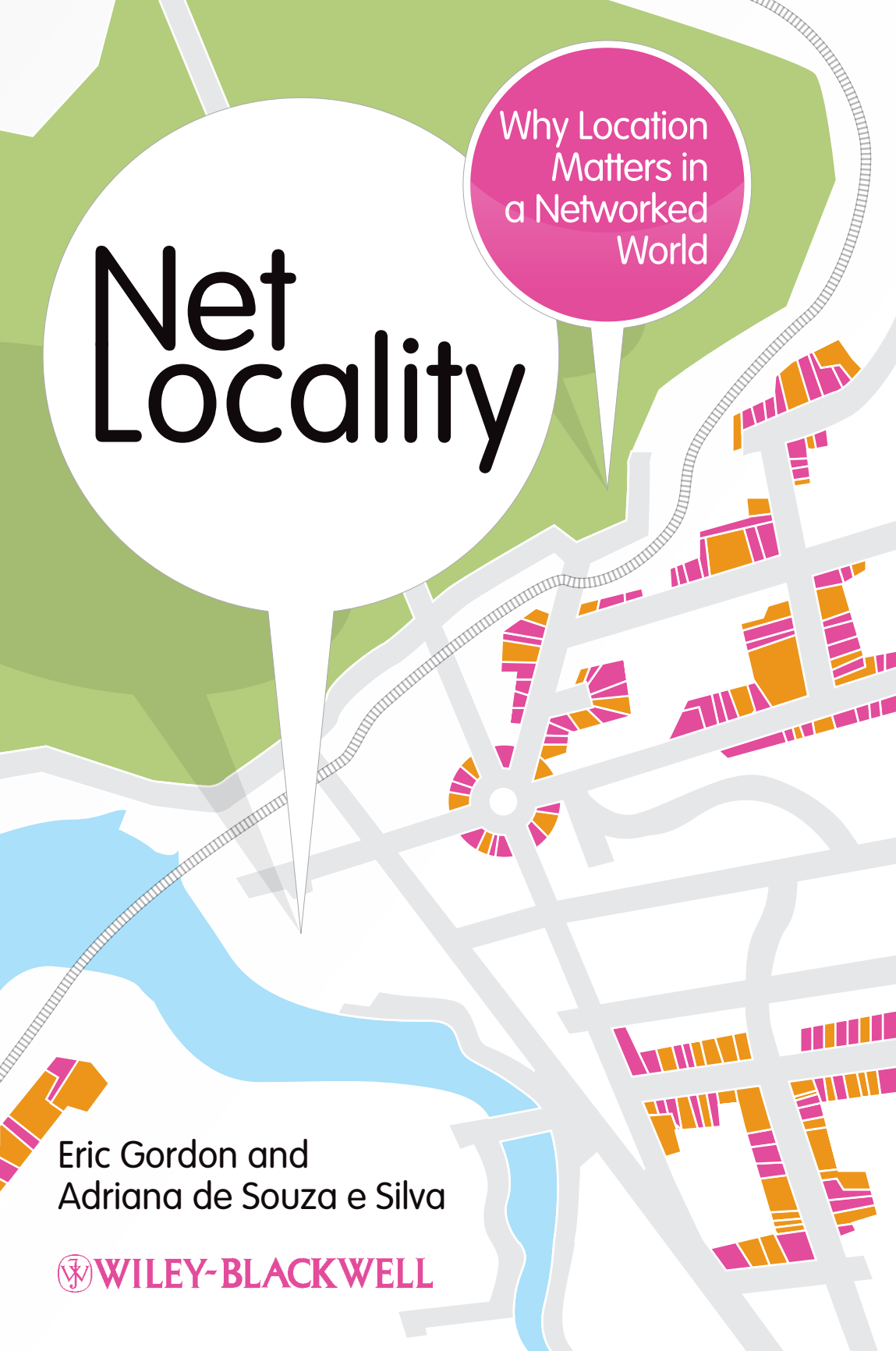
Why Location Matters in a Networked World
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Eric Gordon and
Adriana de Souza e Silva
WILEY-BLACKWELL

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It is a little ironic that two authors, each on a different continent, are writing a book about the importance of location. With one of us in Boston and the other moving between Raleigh, North Carolina and Copenhagen, Denmark, we have experienced the challenges that geographic distance can bring. And yet, through Twitter, instant messaging (IM), email, Skype, and various and sundry other technologies, we have worked together to write a book that is at once an analysis and testament to the power and flexibility of location in a networked world.

The challenges of physical distance were only compounded by the challenge of writing a book about a moving target. Just as we were trying to grasp the correspondence of our everyday writing schedules, we were trying to focus in on a topic that is changing at lightning pace. Location and location-based media are evolving so rapidly that we are sure that between now and when this book is actually published, we will be looking at a different world. So, in writing a book-length treatment on the topic, we knew we couldn't focus on the daily changes in the media landscape. We had to focus on the conceptual issues that bring all those little changes together. This book provides a perspective from which to view the emerging media landscape and imagine how it will transform in the years to come.

Like any project of this scope, we could not have accomplished what we did without a great deal of support. From the conversations we had in classrooms to the debates with colleagues, so many perspectives have influenced this book. But there are a few people who deserve special mention. We want to thank Steve Schirra for his tireless efforts in editing the final manuscript and providing substantive feedback. We asked for a little help and he gave a lot. He has been a great collaborator and friend throughout the process. We want to thank Jean Wang for her insights into the global context of net locality and her enormous help with crafting Chapter 7 and the conclusion of the book. We would also like to thank Jordan Frith for contributing to many of the ideas about locational privacy

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Eric Gordon and Adriana de Souza e Silva
September 2010

Introduction

A man is walking down Michigan Avenue in Chicago. He shares a sidewalk with crowds of anonymous people. He sees skyscrapers and signage extending to the horizon. There is a lot going on – people talking, walking, playing, fighting, screaming, driving, and smiling. He sees a coffee shop that excites his interest. He pulls out his phone and checks into a location-based social network (LBSN). The application makes note of his location and registers his first stop of the day. He touches the "tips" tab on the application and looks at what other people have said about nearby locations and discovers that many have complained about its unfriendly service and high prices. While doing that, he gets notified that someone in his social network just checked into another coffee shop down the street. He walks over there to meet her.

The city for this man does not end with the visibly observable. It contains annotations and connections, information and orientations from a network of people and devices that extend well beyond what is in front of him. And he is not alone. It is difficult to find a mobile phone these days that is only a phone. Most phones send text messages, access the web, run applications, and include a Global Positioning System (GPS) receiver so that it can be located in the physical world. We used to talk about the World Wide Web as an interconnected information space set aside from the world we live in, but the world we live in and the web can no longer be so easily separated.

The spaces we interact with on a daily basis are filled with data – pictures, thoughts, reviews, and historical documentation – aggregated into accessible and usable bits of information. A Google search promptly uncovers thousands of references that are displayed according to the user's location.

Net Locality: Why Location Matters in a Networked World, First Edition. Eric Gordon and Adriana de Souza e Silva. © 2011 Eric Gordon and Adriana de Souza e Silva. Published 2011 by Blackwell Publishing Ltd.

A mobile phone, through any number of applications, can locate its user and find nearby relevant information. The technologies we use to access the web are location aware. The amount of online data, from websites and social networking sites (SNS) like Facebook and Twitter, to text messages and images, is growing exponentially. And, increasingly, that data is associated with its longitude and latitude coordinates so that it can be sorted not only by the who, what, and when – but also by the *where*. As location-aware phones become cheaper in much of the world, the number of people accessing and producing the world's data out *in the world* is expanding significantly.

The web instills locations with data resources, making those physical locations part of the web. There are millions of computers and mobile devices that are connected to each other and are discoverable by satellites. This is creating a near comprehensive map of where we are in relation to everything else. Our global networks of machines have made locating ourselves (and being located) so much easier. We are where our devices are, and we are perpetually leaving behind data traces that can be mapped to our physical world. So while we have always been location aware, and others have always been aware of our location, when we are immersed in information, being aware of locations has wholly new connotations.

This book is about an emerging form of location awareness we call *networked locality* (or net locality). It is about what happens to individuals and societies when virtually everything is located or locatable. More importantly, it is about what individuals and societies can do with the affordances of this location awareness – from organizing impromptu political protests to finding nearby friends and resources.

Net Locality

In January 2010 Google began integrating location data into all searches – either the location of an IP address of a desktop computer or the GPS coordinates of a phone now factors into search results. Many iPhone applications query the user about their location before they launch. Even if there is no obvious immediate use for location, the data is being collected and aggregated with a mind toward future value. The simple reality is that locally contextualized data is useful and convenient. It naturalizes a connection that was only metaphorical before. It takes the otherness of the web and places it squarely into where you are. No need to log on to the web, or even go someplace to access it. This is *net locality*. Net locality implies a ubiquity of networked information – a cultural approach

to the web of information as intimately aligned with the perceptual realities of everyday life. We don't enter the web anymore; it is all around us. This is seductive. It promises to transcend the problems of joint custody – where we spend the week with physicality and the weekends with virtuality.

What net localities (the actual spaces where this is happening) mean for our institutions (government or education) our communities (neighborhoods or friends), and our spaces (cities or shopping malls) is the subject of this book. We describe a transition that will fundamentally alter what it means to be local in a globalizing world. Having access to a global network of information while situated within a local street, neighborhood, town, or city, potentially realigns how the individual deals with the scale of user experience. The street is no longer limited to the perceptual horizon of the person walking down it. A network of information that is accessible through a mobile device augments it. The provinciality of the small town, physically isolated from the rest of the world, is potentially cosmopolitan because of the integration of information into its streets. The way that geographers have traditionally understood the concept of scale is no longer accurate. Net locality renders geography more fluid, but never irrelevant, as was feared in the 1990s (Couclelis, 2007).

Likewise, geography becomes the organizational logic of the web. Our spaces of interaction can take place within multiple, simultaneous scales. The Yelp application (a location-based search and review service), for example, juxtaposes people and things that are nearby with an extended, potentially global network of information. While it prioritizes location in its search results, just as one might prioritize price in a traditional web search, it enables the user to move fluidly between that which is physically proximate and that which is conceptually proximate. The act of finding a nearby bagel shop is only a click away from reading about a bagel shop halfway around the world. This compression of scale is happening on a number of fronts, from browsing the web to attending a local neighborhood meeting, to using an augmented reality application to see, in a slightly new light, the street you have walked down a hundred times before.

Net locality, in general, is dependent upon the technological tools that make it possible. But, of course, tools are products of social needs. The hammer would not exist, for instance, if not for the need to press nails into wood. Likewise, GPS, radio frequency identification (RFID), Wi-Fi triangulation, and other situating technologies have been adopted for web information storage and retrieval because of the social desire to locate ourselves in relation to information. Of course, once the tools are in place, they introduce new possibilities for use. A location-based game like Foursquare could not have been developed if not for GPS, web search,

Figure 0.1 Scene from *Minority Report* (de Bont, Curtis, Molen, Parkes, & Spielberg, 2002) where Tom Cruise's character walks into a GAP store and is greeted by an interactive billboard that knows his name and shopping history.

smart phones, and similar devices. Location awareness runs parallel to the technologies that enable it, and it is both a cause and a consequence of the use of these technologies.

But for most people, the thought of net locality is less evocative of pro-social developments, and more evocative of a dystopian surveillance society. Consider the scene in the film *Minority Report* (de Bont *et al.*, 2002) where Tom Cruise's character walks into a GAP store and an interactive billboard recognizes him, refers to him by name, and asks him how he is enjoying the shirts he purchased last week. We are quite comfortable with a targeted Google ad based on our search histories, but when that context aware advertising is transported into the physical world, it reflects a rather distressing breach of our perceived personal space. The circumstances of this scene are no longer science fiction. They are a reality. The technology to create this kind of interactive billboard is perfectly within reach. It remains speculative only because it breaches our current awareness of location and asks us to accept the ubiquity of net localities. So, while we are location aware, we are riddled with anxieties about it. In this book, we document the process of how the web has merged with our physical spaces and how it is transforming our everyday interactions with the world and each other.

Organizing the Web

Let's start with a story. In 1994, David Bohnett and John Rezner founded a web hosting company called Beverly Hills Internet (BHI). They started with a novel idea: using neighborhood names to organize and categorize

web pages. Users, or "homesteaders" as they were called, were able to host their web pages for free within the virtual neighborhood of their choice. Each webpage was given a unique URL that included the name of the neighborhood and street address. The first neighborhoods bore names such as Coliseum, Hollywood, RodeoDrive, SunsetStrip, WallStreet, and WestHollywood. The idea was that users would gravitate to the neighborhood that best reflected their interests. For instance, an entertainment website would be in Hollywood, a financial site on WallStreet, and a music site on the SunsetStrip. And, in fact, these "neighborhoods" began to be quite important for people as they struggled to find a place on the web for their home pages. In December 1995, BHI had expanded to 14 neighborhoods, including Tokyo, Paris, and SiliconValley, and had officially changed its name to GeoCities.

GeoCities was purchased by Yahoo! in 1999 and fast became one of the largest web hosting sites in the world. The notion that the web could be organized by metaphorical neighborhoods was quite powerful. As the example of GeoCities shows, the early days of the web were ripe with the desire to neatly organize digital information in much the same way as we organize non-digital information: placing things in categories. David Weinberger, in his book *Everything is Miscellaneous* (2008), says that information can be ordered in one of three ways. The first order of order, as he calls it, is literally putting things into piles. For instance, in our dressers, most of us put socks in one drawer and shirts in another. This works surprisingly well. But what happens when we have too many socks to keep

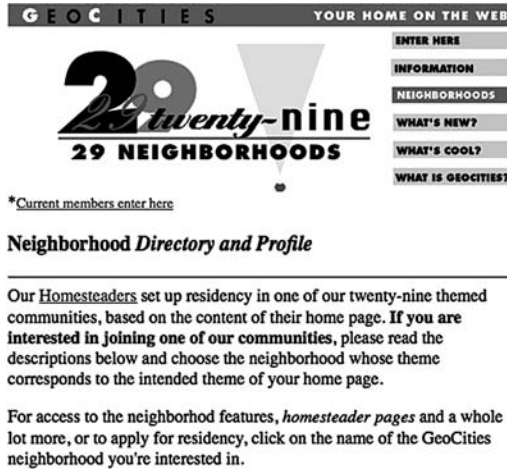

Figure 0.2 GeoCities boasted 29 distinct neighborhoods in October 1996.

in a drawer? We need a different ordering system. Or, perhaps a better example would be, what happens when we have too many books to keep on a shelf? We create a log of book titles and authors, perhaps subjects, and we devise a categorizing system so that they are easily retrievable. The library card catalog is a prime example of the second order of order. GeoCities is another example of this second order. By placing links into categories, they were fixed into an ordering system that made intuitive sense. These websites (containing links to favorite song lyrics, pictures of cats, and family vacation photos) represented a model of interactivity now referred to as Web 1.0. According to Steven Johnson (2003), this was a very one-to-one kind of relationship: one person had the power to put up a link and another person had the power to decide whether or not to click on that link.[1]

With the quality of search engines in 1995 ranging from the manual (web rings) to the near useless (AltaVista), unless users put up links on their personal home pages to recommend particular websites, URLs had to be memorized. Around the end of the 1990s and early 2000s something began to change in the way people organized, created, and retrieved information online. The contemporary web (what is often referred to as Web 2.0) is organized in a more flexible ordering system than that. The third order of order is one that does not rely on fixed categories at all; the analog card catalog has been replaced by search engines like Google that parse through information in order to create usable and temporary results based on search algorithms. Entertainment websites, for instance, no longer need to be permanently placed into the "Hollywood" category to be findable. They can be found based on individual search terms and the particular context and preferences of the individual user. Digital information, Weinberger says, is "miscellaneous." A typical website is not placed in a finite number of categories determined by a content-management expert; it can be discovered through multiple terms and multiple platforms, such as web browsers, news aggregators, and smart phone apps.

Google was instrumental in reinventing this enormous amount of available data. The search engine contributed to transforming the web from an unwieldy database of carefully categorized information into a pile of miscellaneous information to be flexibly assembled. For instance, personal webpages with pictures of cats and favorite song lyrics no longer had to sit within the neighborhood of SiliconValley. They could be found by searching for "cats" or the name of your favorite composer. Google made it okay for information to be miscellaneous – in fact, Google made it imperative that we don't fix information into categories.

In the 15 years since the development of GeoCities, the web has changed quite a bit. People are increasingly socializing, consuming entertainment

and news, and searching for information online. We don't typically visit sites any longer. We simply visit *the web*. Tim O'Reilly has suggested that the web itself is the platform for engagement – no longer the individual site. We use aggregators or SNS to consume, produce, and share micro-content such as blog posts, tweets, and status updates.[2] The blog *post*, and not the blog, is the important unit of engagement. In short, the "places" we go on the web are all intimately connected, siphoned through our personal interests and machine aggregators. Because of the ubiquity of the web, we find that it is no longer constructive to distinguish between the web (often understood as content within web browsers) and the Internet, the infrastructure of networks that makes it all possible. It is *all* the web. Just like a television show is still television if viewed on the web, the web has become transcendent of its hardware and software and implies the web of content that pervades our communication landscape.

The web now extends to physical locations. When people have the opportunity to plot raw data onto collective maps (Berners-Lee, 2010) and to access the web from their location-aware mobile phones, there is, again, a critical change in how information is organized: from a "wasteland of unfiltered data" (Stoll, 1995) often referred to as "cyberspace," to a physically contextualized map of information. The new organizing logic of the web is based on physical location. Increasingly, the types of information we find and access online depend on where we are.

This connection to physical locations represents not only a new logic of organizing information online, but also a radical change in the very way we understand the web. GeoCities represented a way of thinking about the web that situated the world of information as wholly separate from the world of physical locations. There was, as Nicholas Negroponte (1995) famously put it, a clear distinction "between atoms and bits." What was possible in a world of pure information was very different from the possibilities of our physical world, limited by the laws of physics. Now, what is being organized is not just information, but the physical world that contains it.

Extending the web

The belief that the world of atoms was distinct from the world of bits was partly a consequence of the technologies we used to connect to the web. Using a stationary desktop computer to "enter" the web often meant that users had to be sitting down in front of a screen – a position that precluded many activities in the physical world. Additionally, the experience of surfing the web was often a solitary one. Even if the purpose for

entering the web was to socialize with others, the popularization of virtual worlds and online chat rooms led many to think that we would end up communicating with each other primarily in digital spaces. This led to the belief that if the web could provide us with the feeling of "being somewhere," there would be no need to go out in public spaces and socialize with others face-to-face.

Half a decade after the invention of the first online virtual world (Richard Bartle and Roy Trubshaw's MUD), William Gibson's science fiction novel *Neuromancer* (1984) depicted an information world called the "Matrix" which users connected to via neural implants. In this world, one could literally "download their minds" and leave their physical bodies behind. Case, the main character in the novel, receives a penalty at the beginning of the story: he can no longer connect to cyberspace and is imprisoned in his own material body. Another character, Pov, is merely a "point of view," and is composed entirely of information, completely free from his material body. This notion persisted throughout the 1990s, represented in books such as Hans Moravec's *Mind Children* (1990) and movies like *Tron* (Kushner & Lisberger, 1983), *The Matrix* (Osbourne, Wachowski, & Wachowski, 1999) and *The Thirteenth Floor* (Emmerich *et al.*, 1999). These narrative references, coupled with an emerging academic field of Internet studies, established a paradigm of thinking about the web that was firmly ensconced in the notion that digital networks ran parallel to and remained separate from "real life."[3]

The possibility of socializing with people online prompted some to worry that vibrant public spaces would disappear. If one could do everything online – work, shop, bank, order food – why bother leaving the house? Undoubtedly, access to mobile phones and the mobile web has contributed to detaching people from their fixed work spaces and to performing activities on the move – such as talking, shopping, and coordinating with others. For these reasons, mobile phones were also frequently regarded as disconnecting people from their immediate physical location, and, more importantly, from social interactions in those locations. At some point, everyone has been inconvenienced by the use of mobile phones in restaurants, public transportation, and public spaces.

But this is more than just a nuisance. It has changed the way we think about the web. Information is not just miscellaneous; it is ubiquitous and located. The dominant metaphor for the web changed from virtuality to mobility. New studies reflected the changing methods by which users could interact with the communication network, and with each other, and although not a direct consequence of the popularity of location aware phones, the ability to do things (connecting with other people and information) while on the move challenged old assumptions about the