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## Crowd-Sourced Augmented Realities

Everyday lives are increasingly experienced with reference to, and produced by digital information. This information ever more includes crowd-sourced and social media content that mediates interactions with and between places and individuals. Ranging from Yelp reviews of restaurants, to check-ins to points of interest, to uploading image and video records of events, these digital practices and performances have emerged as key moments in the process of place-making.

This “social” element of digital annotations and interactions is linked intrinsically with other discourses and practices comprising and reflecting the contemporary urban (and increasingly suburban and rural) experience. The specific forms that these mediations take – the processes and politics in and through which content and code work socially and spatially – are complex and multifaceted. While digital technologies are implicated in the (re)production of exceptional spaces of routinized surveillance such as airports and international borders (Dodge and Kitchin 2004), social media and consumer technologies mediate more fundamentally the mundane practices of urban life, shaping and reflecting the collective experience as particular versions of events and locations are vigorously promoted or sidelined (Graham 2013; Zook and Graham 2007).

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In this chapter, we sketch the contours of a media geography concerned with what we term crowd-sourced augmented realities. In particular, we set out a methodological framework within which to consider the articulations between power-laden social and coded processes working in and through augmented realities. We use the term *augmented reality* in reference to the indeterminate, unstable, context dependent and multiple realities brought into being through the subjective coming-togethers in time and space of material and virtual experience. The social component emphasizes the significance of social media – Twitter, Facebook, Foursquare and other more-or-less mass-market platforms – in shaping engagement with and understandings of place. Aside from the important backdrop of software code and coded rationalities shaping cities as “coded spaces” (cf. Dodge and Kitchin 2005, 198), there is a clear case that can be made around the disciplining effect of “geomedia” (Lapent 2011) – multimedia representations or annotations with a locational dimension – in engendering particular ways of conceiving of and interacting with place. The specific bodily orientations implicit in the usage of handheld (smartphone) devices and the performative theatricality of social media (self-) representations reshape in significant ways the experiential and discursive boundaries of engagement with urban places (Boulton and Zook 2013). More generally, the role of code as an algorithmic ontology circumscribing and limiting representational practice remains underexamined even as the unprecedented openness of social media platforms/practices confers opportunities for the democratization of geospatial representation. Augmented realities then include personalized and social components – content and practices – in the configuration of individualised, time/space-specific and power-laden material/virtual nexuses mediated through technology, information, and code (Graham et al. 2013).

This approach to social media and augmented realities more generally calls attention to the power-laden social-technological processes and relations by which geographically referenced content may acquire a persuasive rhetoric of authority, and thus the duplicity of code (Graham et al. 2013) in naturalising the uneven production and consumption practices inherent within representations of urban and increasingly, rural places (Allen 2003). To better illustrate the process by which these augmented realities are jointly produced and contested we provide a case study of the crowd-sourced annotations created via Google Map Maker and Google Places reviews at the site of Osama Bin Laden’s compound in Abbottabad, Pakistan on May 2, 2011 shortly after the raid in which he was killed.

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## Content, Social Media and the Duplicity of Code

Rather than envisioning the ontologically distinct constructs of cyberspace and material space that were popular in the 1990s, we need to recognise that ‘virtual’ and material spaces have always been inextricably linked (Nagenbourg et al. 2010; Firmino and Duarte 2010; Graham 2010). We urge a broadened and socio-spatially nuanced concept of augmented realities which emphasizes the potent ways in which

virtual information – in particular, geographically referenced content – intersects and helps shape the relationships that undergird our lived geographies.

## Unpacking the Duplicity of Code

Dodge and Kitchin (2005) draw a distinction between ‘code/space’ and ‘coded space’: that is, between code/spaces in which ‘code *dominates* the production of space’ (original emphasis, p. 198) and ‘coded space’ in which code is part of, but incidental to, the production of space. Such a distinction is useful in emphasizing how code acts in more-or-less visible ways, sometimes contingent upon other coded processes and infrastructures, to produce or ‘transduce’ space via continuously ‘reiterated digital practices that create space anew’ (Wilson 2011). As Thrift and French (2002) point out, few, if any, aspects of contemporary urban and economic infrastructure are *not* ultimately reliant upon, or in part produced by, code.

Code delimits behaviour in a number of contexts – from requiring adherence to accepted procedures at electronic checkouts to pre-screening ‘risky’ airline passengers – and engendering behaviours so mundane as to go unquestioned, until the code ‘fails’ via an error or unexpected rupture. But its action is more subtle than simple compulsion as code does not deterministically produce space, but works through broader “technologies of power” (Foucault 1988, 18) deployed in the management of bodies and populations. In the case of airport security, for example, code becomes part of an ensemble of tactics through which “power is actually deployed” (Rose-Redwood 2006, 474) both in the production of the law-abiding, global traveller, and in the biopolitical totalization of a statistically known travelling public. Moreover, under the guise of convenience and functionality many of the finest-grained, most sustained and intrusive relationships with coded surveillance in contemporary social life are entered into ostensibly willingly by locative media consumers. Specifically, online personalization and segmentation – where search results, advertisements and “suggestions” derive from previously recorded online behaviour – is vastly enhanced by the addition of high-resolution locational information such as that derived from (and required by) GPS tracking inherent to social mobile applications. While the extent to which locative media consumers and social media participants critically consider the privacy implications (and questions of authorship and ownership more generally) vis-à-vis their use of superficially innocuous social platforms, a trend towards pernicious surveillance is both complemented and ameliorated by an increasing participation in practices of “sousveillance” (Dodge and Kitchin 2007).

It is precisely the invisibility of code and the ambivalence of its authorship that make its deployment unnoticed and its operation so hegemonic (Budd and Adey 2009). Although code must continuously be enacted in order to work in the world, a generalized lack of awareness and engagement with code per se arguably alienates citizens a potentially ‘key source of creative power’ (Dodge et al. 2009, 1284). Instead users’ spontaneity is sated within the bounds of preordained customization options and creative potential. Nonetheless, the pervasiveness of social media entails

a dramatic broadening of access to and usage of the “tools of the powerful” vis-à-vis (potentially) powerful and socially affective representations of place. Simultaneously, search engines’ powerful emphasis on personalization portends a situation in which each individual is presented (however problematically) with a best guess amalgam of their proclivities, prejudices and preferences – “filter bubbles” (Pariser 2011) – derived from their recorded locational and social interactions rather than a universal narrative or set of representations.

The algorithmic and social spaces of user-generated spatial data provide an important arena in which to examine the character of the uneven and power-laden practices through which digital representations of place are authored, ordered, and momentarily stabilized in the production of augmented realities.

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## Power Through Social Content and Code

All spatial representations are both the products and producers of specific configurations of power relations (Harley 1989; Allen 2003; Pickles 2004), and thus a key question is whether the ways power in augmented reality is constructed and exercised is novel. Our account of power in augmented realities draws on the Harleian tradition of cartographic critique in asserting the contingent and incomplete nature of the map as socially constructed and embedded discourse. While Harley cannot have anticipated emerging geoweb/geomedia and social media phenomena we nevertheless draw attention to the prescience of his anti-foundationalist, Foucault-infused accounts of cartographic power (Crampton 2001). His insistence, for example, on breaking down the categorical distinction between propaganda maps and other (truthful) maps represents a necessary first step towards recognizing that all representations of place – including digital, crowd-sourced maps – are products of and productive of, social relationships and associated power relations. Building upon Harley’s foray, cartographic scholars have further developed the critique of the notion of a unitary author of a map imposing a vision on a reader without resistance and emphasized the situated and contingent process by which representations are constructed by tracing the “genealogy of power discourses” associated with maps (Crampton 2001, 243).

In the context of “social” representations of place – the net outcome of multiple users’ contributions and the coded processes by which these are combined, promoted, ordered, etc. – it makes less sense to think explicitly in terms of individual authorial intent than in terms of the work done by maps and mapping practices in supporting and creating particular kinds of subjects (Wood et al. 2010). In such an approach, while power is productive – of mapping subjects from amateur cartographers (Wilson 2011) through Foursquare users “checking in” at locations throughout the day, to the casual user performing a Google search from a cell phone – it is not inherently oppressive or negative (Elwood et al. 2012). Indeed, in the case of user-generated geographical data we note the broadening of mapping publics with access to modes of cartographic representation *and* a marked socio-spatial unevenness obscured by this veneer of democratization. As such it is

important to carefully think through the overlapping ways power relations are differentially manifest over time and space through digital augmentation.

In the remainder of this chapter, we suggest four kinds of power manifest differentially over space and time for different individuals in the coming-together of material and virtual spatialities: first via primarily social actors in the cases of *distributed power* and *communication power*, and second via the action of software in the cases of *code power* and *timeless power*. While these categories are separated by dynamic and porous boundaries they provide a useful heuristic for understanding some of the ways in which power is enacted within augmented realities.

## Distributed Power

Distributed power refers to the complex and socially/spatially distributed authorship of the geospatial content that forms the basis of augmented realities and consumer locative media products. Additionally, it recognizes the similarly diffuse power of users to view, promote, rank, comment, redistribute (etc.) geographically referenced information. While distributed power points to the relative and potential democratization of spatial data production and consumption under the auspices of crowd-sourced spatial data, it also recognizes the potential that a veneer of democratization – the notion that because everyone can contribute, all voices will be heard – leads to a potential depoliticization of code's work and the power relations inherent in geospatial authorship.

Significant portions of the content comprising augmented realities is derived from social and crowd-sourced/collaborative endeavours. Places can, for instance, be represented as: a Wikipedia article; myriad mentions on Twitter; multiple photos uploaded to Flickr and Picasa; and YouTube videos created by locals or tourists, just to name a few. Some argue that this explosion in user-generated content fundamentally challenges traditional gatekeepers of knowledge (Shirky 2010) and potentially gives voice to any of the two billion people online. While this libertarian vision of technological equality is attractive, reality falls far short of it (Graham 2010; Graham and Zook 2011). For example, user-generated content is characterised not only by occasional unreliability and poor quality (e.g. (Carr 2007)), but also the potential for relatively untraceable manipulation of representations of place such as the CIA editing Wikipedia articles about Iran (Fildes 2007).

Of more concern, however, is that the reliance upon a volunteer labour force means that a majority of the world's population are excluded from the technologies and connectivity needed to create content about place: a group dubbed by Manuel Castells (1998) as the "fourth-world". In short, some people are simply better positioned and hence more likely to engage in content production due to their available resources (i.e. access to information technologies and greater amounts of free time). Less obvious, but equally important, is that even among those with time and access, only a small minority tend to engage in the production of geospatial content (Crutcher and Zook 2009). Research has shown that the internal technical and social structures of content platforms such as Wikipedia privilege

some contributors over others, e.g., the cultural convention of a relatively aggressive style in arguments has privileged the work of men over women (O’Neil 2009). This results in a relatively small group of people authoring representations in augmented reality (Glott et al. 2010) and a correspondingly high power to influence representations of places.

While access to this group is relatively open compared to historical practice, it does not mean that its representations are neutral or even draw from stakeholders relevant to the topic at hand. Moreover, despite its promise, the distributed power of user-generated content also makes it extremely challenging to understand what the embedded biases in content are, and to work to address them (Boulton 2010). And at its most extreme, the expectation within distributed power that because everyone can contribute all voices will be heard could lead to a depoliticisation of geospatial content. The expectation that all viewpoints contribute to the production and reproduction of spatial representation, is belied by disproportional power wielded by those with the time, inclination, education, resources, and network positionalities necessary to make their ideas visible.

## Communication Power

Communication power refers to the ways in which augmented representations are brought into being: the ways in which particular representations gain prominence, while others may be unheard by, or incommensurable with, prevailing modes of representation. Communication power refers then to the differential capabilities of particular groups, individuals or interests to assert and to stabilize particular representations of place, and the practices by which those capabilities are realized.

The ability to filter or prioritize content creates considerable power to claim or stabilize particular visions of place. This communication power is enacted in two principle ways. First is the power that comes with the ability to effectively use channels of communication to promote a specific goal of representation. In Castells’ (2008, 47) formulation of communication power this is the role played by ‘programmers’ who continually program and reprogram the goals of any particular network, in this case the networks of authorship behind geocoded content. A particularly important limitation of programming in communication power is the assumption of a common language. Geographic information in Estonian, for instance, is meaningless for most Thais and thus places can have separate (and conflicting) representations in either language. Moreover, smaller linguistic groups would have less communication power relative to *lingua francas* such as English which have the ability to create much more visible representations.

The second aspect of communication power is the ability to not only create and interpret content, but also to recirculate, repackage, and even contest it: Castells’ notion of the ‘switchers’. Without an ongoing nurturing of attention – via (re)linking, (re)blogging, (re)tweeting – any bit of geospatial information can be deprioritised in the dynamic remaking of augmented reality. It takes not only well-networked connections to give visibility to particular bits of information, but

also the ability to package information in a way appealing to the those that are most likely to circulate it. Furthermore, on jointly authored platforms (such as Wikipedia) there is a need to not just create information, but also to continuously justify its existence to others that might seek to dismiss it as irrelevant. For instance, Kenyan Wikipedia editors created an English-language article about a popular Kenyan superhero Makmende. Since Western gatekeepers had never heard of Makmende, the article was repeatedly deleted until the international press used the case as an example of the encyclopedia's bias (Ford 2011).

Communication power thus allows certain people and groups to filter and promote the representation and circulation of a stabilized meaning of place. It provides a way for some information to be amplified and other information to fade from the spotlights of attention. Rather than simply being blank spots on a map—*terra incognita*—the representations of place turn on the constellation of programming and switching power of those tied to its network with the power to enact and re-enacted content.

## Code Power

*Code power* is used to refer to the autonomy of software code to regulate actions, or mediate content – whether by proscribing or requiring particular actions (see Graham 2005), or ordering representations in particular ways. In other words, code power refers the role of code in transducing space (Kitchin and Dodge 2011): that is, bringing (representations of) space into being via reiterated processes and in conjunction with other actors.

There is a rich vein of scholarship exploring the power of code to regulate conduct ranging from fixed rules governing actions (e.g. (Lessig 1999)) to performative acts that rely on both human and technological rituals (Chun 2008). In reference to space, Graham (2005) argues that we now move through software-sorted geographies: landscapes that are often shaped, formed and mediated by invisible lines of code. Dodge and Kitchin (2005) illustrate that the technicity of code (its power to influence action) is able to influence our spatial experiences and actions through processes of transduction (constant remaking and re-enactions).

Code power works in what are frequently opaque ways to order representations of place. For example, the data presented to a particular user via the Google Maps interface is a product not only of the particular search terms used, but also complex algorithmic judgments based on the user's past tracked online activity, their geographical location, and any number of inferred characteristics based on segmentation of user populations, or even derived from the recorded behaviors and preferences of individuals in users' social networks (Miller 2011). This is to say nothing of the characteristics of the actual content served which is, in turn, valued and weighted according to myriad more-or-less documented factors, increasingly including locational relevance (proximity) and currency (time).

Although code power is inseparable from the performances and politics of its distributed authors/consumers who stabilize and claim particular representations

within the ephemeral and continuous reiterations of augmented realities, we also draw attention to the fact that code power is, often, exercised in a very centralized and hidden manner.

Centralization of code power entails a hard limit on the creativity or power of a system's switchers – ordinary users and their deliberate/unwitting promotion of content within digital representations of place – imposed arbitrarily by a sovereign, such as Google. A clear example of the latter is the deliberate editorial cleansing of so-called Google bombs created by distributed users. In high profile cases, such as the mass-utilization by liberal activists of the phrase “miserable failure” in reference to U.S. President George W Bush, countered by similar actions by conservatives directed towards President Jimmy Carter and documentary maker Michael Moore, Google chose to claim that the defusing of the bomb was “completely algorithmic” (Sullivan 2007). Similarly, no editorial intervention was claimed in the relegation of anti-Semitic “Jew Watch” from its top ranking for the term “Jew” (Bar-Ilan 2006). The fact that lower profile public figures are still targeted in such ways – see, for example, the neologism coined around U.S. Senator Rick Santorum's last name – belies the claim of algorithmic neutrality, even as it provides a source of optimism that some algorithmically determined democracy/openness may exist, unless or until the algorithmic neutrality is perceived to threaten the search engine's reputation.

Through the increasing employment of personalised and opaque code, geocoded content, and even our movements through material space, are ever more fragmented into individualized representations that ultimately enable the construction of self-reinforcing information cocoons. As such, code power makes a largely opaque contribution to the representation of places resulting in augmented realities that are increasingly contingent on every person's individual positionalities in time, space and society.

## **Timeless Power**

Timeless power refers to the ways in which digital representations of place reconfigure temporal relationships, particularly sequence and duration, between people and events. Although cartography has always entailed the synthesis of multiple temporalities – whether in the form of (hidden) data collection or surveying processes taking many months or years, or in the form of labels, references or imagery relating to historical events/significances – digital representations of place arguably entail a deepening of this effect. Although digiplaces are products of distributed individuals, coded rules, and various more-or-less visible practices of social- and software-sorting (Graham 2005), they are also positioned in an ambiguous temporal relationship to their consuming audiences. Not only are familiar representations of place such as Google Earth or Street View imagery, as well as the Flickr photographs, user-generated points of interest and Wikipedia articles served up as current, of-the-moment representations of place, they are put to work as such by individuals who act upon and in relation to these representations. Manuel Castells



(1996) describes this flattening of time as timeless time, wherein society is installed within an infinite ephemerality of continuous re-cycling and copresence.

Thus the production of augmented reality is an exercise of the power of what Castells (1996, 467) refers to as “timeless time” where time is dissolved “. . . by disordering the sequence of events and making them simultaneous, thus installing society in an eternal ephemerality”; ephemerality that are even more pronounced when combined with those discussed in the previous sections. This collapse of time is particularly remarkable given that much of this geospatial content has a time stamp associated with its creation: when the photo was taken, when it was uploaded to an online platform. However, this temporal data is routinely ignored in the enactment of augmented realities in the effort to construct seamless representations of place. Implicated within timeless power are the constraints imposed by code power, e.g., the software design that make it extremely difficult to access time metadata within augmented reality interfaces.

### **Distributed, Communication, Code, and Timeless Power**

It is important to reiterate that the practices of power within augmented reality are often situated on the borders of these four contexts. Google’s PageRank, for example, takes the communication and distributed power that results from interlinkages, reposting and promotion, and filters it through the coded power of its search algorithm to derive a particular representation of a place via a ranked Google Maps search. Likewise the distributed power possessed by active Wikipedia editors is merged with timeless power when a geocoded Wikipedia entry is placed seamlessly on a real time digital map.

Moreover, because the separation between powers is blurred, the way in which one can respond to the representations within augmented reality is similarly contingent. For example, Google’s coded power is opaque, but the company has a knowable presence. It can be criticized, lobbied, sometimes even debated with. In contrast, representations within Wikipedia, which in theory is far more open, possesses a diversity and diffuseness allowing a very different sort of power to be enacted. It is hard to disagree with an amorphous cloud if the cloud simply discounts one’s arguments or if the dispute is channelled into separate and non-interacting arenas of deliberation.

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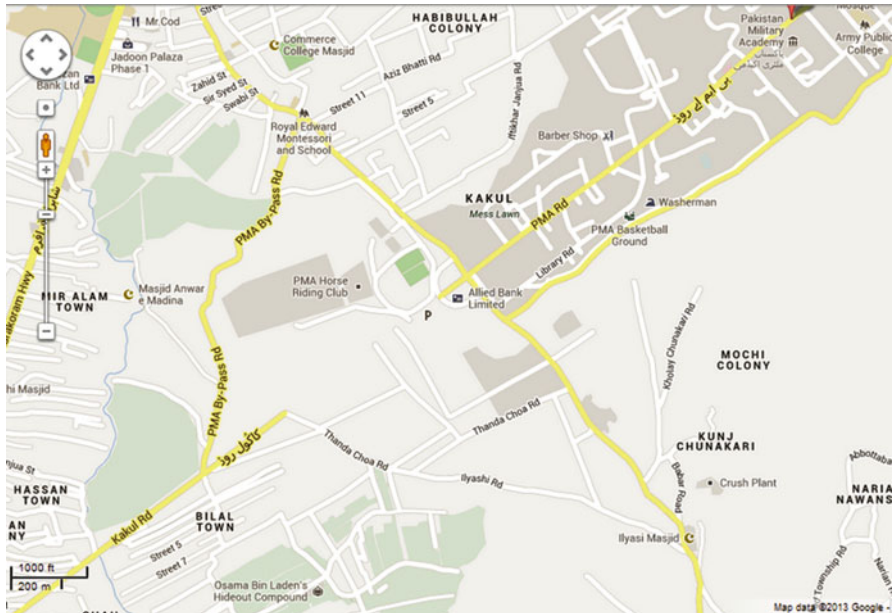
### **The Augmented Realities of “Osama Bin Laden’s Hideout Compound”**

In order to explore these issues in more detail, this chapter reviews the augmentation of Abbottabad, Pakistan. Abbottabad is a city of close to a million and half people located 100 km north of the capital of Islamabad and achieved international attention as the location in which Osama bin Laden had been hiding and where he was killed by a U.S. military raid in the early hours of May 2nd, 2011. Overnight Abbottabad

became a site through which the practices of power exercised in crowd-sourced augmented realities (particularly as manifested via Google Map Maker and Google Places reviews) can be easily discerned.

While any number of software services can contribute to crowd-sourced data, Google Map Maker is among the most potentially transformative as it exerts users to “Enrich Google Maps with your local knowledge.” The stated goal of Google Map Maker is to leverage user generated content to fill voids in maps (which were famously labelled “unknown” on maps in earlier centuries) that may ultimately be deployed in Google Maps as “places of interest”. Map Maker is particularly targeted to country contexts where data is scarce, constrained by security concerns or both, making it extremely relevant to developing country contexts (see Boulton 2010) for a detailed review and critique). Google Places reviews (rebranded as Google+ Local in 2012) is a service that allows Internet users to comment on “places of interest” within Google Maps. While ostensibly for reviews of business, users made extensive use of the reviews to comment on various sites within Abbottabad.

A quick review via Google Maps of the area of Abbottabad in which bin Laden lived (see Fig. 14.1) reveals the standard formatting and coloration familiar to users of Google’s mapping services. The only thing that stands out is the slightly incongruous label “Osama bin Laden’s Hideout Compound” in the lower middle of



**Fig. 14.1** Google Maps screen shoot of Abbottabad, Pakistan, 2013 (Source: author screenshot from June 12, 2013). Note, Osama bin Laden’s hideout compound on the *lower lefthand* side and the Pakistan Military Academy at Kabul at the *upper right*. The Margis Arif Hospital is not visible in this screen shot but is located in the *upper left* of the map

the map that marks the Google Maps defined place of interest where the founder of Al Qaeda died and the focal point of crowd-sourced annotation. Also of note is the Pakistan Military Academy in the upper left which also emerged as a target in the geospatial content created after May 2nd, 2011.

### Distributed Power

While distributed power reflects the possibility of the democratization of spatial data production, even a brief review of the crowd-sourced augmented content layering the bin Laden compound site provides a clear counter example. Almost immediately after news reports of the raid on the compound, multiple user defined places of interest were findable via a Google Maps search. In Fig. 14.2, each placemark represents a separate crowd-sourced augmentation to this location. While most of these were placed within the compound walls and were relatively matter of fact, e.g., Placemark D, Osama Bin Laden Compound, some took an incriminatory or derogatory tone such as the “Bin Laden pot farm” highlighted in Fig. 14.2. While this is unsurprising given bin Laden’s role in the 9/11 terrorist attacks, it highlights

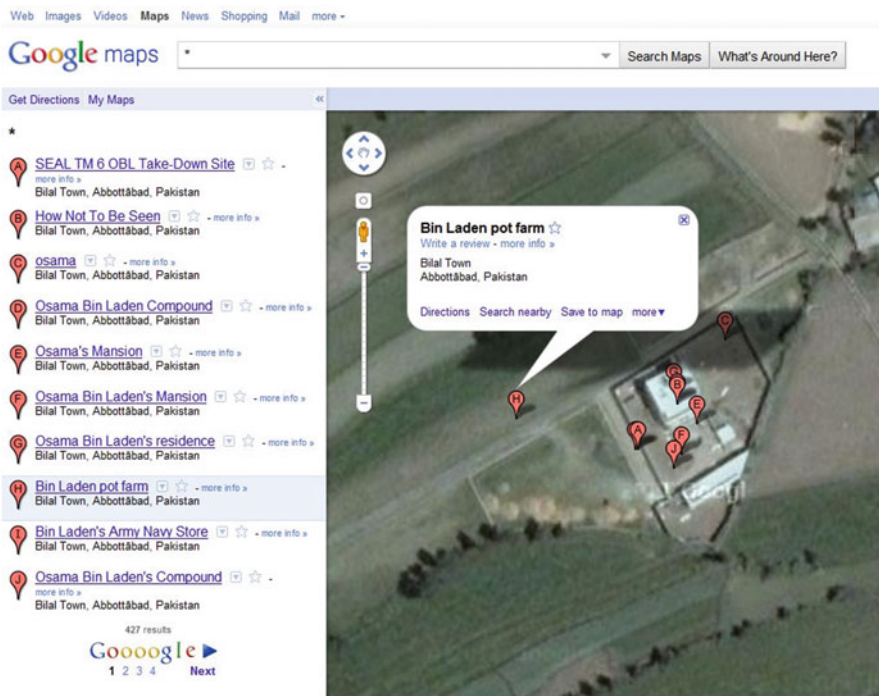


Fig. 14.2 Results of a Google Maps search of the bin Laden compound, 2011 (Source: author screenshot from May 2, 2011 at 4:30 pm US Eastern Time)

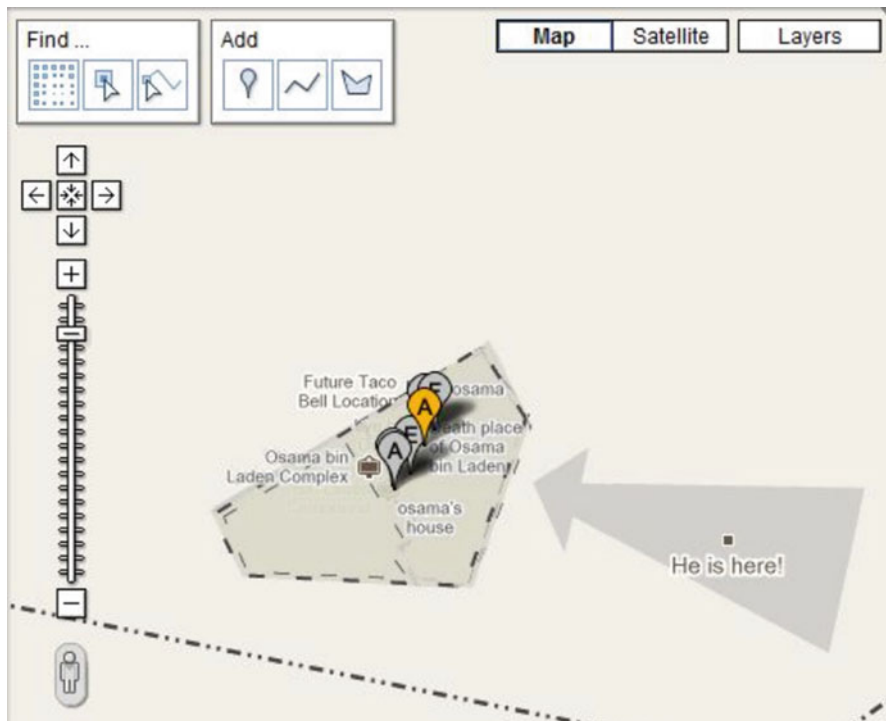
how distributed power allows a non-local population to construct representation of point of interest that is literally thousands of miles away, the antithesis of local knowledge. Moreover, the brush used by non-locals to make these representations are extremely broad and capture points of interest that share nothing with this compound besides spatial proximity. For example, nearby businesses have received reviews referencing bin Laden, e.g., “some 6’5” guy . . . kept walking around and trying to recruit people saying something about 72 virgins”.

The nearby site for the “Pakistan Military Academy” provides an interesting contrast in the enactment of distributed power. While multiple reviewers of this point of interest (especially within the first few weeks of the raid on the bin Laden compound) provide strong critiques of the Pakistani military, e.g., “Usama’s compound was 100 yards from your front gate. You’re the best? At what?!”, this evolved into a more contested discourse, with comments evenly split between denigrating and supporting the Pakistani military. For example, in late 2012 a user commented, “if Pakistan’s military was so good they would’ve rolled tanks into the compound killed the guy. surprised they even have a military that wasn’t [sic] destroyed already” and was met with a response (albeit an asynchronous one that came 3 months later) that said in part, “the pak [sic] army which is the best army in the world had checked all abbotabad everytime before the passing out parade. This was a trick by the US just to decrease the popularity of Pakistan and its people.”

## Communication Power

An excellent example of communication power the way in which the edits made in Google Map Maker on May 2, 2011 were cleaned up to make a single point of interest with in Google Maps to represent the bin Laden compound (see Fig. 14.1). In the days immediately following May 2, 2011, crowd-sourced edits made in Google Map Maker included multiple placemarks (see Fig. 14.2) as well as a user created polygon in the shape of an arrow that was defined as a place of interest named “He is here!” (see Fig. 14.3). Additionally other crowd-sourced places of interest included point locations for “Jihad Tshirt Sales”, “UBL’s Bed and Breakfast”, and “SEALS heliport” (see Fig. 14.4). While some of these augmentations appeared in Google Map searches during this time (see Fig. 14.2), they were ultimately stabilized – largely by the decisions of Google Maps – into the representation of a single point of interest that exists today. A far cry from the multiple and wide-ranging representations in May 2011.

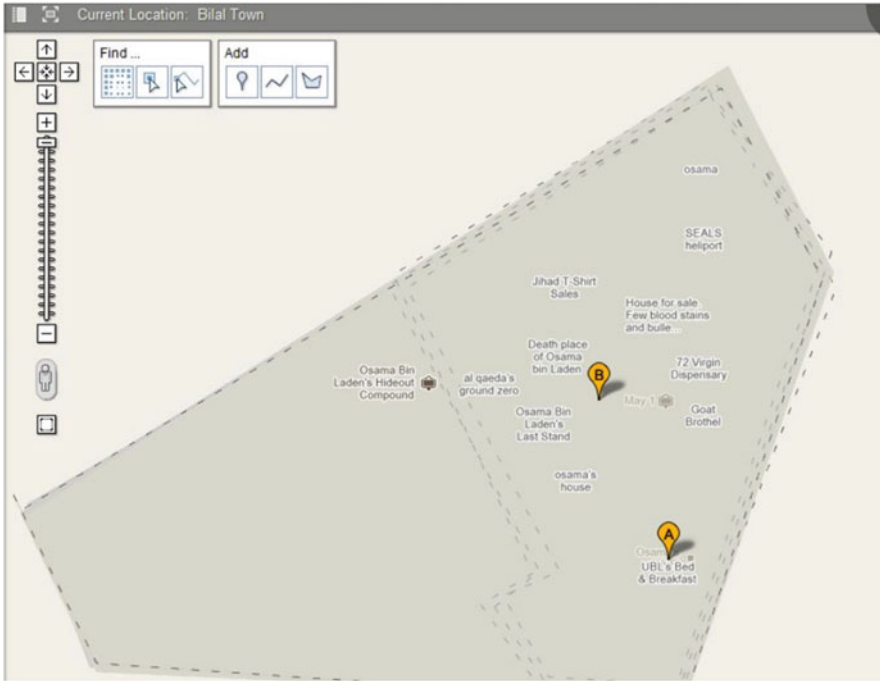
In concert with the activity within Map Maker (and perhaps in reaction to the reduction to a single point of interest) the compound has been the subject 1,482 reviews that generally echo the sentiments and dark humour exhibited in the creation of points of interest. Reviewers repeatedly make jokes in the style of fake hotel reviews to complain about noisy helicopters and unhelpful bearded men as well as much more derogatory comments. While salutatory reviews also exist, “He (is) a great man” they are far out-numbered by this process of crowd-



**Fig. 14.3** Screenshot of the bin Laden compound within Google Map Maker, May 2, 2011 (Source: author screenshot from May 2, 2011 at 4:30 pm US Eastern Time). Note: the large shaded arrow pointing to the compound with the label “He is here!” that has been added to Google Maps as distinct place of interest

sourced communication power which seeks to reinforce a specific, dark-humoured representation of the compound as a very bad hotel.

Perhaps an even better instance of communication power is the evolving representation of the nearby Margis Arif Hospital at which reviewers reference bin Laden’s supposed need for dialysis as well as his death. For example, on May 2, 2011 a reviewer quipped, “Great for bullet wounds and shrapnel injuries! If you happen to use dialysis, you might be privileged to use the same equipment as the great man”. Another review posted on the same day and by a user with the name Osama bin Laden stated, “Good doctors, friendly nurses. Ample supply of dialysis equipment”. While Google provides a mechanism for the removal of reviews by allowing a business owner to flag comments as inappropriate, these reviews have remained for more than 2 years. While the reason for this is unknown – clearly these are inappropriate reviews, the hospital managers have not had availed themselves of this despite the promise of distributed power.

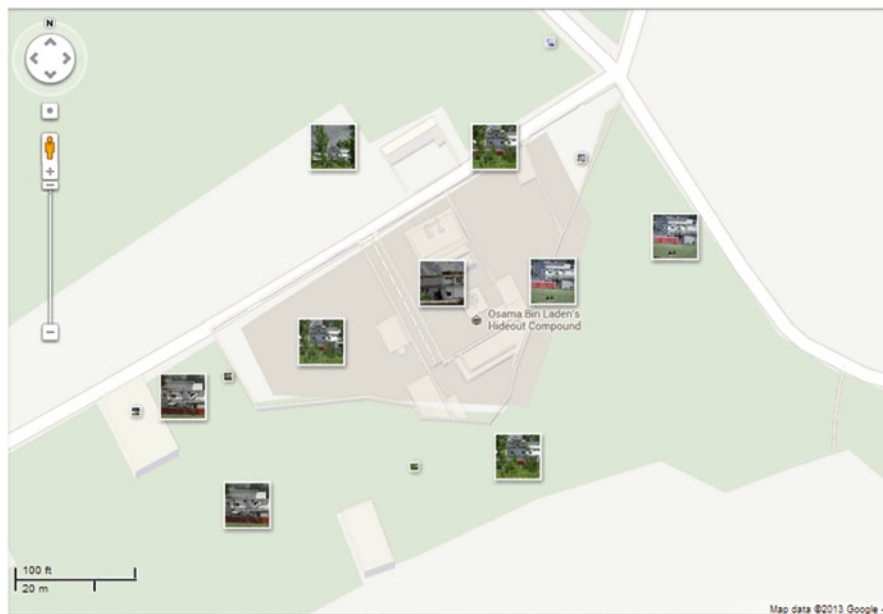


**Fig. 14.4** Screenshot of the bin Laden compound within Google Map Maker, May 2, 2011 (Source: author screenshot from May 2, 2011 at 4:30 pm US Eastern Time). Note: Some of the labels read “Jihad Tshirt Sales”, “al Qaeda’s ground zero”, “Goat Brothel”, “UBL’s Bed and Breakfast”, and “SEALS heliport”

## Code Power

The ability of coded algorithms to shape crowd-sourced augmented realities is manifest throughout this case study. Even the basic functions of interacting with augmented realities, e.g., submitting an edit to Google Map Maker or a review, are structured by user interface design, classification categories and rating scales that compel users to standardize their input. A more overt example of code power is the process by which multiple listings in a map are ordered (e.g., a search for mosque in Abbottabad) or reviews about a specific point of interest within Google Maps (e.g., the bin Laden compound) are prioritized (Zook and Graham 2007). For example, when one examines the 1482 reviews associated with the compound there are four ordering options including highest score, lowest score, latest and most helpful.

This latter category of Most Helpful is a good example of code power as the process by which “Most Helpful” is calculated is extremely opaque. The only information provide by Google Maps is “When you sort the reviews by” Most helpful, “this takes into consideration many aspects of each review’s text and author, as well as feedback from users who vote on whether the review was helpful



**Fig. 14.5** Screenshot of the bin Laden compound within Google Map with the Photos option, 2013 (Source: author screenshot from June 12, 2013)

or not” (Schneider 2012). This brief statement indicates at least three points of evaluation – text, author and feedback – that produce this metric which provides and important ordering of these augmented representations. Thus it remains that the “Most Helpful” ranking process remains largely a black box despite its powerful role in creating representations.

### **Timeless Power**

Timeless power is also observable within this case study as users continue to post reviews of the compound – albeit at a much reduced pace – that contribute to a representation of this location that flattens time into an infinite May 2, 2011. This process also finds support in the dozens of photos of this location taken from an array of angles in the immediate aftermath of the raid that provide a static representation of this location (See Fig. 14.5).

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### **Critical Geographies of Augmented Realities**

The lines of separation between these four different manifestations of power are undoubtedly blurred, but by constructing this typology and illustrating it via this case study we seek to provide a useful beginning for developing further understand-

ings of the generative social processes through which digital augmentations shape the process through which place is brought into being. Thus we call for expanded research within geographic research on how the socio-technological practices of crowd-sourced and social media derived data contribute to place-making.

In particular we emphasize the utility of addressing questions of augmented realities within a broader critical geographic engagement with key questions of representation, power and place. To date, studies of geospatial social media have been broadly distributed across the social sciences, and critical accounts of the practices, representations and institutions implicated on this broad terrain have shed considerable light on these emerging phenomena. This chapter is directed primarily towards asserting the essential role that geography and geographers can play, in these substantive and theoretical endeavors.

The augmented realities of San Francisco or Disney Land or Abbottabad are shaped both by the materialities of their locales and the power laden processes expounded here. While there may be few physical commonalities between restaurants in Disney Land or Abbottabad, they are both enrolled in the coming-together of material and virtual spatialities and subject to the associate power flows. The extent that there are commonalities between the power-laden cartographic, embodied, (gendered, racialized, etc.) practices around cartographic representations in each case, critical geographers' crucial role going forward is to explicate the ways in which crowd-sourced augmented realities are constructed, experienced and contested in various contexts.

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