amazon is reshaping geography to suit its business model. It is important, both for understanding the geographical implications of all successful platform firms and because the unique impacts that Amazon is having on economic geography. In some respects, it confirms Cairncross’ (1997) claim that the internet results in the death of distance, as an increasing number of people can order online, and increasingly have the item delivered the next day. It is building a logistics an infrastructure that allows it to use code to orchestrate space and time as competitive weapons, in ways that also have significant implications for the spatial economy of cities (on code/space, Kitchin & Dodge, 2011).

Some of the story is well known, but taking the developments as a whole can be quite revealing of the concentration of control, the dissolution of sectoral boundaries, and the global reach. Established in 1995, as an online bookseller, it has become the largest online retailer and is rapidly overtaking Walmart as the world’s largest retailer. In economic terms, approximately 9%
of all US retail sales are transacted online and Amazon and its Marketplace for third-party vendors is responsible for approximately 40% of all online retail. The movement of sales online meant that the process and locations for fulfilling customers’ orders could be reorganized. This, in turn, changes the location of employment and types of employees needed. Instead of customers coming to physical stores, for most goods, purchases were made online and delivered from a warehouse normally located on the city’s outskirts – not downtown and not in a shopping mall. After 2000, when it opened its website to third-party vendors it made it possible for any merchant anywhere to sell through Amazon. This allowed anyone to become a retailer – there was no need for a store or even normal place of business – a spare bedroom anywhere in the US or elsewhere could become the “headquarters” of a “shop.” In this section, we explore the ramifications of the Amazon business model for spatial organization.

5.1.1 Product Line Extension – Becoming the Everywhere Store\(^8\)

In 1994, Amazon was established in Seattle as an e-commerce online bookseller and used Ingram Books, a book distributor to handle all logistics. The Amazon website was a virtual location accessible to anyone with an internet connection. Four years later, Amazon began selling compact disks and video cassettes, as they had similar physical characteristics that made logistics easy. In 1999, toys and electronics were added. This initiated a rapid expansion into selling other products – extending product lines was relatively easy as it entailed building a new catalog and opening a new tab on its home page. This constant extension of product offerings meant that Amazon’s computer system, warehouses (and later logistics system), and management team not

\(^8\) This is a play upon “Everything Store”, which is the title of a book about Amazon (Stone, 2013).
only grew in number and size, but as importantly, in capability to handle an ever greater variety of products of varying sizes and shapes.⁹

In 2000, Amazon introduced its Marketplace that offered its website to third-party vendors in return for a commission. The third-party marketplace grew rapidly, as vendors from around the world began using Amazon igniting a positive feedback loop of more customers and more vendors. As a result, benefiting from network effects, Amazon became the dominant vendor on the Internet with enormous selection at an enormous number of price points. The Marketplace allowed vendors from around the world to sell directly to Amazon customers. In 2018, a study found that 38% of Amazon’s sellers were located in China an increase from 24% in 2016. Moreover, the state with largest number of Amazon sellers was California with 22% of the total sellers and many of them sold items made in China (Marketplace Pulse, 2019). Due to international postal regulations that support international development by charging exports from a developing nation less, it was cheaper to mail a product from China to a US customer than it was to ship inside the United States (Semeuls, 2018a). The Marketplace provided Chinese firms direct access to US customers, thereby bypassing legacy retailers.

5.1.2 Logistics – Geography of Fulfillment

Initially, Amazon depended upon third parties for logistics functions such as warehousing, and distribution. In 1997, it opened its first warehouses, one in Seattle and one in Delaware to serve the East Coast. In 1999, it opened warehouses in a number of other states including Fernley, Nevada largely to serve the rapidly growing California market (MWPVL International, 2019). Amazon took advantage of a feature of US federal system, namely the shipping firm is not required to collect taxes on goods shipped interstate, due to interstate commerce clause in the

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⁹ In 2018, Amazon began notifying its vendors that they would have to adopt its standards for packaging, so that Amazon would no longer have to repackage their products. Effectively, it had become so powerful that it could demand packaging optimized for online retail (e.g., Estes, 2018)
constitution. This was a powerful subsidy to online retailers as the unpaid taxes largely covered the cost of shipment (Einav et al., 2014). Effectively, federal law provided a subsidy but also dictated the location of Amazon’s warehouses, because having a point of presence in a state meant that it would then have to collect taxes on all products shipped into that state. As it grew and was shipping ever more merchandise, it needed to increase the number of distribution centers, Amazon faced a conundrum, namely it could expand in the states where it already had distributions centers (Washington, Delaware, Georgia, Kansas, Kentucky, and Nevada). However, expansion into another state meant that it would have to begin charging sales tax. \(^\text{10}\)

In response to pressure from states and local vendors and ever-increasing volumes, in 2005 Amazon’s strategy changed. It launched Amazon Prime that promised free two-day delivery anywhere in the US. Amazon Prime locked-in customers and drove even higher volumes. However, it also meant that delivery became a significant cost. In response, the location of Amazon’s distribution centers changed dramatically. As can be seen by the green and purple dots, facilities were soon established outside all major population centers (see Figure Three), which meant that Amazon now had to charge sales tax (Marketplace vendors were not required to charge sales tax). Now, rapid, free delivery replaced tax benefits and Amazon would concentrate on lowering the costs of logistics. The significance of this logistics shift, which dramatically accelerated in the 2010s, was that with enormous success of Amazon Prime meant it needed to deliver products more rapidly. To lower costs, it purchased Kiva Systems, a producer of warehouse robots, to robotize its warehouses and lower labor costs.

\(^{10}\) This was not a problem for platforms such as eBay and Etsy, as they left sales tax collection to their vendors.
Amazon rapidly built out its warehousing footprint, nationally and globally. Last-mile delivery was contracted to the US Postal Service, UPS, and FedEx in the US (and their equivalents abroad). As volume grew, Amazon was able to extract ever better shipping and warehousing rates. These were so much lower than the rates Amazon Marketplace sellers could get from shippers, this allowed Amazon to launch “Fulfillment by Amazon.” This had labor implications as the legacy shippers had relatively high wages and, of course, some level of profits. Fulfillment was one of Amazon’s greatest costs. In 2015, Amazon introduced Amazon Flex, which engaged “independent contractors” that used their own automobiles to deliver packages from Amazon or Amazon-contracted warehouses. To further extend this contractor-based delivery system, in 2018, Amazon signed a contract to purchase 20,000 Mercedes Benz delivery vans that it “sold” to local
“entrepreneurs” that wished to start local delivery businesses (Stevens, 2018).11 These contractors would then “hire” or contract with sub-contractors to staff the delivery vans, thereby removing the “contracting” responsibility from Amazon. However, all of the contractors’ activities are monitored in real time. These initiatives allowed Amazon to further integrate and bring its supply chain under direct algorithmic control. Moreover, since these are contractors they need not receive paid high wages or good benefits, thereby lowering costs (Hempstead, 2019).

Amazon’s effort to build a supply chain has expanded to include directly contracting long-haul trucks to move goods. It began leasing planes and established a delivery hub in Hebron, Kentucky – in close proximity to the UPS hub in Louisville, Kentucky and the FedEx hub in Memphis, Tennessee. These Amazon pilots are a contractor’s employees and are paid less than other airlines. Finally, in 2016, it received a license from maritime authorities to become an importer-shipper from China (Chamlou, 2018). Coordinating this ever-expanding network of “captive” contracted logistics operation is accomplished through enormous computation power and software. The contractors are dispatched on particular routes that are to be completed in a set time and constantly monitored. The entire system is controlled and monitored by computer and productivity goals for workers are algorithmically set, monitored, optimized and constantly increased.

This logistics system with two-day and often same-day delivery is a competitive advantage against competitors such as Walmart, eBay, and others. Moreover, it is globalized (see Globalization discussed below). One remarkable aspect of this system even as Amazon builds its own logistics system it contracts with FedEx, UPS, and USPS for delivery. Similarly, it contracts with warehouse logistics providers like Dynamex even as it competes with them and resells their services to Marketplace sellers. Because in 2019 nearly 40% of all US online sales were through

11 The vans have the Amazon logo, but are owned by contractor firms whose sole customer is Amazon. These firm then contract with the drivers (Amazon, 2019a).
Amazon, it has more supply chain data than any other retailer so it has enormous insight into the physical and virtual dimensions of the logistics chain.

The final important geographical impact was that Amazon began offering fulfillment to its Marketplace vendors – it labels these offerings as having “Fulfilment by Amazon (FBA)”. By providing the fulfillment service to its vendors, it increases its warehouse and delivery volume, decreasing costs. This offering had another important effect as the growth of Chinese sellers was facilitated by FBA, as it allowed their products to have the same two-day Prime shipping as domestic sellers. The Chinese sellers would ship their products to the Amazon warehouse in the US or Europe. It is from here that orders would be fulfilled, thus concealing the fact that the seller’s business location was in China. According to Marketplace Pulse (2019), “almost all top Chinese sellers use FBA, while only 75% of top US-based sellers do.” In addition, firms that used FBA had higher rankings than those that did not.\(^{12}\) As Amazon increases the throughput through its logistics system, it can increase its economies of scale and scope, increasing its considerable advantages, enabling it to enter yet other markets further squeezing its competitors.

The regional development implications of the movement of sales online are difficult to capture because there has been little study of the local employment effects. One obvious result is the transformation of the physical shop-based retail sales model that is leading to the “hollowing-out” of many shopping centers and main street shops (Semeuls, 2018b). Those jobs are being gradually replaced with warehousing and delivery workers, many of whom are contractors, whose place of employment is on the urban periphery. A second result is that vendors can operate from anywhere in the world or from their homes to sell online through Amazon, as was shown in clearly was the case with Amazon and Chinese exporters. Third, the Amazon-owned logistics system utilizes large numbers of contractors that ensure that it has lower labor costs than the

\(^{12}\) As Cutolo and Kenney (2019) point out, using FBA separates the third-party vendor from its customers and thus strengthens Amazon’s control of the customer and prevents disintermediation. For the Chinese vendor, this is not important. For US vendors wishing to decrease Amazon’s power as an intermediary, FBA is a double-edged sword.
established firms being replaced. Fourth, the Amazon logistics system has pioneered an all-
enshrining digital Taylorist work process that appears to have powerful efficiencies over its
competitors. Finally, this combination of “innovations” will put pressure on wages and working
conditions at retailers and logistics firms. In regional development terms, Amazon is likely to
decrease local employment and, not only, contribute to a further hollowing out not only of
downtown retail, but also suburban shopping centers as the anchor tenant department stores
collapse into bankruptcy.

5.1.3 Globalizing the Model

In contrast to earlier firms that had to invest significant resources to build a global presence,
the placeless nature of an online retailer’s website means that, from its inception, Amazon
attracted customers from around the world. To quote its 1997 public offering prospectus,
“Through March 31, 1997, Amazon.com had sales of more than $32 million to approximately
340,000 customer accounts in over 100 countries.” As its overseas customer base grew, Amazon
established operations abroad. The decision to invest in an overseas operation was, in part,
simplified as Amazon was already shipping merchandise to the country and thus had knowledge
of the market and the fulfillment system.

Amazon established its first overseas operations were in 1998 when it purchased online
booksellers in the UK and Germany (Kotha et al., 2001). This was rapidly, followed by France,
Japan, and Canada (for general discussion of US internet firms expanding globally, see
Rothaermel et al., 2006). With the exception of an acquisition in China, it was only in 2010 that it
again began expanding to other markets through subsidiaries or acquisition.

In foreign markets (ex-China), if it entered organically, it did so by using local distributors
and the existing domestic logistics infrastructure. However, later it built its own distribution
system (See Figure Four). For example, in Japan Amazon entered initially by shipping purchases
from the United States. It contracted Japanese logistics firms for fulfillment. Later, it established
its own warehouses and, more recently, has begun contracting with individual delivery drivers (Miyajima, 2019). In Germany, Amazon built warehouses and a delivery network, but after numerous strikes in its warehouses, much of the further growth in warehouse was in next-door Poland where labor is cheaper and less militant (Goettig, 2017). Its German (Polish) logistics infrastructure also fulfills sales for the Nordic nations and Eastern Europe. In 2013, Amazon entered the Indian market by building a fulfillment network and remains locked in a struggle with Indian firm, Flipkart, which was purchased by Walmart. It entered China in 2004 through acquisition of a Chinese firm. However, inside China it has largely failed due to competition from Alibaba. Of course, as mentioned previously, China is enormously important source of products sold on Amazon by third-party vendors. In this sense, Amazon is a virtual storefront for Chinese vendors. With the exceptions of China and India, thus far Amazon has had success in reproducing its retail model abroad.

**Figure Four: The Number and Location of Amazon Logistics Facilities and Data Centers Globally**
As with any international business model transfer, there have been difficulties, one of the greatest of which is the differing organization of labor-management relationships by country. For example, in Europe where workers have greater rights, the Amazon has experienced strikes and work stoppages in the UK, France, Germany, Italy, Spain and Poland (Business & Human Rights Resource Centre, 2018). In another case, the Indian government decided that Amazon cannot be both a vendor and a platform for third-party sellers (Vincent, 2019) – a concern increasingly expressed in the United States and Europe – as the platform can compete with its own complementors (on the US, situation see Khan, 2017).

These recent reactions from labor actions and logistics issues in Japan to the lack of traction in China and the Indian government’s rulings regarding the organization of platform markets suggests that the earlier apparent ease of Amazon’s international expansion internationally may be meeting a reassertion of local particularities. While the reactions to Amazon remain nascent,
investigations at the level of the European Union, and by national competition authorities and municipal governments may threaten the Amazon model.

5.1.4 The Amazon Story synthesized

Amazon and its competitors are a powerful force changing the geography of retailing, logistics, and also production as it replaces stores with home delivery and the Amazon Marketplace allows vendors from anywhere in the world easy access to customers – increasing opportunities for producers everywhere to link directly to customers. The impacts on labor are multi-faceted. First, clerks in shopping malls are being displaced by workers augmented by robots in warehouses and last-mile delivery drivers. In the logistics system, UPS and FedEx drivers are threatened by being replaced by Amazon’s badly paid contractors. Local businesses may be displaced, as is happening with many retailers, and concomitantly the revenues from consumer spending and control is transferred from the community to Amazon’s headquarters. Second, at the global level, the powerful national and, even, international retailers now have a global competitor that benefits from winner-take-most economics – leading to global concentration and similar effects in all of the countries within which it operates.

Third, the status of the third-party vendors on Amazon has received little attention. Because over 35% of all online sales go through Amazon, it is the dominant online retail site (Lundin, 2018). This dominance provides it ample leverage for extracting an ever-greater share of sales price from its third-party vendors. These vendors are, in fact, “platform-dependent entrepreneurs”, (Cutolo & Kenney, 2019) as Amazon can whenever it wants increase the percentage of the total sales price it takes, thereby forcing these entrepreneurs to put downward wage pressure on their workers.

Absent an increasingly militant workforce, Amazon’s management ethos and drive to automation and algorithmic monitoring to accelerate the pace of work is likely to set labor
standards in logistics. Finally, Amazon separates its work force with a salaried elite employed in white-collar offices and a far larger number of temporary workers, labor contractors of all sorts, and also full-time workers employed in grueling algorithmically-monitored conditions.

Amazon’s continual entry into new markets is resulting in bringing a constant pressure on prices and thus wages into ever more industries and geographies. Initially, it only competed with bookstores and other online booksellers. It evolved to compete with nearly every retailer, online and offline. It then began virtual book publishing and became a competitor with book publishers—and placed powerful pressure on them to lower book prices. When it built warehouses, it began competing with distributors and then later with various logistics firms. Also, it introduced products such as Amazon Basics that competed with the third-party vendors using its site. As Amazon increasingly became the site upon which consumers searched for products, it began selling advertising, thereby forcing its vendors to bid for the opportunity to sell. Given its dominance, it threatens yet other industries, such as automobiles, insurance, and even segments of health care.

While not yet demonstrated empirically, Amazon’s business model appears to be a powerful engine for increasing spatial inequality. The inequality occurs through the destruction of local retailing, the inherent structure of its Marketplace to put downward pricing pressure on its third-party vendors, and its logistics chain using third-party vendors that are paid far less than incumbents, and the relentless warehouse automation ensuring ever fewer jobs per dollar of retail sales. Amazon, one of the platform economy giants, offers remarkable convenience, competitive low prices, and the ability of vendors to access the global market. We are only now beginning to understand the social, labor and geographic implications of its pervasiveness.

5.2. Google Maps

Google, with its suite of software services, also is transforming spatial relationships. The ability of users to interact directly with online mapping tools such as GM led some geographers to
argue that a “neogeography”, which was synonymous with a “bottom up” democratization of mapping (Eisnor, 2006; Turner, 2006) was emerging. While there are many open source programs, such as OpenStreetMap, this paper explores GM as an owned digital platform that is a business. While Search as a way of extracting value has long been recognized, GM has become a powerful platform for reorganizing economic activity to capture value. GM (and its pale copy, Apple Maps) is transforming the lived experience of geographic space, and also the competitive dynamics in a wide variety of industries.

The significance of a digital map as a platform has not been appreciated. As a platform, the successful mapping program experiences the typical platform benefits of winner-take-most dynamics, multi-sided markets, lock-ins, user-generated data, and the formation of ecosystems whereby complementors help create value. As with any successful platform, GM provides APIs that allow users to contribute content, but also allows GM to be embedded in a myriad other digital applications adding value to them but also providing Google with information about those applications. As a result, GM is the beneficiary of enormous volumes of user-generated content.

Maps, while important in the era of desktop computing, have become a vital service in the mobile smartphone era – for both users and service providers. Maps are, of course, a representation of geography and as Craig Dalton (2013) observes “maps have a long-running association with sovereign power in the exercise of state programs such as empires, defense, land tenure, and administration”. With 80% of the US market, GM has become both a platform and a reference. To paraphrase Dalton, in spatial terms, the map denotes existence and to be “on the map” is mandatory for any entity wishing to be found. With GM, sovereign power over spatial existence has moved to a for-profit firm that will use this power to increase profits.

This paper is not the place to dissect the evolution of GM, as it constantly added features such as Street View, aerial maps, public transport schedules, pedestrian information, hiking trails, the

13 For a more skeptical view of neogeography, see Haklay, 2013.
ability to hail an Uber or Lyft, etc. even as it increased its granularity and labeling. Thus, as is
typical for a platform, GM has constantly evolved adding more features, often learning from
innovations made by the users in its ecosystem. The key to GM’s success was that almost
immediately upon introduction, users began creating mash-ups using the maps. Their user-
generated content, was so interesting and valuable, that in June 2005, Google chose to allow users
to integrate the GM API into their websites and applications. This decision was critical because it
allowed users to add value and innovate on GM and, in effect, begin its transition to becoming a
platform. This functionality was offered for free to any website, commercial or non-commercial
that generates less than 25,000 accesses per day. Such generous terms meant GM was quickly
adopted. In 2013, the GM AI had become the most used API in the world with over one million
websites using it (Google, 2013). In June 2018, Google announced that all users of the Map API
had to create a Google billing account to continue its use, though small-scale users would get a
$200 per month credit. Further, the account would be on the Google Cloud, thereby linking users
to Google’s cloud. With this, every website with a Google Map embedded in it was transformed
into a potential Google customer.

By being embedded in so many websites, Google receives information every time the website
user accesses the embedded map providing locational data from that website’s user. This enable
two potential revenue streams for Google. First, the merchant pays for the click on the map.
Second, the click is evidence of consumer interest against which Google can serve advertisements.

The ubiquity of GM is remarkable. The greatest volume of information is, almost certainly,
that of the location of all Android users (and iPhone users that use GM). However, in economic
and competitive power terms, GM embeddedness in the applications and operations of other firms
maybe a greater indicator of its ubiquity and power. Consider that Google’s competitors (as
Google now has direct travel booking and local business rating systems), Yelp, Booking.com,
Expedia and others use GM, thereby providing data on map searches directly to Google, while
paying Google for usage – effectively Google has visibility into the core of their businesses.\textsuperscript{14}

Another example of firms that are not direct competitors, unless one believes autonomous vehicles will soon be deployed, is the fact that Uber paid GM approximately $58 million between January 1, 2016 and December 2018 for usage by its drivers and for route visualization for customers (Lyft is also based on GM). Consider, all of the rides and locational data collected while the car is driving is shared with Google. What is significant here is that GM is a critical module in the business models of all of these firms and thus is in a position to extract a payment AND data from the operations of these independent firms – and, of course, if it chooses to can enter their markets armed with significant prior understanding based on the results from GM. Effectively, these map “customers” have become dependent upon this core module for their own businesses.

Maps are also becoming an important input for existing firms. For example, today’s automobiles are sensor-laden connected vehicles with cameras, mechanical, temperature, and numerous other sensors, as an increased proportion of the value of an automobile is in its software and data-processing and communication capabilities. Most automakers resisted the integration of GM as their default in-automobile navigation systems. And yet, GM is increasingly gaining traction as Fiat-Chrysler, General Motors, Renault-Nissan-Mitsubishi Alliance, Ford, and other automakers bow to consumer wishes and sync their navigation systems with GM or adopt it as the default. The German automakers, BMW, Mercedes, and Volkswagen as a consortium, purchased Nokia Maps in 2015 for $3 billion in an effort to offer an alternative to GM. Even as GM makes headway with the automakers, GM is also increasingly embedded in truck routing software, therefore if GM is operating it is receiving information in real time about truck location. If autonomous trucks become a reality, almost certainly GM will be at the core of their operations. Conversely, as increasing numbers of automakers adopt GM it could become the de facto standard

\textsuperscript{14} This paper is not the proper venue to consider the strategic competitive advantages that GM provides, but we note that they are considerable. Further research would be required to understand how powerful an advantage this is or could be.
with a lock-in that provides Google with an opportunity to extract rents or even become the
default software for all operations.

Generativity is what allows the innovative use of the resources provided by platforms and
thus integrates new actors into the ecosystem (on generativity, see Zittrain, 2008). To illustrate,
insurance claims adjusters use Google Street View to reconstruct an automobile accident scene
without visiting the location, thereby saving time. GM and Street View are integral to Pokemon
Go and a variety of other place-based games and thus give rise to greater innovation (Holly,
2018). Yet another application on GM is “Plane Finder” that maps planes in the US skies in real-
time. The significance, of course, is that all of these uncompensated innovators make GM more
valuable and, if the innovation, becomes monetizable they pay for the use of maps and, of course,
as Cutolo & Kenney (2019) point out develop innovations that Google can integrate directly into
its map or other offerings.

Another important geographical and community result of GM is that it has become part of the
hegemonic local information package that allows Google to, more tightly, integrate local firms
into its advertising machine. Because increasingly search for local service providers such as
plumbers, electricians, locksmiths, etc. is through Google, it has become the intermediary for
service provision replacing newspapers, television, radio, Yellow pages, etc. The result is that
local service providers must buy advertising from Google to secure customers. As was the case
earlier with Amazon, this revenue is extracted from the community and centralized. Effectively,
Google can leverage the granularity it has achieved with GM and the use by consumers of Google
Search to levy a “tax” on location. Obviously, this brief discussion of the increasing hegemony of
GM on “location” itself and its increasing integration into all manner of location-dependent
activities is incomplete and tentative. From this, we can see both the death of distance as GM is in
the “locationless” cloud and anywhere and simultaneously GM is intensely local everywhere.
6. Concluding remarks

If, as we believe, we are in midst of organization of the economy on the basis of platforms, there will be a reorganization of the spatial relationships in the capitalist economy as was triggered by the transition of the cutting-edge of capitalism to the mass production/mass consumption political economy centered in the US Midwest, the Ruhr Valley and, later, Baden Wurttemberg in Germany; all of which were concretized in the aftermath of World War Two. Our general discussion of the reach and power of the platform giants suggests that at the global-scale the power to extract value is remarkably concentrated in a few firms that are located on the U.S. West Coast. In the previous era, nations had national champions in key sectors such as steel, automobiles, chemicals, etc. In the Platform Economy ex-China, this is not the case. In platform terms, most businesses will be dependent upon platforms and only relevant as consumers or merchants transacting on a platform. Simultaneously, business sectors such as retail, logistics, publishing, advertising entertainment, and others, whether in the USA or in other nations, will be challenged by the platform giants and experience a transfer of value to the platforms – this has global-scale accumulation implications.

Our case studies of Amazon and GM explored two very different platforms with different dynamics – though both rerouted commerce in ways that centralized power, but decentralized the ability to use the platform. We demonstrated the impact of these two platforms at different scales, where, in particular, GM has an impact at the scale of the individual, while Amazon was reorganizing retail geography at the regional level. In the following paragraphs, we outline fruitful areas for future research into the interaction between platforms and geography:

1) Digital platforms are a vital new stage in the development of capitalist economies and that economies organized by platforms will have different spatial dynamics. Economic geographers have not considered the implications of platform economies for the location of economic activities, labor, and the ability to extract value
2) The global reach of these dominant platforms is already impacting international development. Earlier claims suggested that the ability to access news and information from around the world would increase the flow of knowledge globally and contribute to development, are these valid? Conversely, there have been few attempts to measure the amount of value that these platforms extract from users in the developing world or, in fact, the developed countries. Finally, we know these platforms are concentrating global wealth into a few regions, but less is known about why these firms are clustered in so few regions.

3) This paper introduced a preliminary taxonomy of platform-organized labor and value creation. Research on the location of remote “gig” work has already received significant attention and also there has been some geographic research on the impacts of on-demand transportation upon taxis and mass transit. Similarly, there has been some research on the geography of crowd-funding platforms that can be used to raise money for various purposes including entrepreneurial ventures. While researchers such as Richard Florida (2002) have mapped the location of the creative class, far less attention has been given to the location of the rising elite group of platform workers or platform-mediated creators. Recently, contract workers for the platform has received some attention (Gillespie, 2018), but we still know little about their location. There seems little doubt that the spatial division of labor is in the throes of remarkable changes.

4) The geographic implications of the Amazon business model are remarkable in scale and scope, but there has been little academic or geographical study of its implications for the organization of the capitalist economy. Perhaps, this is because geographers have had less interest in logistics and where there has been interest it has been in the studies of value chains (e.g., Gereffi et al. 2005); this is despite the fact that logistics are fundamental to capitalist circulation.

5) GM has become a ubiquitous representation of geographic space. However, remarkably little is known about Google’s strategies for using it as a competitive weapon in competition with
firms such as Yelp, Booking.com, and many other narrow sectoral platforms. GM can be used as a surveillance tool by firms such as Uber and Lyft to monitor their drivers, by insurance firms to monitor mileage driven, trucking firms to monitor their drivers. Critical geographers have exposed the role of maps in imperial ventures and the development of capitalism, but, it is possible to argue that the scale, scope, granularity, and plasticity of use of digital maps is unprecedented – and, quite obviously, we are in the early stages of the use of GM as a tool for generating revenue. GM and its impacts on capitalist competition and the spatial organization of communities and business seems to be a vital field of research.

While it is difficult to fully disentangle how large the element of hype in the current AI boom is, the tremendous data sets and capable engineers suggests to us that it may be more a tool than the basis for firms that will dislodge the existing giants. It seems likely that AI will reinforce the power of the giant platforms to sift through their data streams to search for new patterns and sources for decision-making, rather than being a vehicle for their disruption.

From a pragmatic or policy perspective, at the regional or sub-national level increased awareness of the impacts of platforms will be necessary to make viable development policies. The old strategy of attracting big box stores for the sales tax benefits is no longer viable. Further, recruiting Amazon warehouses with enormous tax benefits is unlikely to generate significant employment as Amazon is making enormous investments in warehouse automation. At the national level, considering the correct competition policy for controlling the power of the platform firms will be critical. Geographers can make an important contribution to the policy process through developing a better understanding of how these dominant digital platforms are organizing and transforming economic space.
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