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Security in public space: an empirical assessment of three US cities

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Abstract. Critics often mourn a loss of publicness in cities due to the increased presence of antiterror security zones and related behavioral and access controls, although recent work suggests that security landscapes have shifted from the hard, intense, militarized architecture of the late 1990s – early 2000s to a softer, less obtrusive approach more commonly seen today. Nonetheless, these studies are mostly anecdotal in nature: few studies attempt to back these claims with empirical evidence and even fewer connect this physical security imposition with the policies and plans governing its implementation and operation. In this paper I describe results of site visits to Civic Centers and Financial Districts in New York City, Los Angeles, and San Francisco. In each neighborhood I catalog security landscapes using a simple tool to assess the intensity, duration, and location of individual security zones. I find that the security landscape covers between 3.4% and 35.7% of publicly accessible space in the districts studied, and that this landscape is most prevalent and intense in New York City. I also find that security zones governed by multistakeholder networks are more intense and militarized than zones managed by a single entity. By understanding how the policies impact physical security, albeit in a relatively small sample of cities and districts, we can better predict what the future of urban security measures might hold. This paper provides empirical grounding to more common theoretical speculations regarding the future of the urban security landscape in the global West.

Introduction

From the sidewalk soapboxes of the Industrial Workers of the World to the Civil Rights marches of the 1960s to the World Bank/International Monetary Fund protests in Seattle, public spaces have been home to expressions of dissent and democratic action. Ideally, public spaces are sites of open communication and deliberation, where marginalized and underrepresented groups can voice their opinions, make themselves visible, or simply disappear anonymously into the crowd (Kohn, 2004; Marcuse, 2002; Mitchell, 1995; 2003; Young, 1990). In a robust legal definition, public spaces have "immemorially been held in trust for the use of the public ... for purposes of assembly, communicating thoughts between public citizens, and discussing public questions" (*Hague v. Committee for Industrial Organization* 1939, 307 US 496).

But many claim the very publicness of the city has been limited by security concerns that refashion public spaces into militarized zones that reduce opportunities for free expression. Although post-September-11 security impositions seemed reasonable in that emergency situation, as threat levels fall, these measures threaten to limit space to those with appropriate documentation only (Németh and Hollander, 2010). In this way, such restrictions are related to the demise of an inclusive public realm (Young, 2000). Thus it is important to document access and behavioral restrictions in public space because it is *only* there that we can really engage with, and hope to better understand, the ideals of diversity and difference in the city.

A quick review of the urban security literature demonstrates that these are not new concerns for critical geographers and sociologists (Davis, 1990; Zukin, 1995). For years, urban space management has based schemes on creating safe environments, just as some have demonstrated how hypersecure urban environments can filter users into

oppositional categories, limiting access to those deemed desirable or appropriate (Németh, 2009). Yet most research on this subject has thus far remained anecdotal. Few attempt to determine what security measures exist on the ground and even fewer elucidate any variations in the intensity of these restrictions. These are unfortunate oversights given recent attention paid to aesthetics and perception in security studies. Much of this literature centers on the notion that security measures are visually symbolic, so the details of their imposition—their intensity, location, and duration—can cause different emotional responses in different users (Blobaum and Hunecke, 2005; Day, 2006; Van Rompay et al, 2009; Wang and Taylor, 2006).

Recent articles by Boddy (2008) and Coaffee et al (2009) attest to two important changes in the urban security apparatus. First, the articles conclude that *physical* security has shifted from an overt militarized landscape of decades past to a more camouflaged landscape currently prevalent in cities. Second, both articles maintain that security *policy* and planning have become more decentralized, currently undertaken less by singular, public entities and more by networks of public and private actors. But little is known of the impacts of these important shifts. In this paper, I first establish what these security zones look like, how they function, and whether they manifest themselves differently in different contexts (eg public districts versus private districts). I then determine the locus and coordination of policies governing the implementation and operation of these zones, and outline any connections between policies (the political) and security landscapes (the physical). By understanding how the political impacts the physical, even in this small sample of cities, we can better predict the future of urban security measures in the global West.

Plan of paper

I begin with a conceptual framework that speculates about how the prioritization of security over social concerns might impact a 'right to the city' for its inhabitants and visitors. Finding that the urban security literature has lacked significant empiricism, I collect detailed data on security measures and policies in districts in New York City, Los Angeles, and San Francisco. I introduce and deploy a simple and replicable methodology enabling efficient assessments of security zone intensities. I correlate these data with several independent variables, including two policy-related proxies, to further explore the relationship between the physical and political. I then zoom out to the district level and compare security landscapes across contexts, concluding with a discussion of pertinent findings and potential future work on this subject. Throughout the paper I argue that security measures simultaneously protect and limit free use of public space and are thus implicated in whether, and how, populations are represented in the public sphere. As such, this empirical work allows more confident speculations on the future of urban security and its impact on individual and group rights to the 21st-century city.

Right to the city

Many critics speculate that a significantly militarized urban landscape diminishes sets of public rights and privileges. I group these speculations into a right-to-the-city framework occupying recent urban affairs literature. Introduced in Lefebvre's eponymous tome (1968), a right to the city is comprised of three interrelated entitlements: the right to access *physical* urban space; the right to be *social*, to express oneself and interact with others; and the right to *representation*, to a sense of belonging, and to channels of active citizenship.

The first right includes changes to the physical landscape, which are, of course, the most visible manifestations of urban security. Some speculate that the hardened

post-9/11 fortifications have produced a segregated society: one characterized by a distinct "architecture of terror" (Benton-Short, 2007). These militarized landscapes are mostly found in dense, populous, global cities, producing what Boddy (2008) calls an architecture of dis-assurance, the symbol of which is the concrete Jersey barrier. Boddy contrasts this visual or emblematic security with what he calls "passive – aggressive", or mostly invisible, security measures. The latter have become increasingly common and are a statutory requirement in most new development projects, including New York City's Freedom Tower project at the former site of the World Trade Center.

The second right is the ability to live a cosmopolitan lifestyle: one that provides the option to engage in unmediated interaction or to retreat into introspective anonymity. This right implies the chance to lead "an urbane, full, diverse life" (Marcuse, 2005, page 782) that finds "renewed centrality [in] places of encounter and exchange" (Lefebvre, 1968, page 179; cited in Mitchell, 2003, page 19). Social, or emotional, impacts are impossible to judge without surveys of public space users—a task outside the scope of this paper—but many agree that a fortified urban landscape has the potential to increase fear and distrust of the other. Davis (1990) asserts that the "social perception of threat becomes a function of the security mobilization itself, not crime rates" (page 224). In fact, the US federal government's National Capital Planning Commission (NCPC) itself worried in a 2002 report that such a severe mobilization of security measures would increase "fear and retrenchment, and undermine the basic premises of an open and democratic society" (quoted in Boddy, 2008, page 282).

The third right involves the ability to actively produce space and determine one's own vision of "the good life" (Young, 1990, page 37). This right entails opportunities for representation, participation, and appropriation, and involves meaningful access to decision-making channels (Purcell, 2008). But, because determining the condition of one's action often occurs in defiance of the owners, managers, or regulators delimiting desirable actions in public space, claiming this right can involve radical acts of protest, dissent, or resistance to hegemonic powers threatening this right of representation (Mitchell, 2003). The diminution of this right also refers to the constricted use of public space by certain populations, particularly those expressing political dissent or exercising rights to free assembly. In this regard, the War on Terror has become fully entrenched in a more localized politics, and some argue that officials use security concerns to justify the "prevention, repression and control of mass citizen political mobilization in cities" (Warren, 2002, pages 614 – 615).

This right-to-the-city framework helps us understand that public *space* is linked to the development of a public *realm*. In this regard, the very possibility of an inclusive, representative public realm wanes when the public space in which one might exercise rights of speech, assembly, or political dissent begins to disappear (Flusty, 1994; Savitch, 2008). Put another way, the introduction of such punitive security measures—said to maintain and safeguard these very rights—might actually serve to homogenize and normalize space, eliminating any hopes for an unmediated experience of public life.

A number of critics address the diminution of the public realm, but very few assess the actual extent of the security landscape in our everyday public spaces. And while some posit that security measures around high-profile buildings form a broader "landscape of fear" (Sorkin, 2004), none attempts to conceptualize the district-wide security apparatus, instead providing useful, but limited, analyses of individual, iconic spaces (see Miller, 2007). If different security measures generate different visual, emotional, and representational impacts—if "the transmission and reception of such impressions are projected through the insertion of overt and covert security features" (Coaffee et al, 2009, page 493)—it is vital to take a more detailed and nuanced empirical look at security zones, security landscapes, and *the policies that provoke their implementation and operation*.

Figure 1. [In color online, see http://dx.doi.org/10.1068/a4353] Security zone around Los Angeles federal courthouse (photograph by the author).

But before proceeding, a few definitions and a brief history are in order. In this paper a security landscape represents the *aggregate* geography of individual security zones in a given geographic territory. A security zone itself is a bounded area located around a public or private building that presents a combination of access restrictions, behavioral controls, or security guards (see figure 1). These individual zones constituting a security landscape can be located on either public or private property and are implemented and managed by either governmental operatives or private developers and property managers.

Shortly after the 1995 bombing of the Alfred P Murrah Federal Building in Oklahoma City, the US General Services Administration (GSA)—keen to protect buildings from vehicle-laden explosives on adjacent streets or sidewalks—produced a report advising that all government buildings identified as 'public assets' should be outfitted with perimeter security measures responding to an explicit set of standards (GSA, 1999). In response to the GSA report, the NCPC (2002) developed the first perimeter security standards for the Federal Triangle in Washington, DC, then refined these standards three years later (NCPC, 2005). The latter included the first explicit mention of security zones, referring to a secured "layer" of perimeter space around a public building. This concept was then adopted by federal agencies and cities around the country (Hollander and Whitfield, 2005). Many, though not all, security zones serve a distinct antiterror purpose, replete with gun-toting security personnel, steel-reinforced bollards, or Department of Homeland Security (DHS) vehicles parked strategically at vulnerable perimeter points.

Although security zones were initially located around public buildings, observations of the post-9/11 city reveal that private property managers—perhaps compelled by the fate

of the privately owned World Trade Center—have fervently followed suit (Németh and Hollander, 2010). More and more, public security officials are advising private security officials, property managers, and design professionals how to better secure their perimeters (Ervin, 2008). Coaffee et al (2009) argue that, as security zones have begun to establish some permanence in the contemporary urban landscape, concerns abound with regard to the acceptability of these measures. In the US most of these were expressed in pervasive national reports by the Federal Emergency Management Association (FEMA, 2007) and the NCPC (2005), the findings of which encouraged security planners, policy makers, and designers to move from an overt, visible, emblematic security architecture—replete with concrete bollards and other hardened visual symbols of security—to an increasingly covert, camouflaged, even invisible set of security features.

Shifting security policy

To better understand how the physical security landscape is defined and justified, it is instructive to review existing policy documents governing security zones in each district. To reduce the risk of providing sensitive or confidential information to the public, security zones on public or private property rarely exist in official zoning or planning documents. But their planning and implementation do not occur in a policy vacuum.

Since September 11, 2001, urban security policy, particularly as it pertains to the imposition of a physical security infrastructure, has become increasingly decentralized (Ervin, 2009). As the federal government in the US has no specific center for urban security, each city has its own operational system for dealing with perceived threats (Bugliarello, 2005). Yet even the largest localities are never fully equipped to develop a comprehensive security plan that encompasses a full range of research, training, and preparedness mandates. Consequently, many cities enlist the private sector to support their city agencies. And since many critical infrastructural assets are, in fact, owned and operated by the private sector, these parties become responsible for preventing acts of terrorism on these systems. Essential homeland security functions have moved from governmental to nongovernmental organizations, and the onus of countering terror threats is often placed on developers, businesses and other civil society actors (Bugliarello, 2005).

Central governments have also created local public–private partnerships and other multistakeholder networks (MSNs) specifically designed to address counterterrorism issues by encouraging recursive flows of intelligence and instruction. In New York City, considered a 'best practice' in interagency security coordination, private sector security officials are made aware of government intelligence just as their own expertise is leveraged to ensure critical buildings and infrastructures are protected from potential attacks (Ervin, 2008). MSNs take several forms; in New York City, for example, they include *Infragard*, a program aimed at connecting private security officials with the FBI, the New York Police Department (NYPD) *Shield Program*, a partnership of police officials and private sector agencies protecting critical assets, and the *Joint Terrorism Task Force*, a program administered by the US Department of Justice that teams local police departments with FBI officials. The Los Angeles Police Department (LAPD) *Operation Archangel* mirrors the NYPD Shield Program in form and function, while the city's *Homeland Security Advisory Council* connects 300 private security officials with LAPD officers with counterterrorism expertise.

Enhanced intelligence flows facilitate public and private coordination: standards, guidelines, and building rating systems disseminated by federal authorities subsequently trickle down to local built environment professionals. Planners and design review officials are increasingly requiring antiterror security plans as part of building permit applications. And at the request (and behest) of private security officials armed

with new intelligence, architects and designers are called upon to 'design in' security to buildings and streetscape plans. Security planning is normalized in everyday city building activities, and professionals are complicit in the incremental hardening of critical urban assets as concerns shift from public to private hands, and from "traditional planning considerations to priority for police and security inputs" (Marcuse, 2004, page 275). Some claim these strategies sort the risk free (security cleared) from the risky (often based on assumptions of consumption ability), accentuating a culture of fear of the unsecured 'other' (Ellin, 1996; Sennett, 1970). So just as "elites strive to bunker themselves off within fortified capsules ... government – security coalitions work to build new systems of securitization into the fabric of cities and systems of circulation" (Graham, 2010, page 108).

In sum, governments have adopted "a less overtly hierarchical response—focusing more on *governance* interaction than on *governmental* interventions" (Coaffee et al, 2009, page 490, emphasis in original). Not only is security decision making shifted from the national to local level, but control is also transferred from public to private entities via the creation of partnerships and intelligence-sharing programs. Bugliarello (2005) speculates that, as security policy decentralizes from overarching federal mandates, measures might become less overt, less visible, and thus more acceptable to the general public. As such, it is important to understand both the locus of policy and the level of coordination in a particular location if we are to move beyond speculation and determine empirically whether—in the six districts studied—certain policies accompany particular security features. In this regard, this study addresses calls by scholars to 'bridge the gap' between observations of material public spaces and the political actions that define them (Smith and Low, 2006).

An empirical assessment

Site selection

In order to gain a more nuanced understanding of the security landscape, the empirical section of this paper assesses security in districts in three US cities: New York City, Los Angeles, and San Francisco. New York City security planning is, by some accounts, the 'gold standard' and is recognized as a best practice in both interagency collaboration and proactive planning (Ervin, 2008). Less is written about recent security policy or landscapes in Los Angeles or San Francisco, so comparisons against this standard will prove informative. By employing both quantitative and qualitative assessments, this study adds to an understanding of how other cities in the global West have experienced the rise of security and have fortified target buildings and neighborhoods. I selected these particular cities for a number of other reasons.

First, each city is ranked in the top five in funding received in 2008 through DHS's Urban Areas Security Initiative (UASI). DHS (2008) considers each a Tier I urban area due to their high-density and high-threat nature. Analyses of these cities are likely to expose security measures at their most pronounced and deliberate.

Second, it is instructive to analyze both public and private districts if we are to better understand whether measures differ in relation to the locus of security policy. Therefore this project examines security landscapes in both Civic Center districts, comprised primarily of public buildings and governmental structures, and in Financial Districts filled with private banks and financial institutions. New York City, Los Angeles, and San Francisco each have a distinct (and so-named) Civic Center and Financial District. The concentration of governmental buildings and high-profile corporate headquarters makes these neighborhoods prime targets for terrorists desiring both intense disruption and destruction (Savitch, 2008). Nevertheless, I acknowledge that some of the most iconic public spaces can be found elsewhere in cities—Times Square, Washington

Square Park, and other Manhattan landmarks immediately come to mind. Still, visits to both districts enable a better understanding of whether significant physical or regulatory differences exist in public versus private districts, or around public or private buildings.

Third, these three cities—and the districts studied in each—differ in size, population, density, and geographic location. In particular, each city exhibits very different configurations of public space. In this study I consider each district's *public space footprint* as publicly or privately owned exterior space legally required to allow public access, including all parks, plazas, sidewalks, and full-time pedestrian streets on which vehicular traffic is expressly prohibited. While privately owned spaces—such as corporate plazas fronting a financial tower—might present different rules or prioritize use by employees over the general public, these spaces are still publicly accessible in a legal sense, and are often more popular than traditional publicly owned spaces, particularly in New York City (Németh, 2009).

Our team derived the public space layer from parcels, building footprints, and sidewalk (or curbs) data created by GIS departments in New York City, Los Angeles, and San Francisco. To delineate the extent of the public space layer we added sidewalk polygons to the parcel data layer; public space was roughly calculated by subtracting the building footprints layer from the amalgamation of the parcel and sidewalk layers. The public space layer was then carefully evaluated for accuracy by overlaying the layer onto Google Earth imagery. We extended sidewalks; added pedestrian streets and plazas; and removed vacant lots, parking areas, alleys, and maintenance yards not

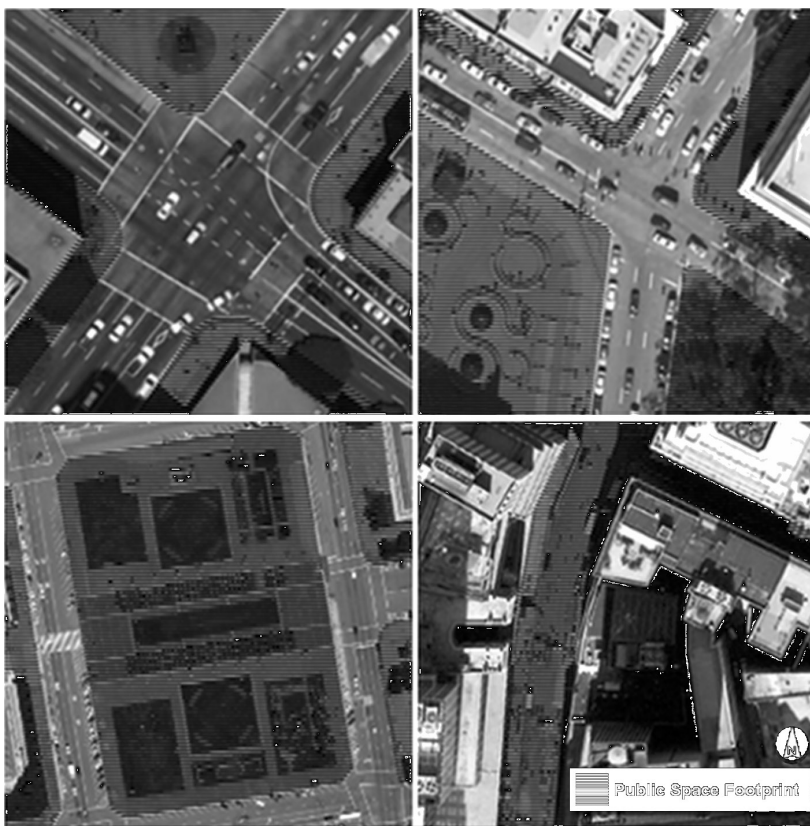

Figure 2. Graphical representatin of public space footprint (source: Michael Hinke, Decision Support Resources).

traditionally considered public space. Figure 2 shows several examples of public space footprints found in the case-study cities.

Data collection

I also collected zone-level data on eleven descriptive variables (see table 1). I detail the collection procedure for several variables that deserve further explication.

Table 1. Variables in security zone analysis.

Name	Description	Type	Coding
DISTRICT	Location of security zone in each city	dichotomous	0 = Civic Center 1 = Financial District
CONTROL (TOTAL)	Total score on security zone classification criteria (behavior+surveillance+access)	ordinal	2 = low security 3–4 = moderate security 5–6 = high security
CONTROL (BEHAVIOR)	Behavior score on security classification criteria	ordinal	0 = no restriction 1 = minor restriction 2 = major restriction
CONTROL (SURVEILLANCE)	Surveillance score on security classification criteria	ordinal	0 = no restriction 1 = minor restriction 2 = major restriction
CONTROL (ACCESS)	Access score on security classification criteria	ordinal	0 = no restriction 1 = minor restriction 2 = major restriction
BUILDING OWNER	Ownership of building at which zone is located	dichotomous	0 = public 1 = private
DURATION	Permanence of physical measures found in zone	dichotomous	0 = temporary 1 = permanent
SIZE	(Log) size of security zone	continuous	none
CLUSTERING	Proximity of zone to other zones	continuous	none, although standard deviations ± 1.0 indicate significantly strong clustering or dispersion, respectively
POLICY (COORDINATION)	Level of institutional coordination of policy governing zone	ordinal	0 = no policy found to govern zone 1 = local policy only 2 = multiple policies governing zone (including federal level)
POLICY (TIME)	Period in which dominant security policy governing zone was implemented	dichotomous	0 = pre-9/11 1 = post-9/11

CONTROL variables

As the extent of security zone restrictions varies from zone to zone, I developed a simple and objective set of assessment criteria to differentiate methods and classify security zones, and thus security landscapes, on their overall level of restriction and on the presence and intensity of certain criteria (see table 2).

Access restrictions include bollards, planters, gates, or fences located at ingress points to a space or building. Behavioral controls include posted signs prohibiting activities like photography or loitering, or design features to discourage actions like sitting or gathering in a small group. Surveillance measures include only security

Table 2. Security zone classification criteria.

	Minor restriction (1 point)	Major restriction (2 points)
CONTROL (ACCESS)	Few physical impediments to access, but no entrances blocked	Several physical impediments to access or entrances blocked
CONTROL (BEHAVIOR)	Behavior limited by either physical or legal restrictions	Behavior limited by both physical and legal restrictions
CONTROL (SURVEILLANCE)	One security guard present	Several security guards present

guards and other human surveillance. I do not include the presence of surveillance (CCTV) cameras as a criterion because cameras are ubiquitous in nearly all outdoor (and indoor) public spaces in major cities. Elsewhere (Németh, 2009) I estimate that 95% of buildings in midtown Manhattan have surveillance cameras present while, among others, Fyfe and Bannister (2005) have shown that nearly every square meter of Central London is covered by a CCTV camera.

Each zone is assessed on the three criteria, receiving one point for any *minor* restriction and two points for any *major* restriction: total scores range from 1 to 6. For heuristic purposes, I have grouped zones into three categories based on an overall restriction level: low (2), moderate (3 – 4), or high (5 – 6). To further distinguish a security zone from, say, a corporate plaza with one security guard on patrol, note that I eliminate zones with a total score of less than two. This scoring system simply allows for intensity comparisons across zones; one might use different cut points for the low, moderate, or high distinctions, or might not group zones at all. I acknowledge that I might have weighted criteria based on perceived impact, or included additional measures or restrictions, but feel that the objectivity and simplicity of the tool allows for different research teams to replicate this methodology, facilitating both single-context longitudinal analyses and rapid cross-context comparisons.

In this study, two field researchers visited each city in late 2008 over several days to collect a 'snapshot' of these security data. To enable a convenient but comprehensive data-collection process, our research team developed a sophisticated web-based, GIS that allowed field researchers to collect, edit, and upload GPS data to the project website (http://securecities.com) from the field within a single day. The research team accomplished these tasks using an iPhone, an inexpensive iPhone application, a laptop, a high-resolution digital camera, and widely used open source software.

In the field, one researcher used the XifPix iPhone application (http://jofti.com) to delineate the boundaries of the security zone. While running the application, photographs taken at the corners (or, nodes) of each security zone were embedded with location data and the geo-tagged photographs from this iPhone were immediately uploaded to Picasa™ (Google's photograph-editing software). The other researcher used a web-based form, connected to the project database via the World Wide Web and loaded on the second iPhone, to score security zones on the basis of the assessment criteria (see table 2). This researcher also indicated whether security measures were temporary or permanent, whether the zone was located at a public or private building, and was also responsible for using the stand-alone camera to take high-resolution photographs of each zone. Returning from the field, the team was able to edit the location of the geo-tagged photographs directly in Picasa™ Web Albums. The middleware developed by the team created security zone polygons from the edited geo-tagged

nodes and photographs, uploaded the polygons to the project website, and calculated the total area of each polygon.

The result was a close coupling of the security zone assessment criteria with the middleware, the database schema, and open source database software (PostgreSQL/PostGIS and MySQL), the photograph-sharing website (Picasa™ Web Albums), and the data-collection software (XifPix) loaded on the data-collection device (iPhone). This system is easily replicable and the database schema allows the team to seamlessly add data from similar fieldwork in other cities.

CLUSTERING variable

To determine the spatial relationship between security zones in the Civic Centers and Financial Districts, the team calculated the spatial autocorrelation between each individual security zone, independent of the type or intensity of security identified. To accomplish this, I used the spatial statistics tools within ArcGIS 9.3 to determine if spatial relationships could be defined as clustered, dispersed, or random. To obtain the Anselin local 'Moran's I' statistic, I used the inverse distance parameter, or 'Manhattan distance' limited by the convex hull of the polygons within the district, then standardized weights for each location by row totals to arrive at the standard score, or Z-score, for each security zone. A high negative Z-score indicates that zones are significantly dispersed, a high positive Z-score indicates that zones are significantly clustered, and a Z-score around 0 indicates a random allocation of zones.

POLICY variables

Through an analysis of all available planning briefs, policy documents, and published academic papers, I produced sketch overlay maps indicating existing security policy in each district. I focused particularly on identifying and classifying policies related to the implementation of physical security. It is important to note that all three cities received UASI money, and are therefore influenced by this federal-level funding. Nevertheless, the allocation of that funding *within* each district is not clear, so I set out to determine both whether a security plan governs the identified security zone and, if so, the level(s) of government responsible for that policy.

First, I identified whether each security zone is governed by policy in place before or after September 11, 2001 [POLICY (TIME)]. Second, I determined the level of policy coordination governing each zone, specifically noting whether a zone is overlain by district, city, or national-level policy [POLICY (COORDINATION)]. For this latter variable, if the area in which the security zone is located is not explicitly mentioned in any plan or policy document (eg First Bank in San Francisco's Financial District with newly installed metal bollards), the zone receives a '0' for this variable. If the zone is governed by a federal-level plan only (eg the Los Angeles Federal Courthouse surrounded by post-Oklahoma City, hardened, antiterror security measures), then it receives a '1'. And if the zone is explicitly mentioned in federal plan documents and has an MSN governing it (eg New York City's One Police Plaza and its security plan, implemented in coordination with the NYPD, the New York Department of Transportation, DHS's Federal Buffer Zone Protection Program and the Lower Manhattan Security Initiative), then it is scored a '2'.

Results

Security zone level

Table 3 presents descriptive statistics for the security variables collected and calculated. The measure of dispersion used is the median average deviation (MAD), the equation for which is $\text{MAD} = \text{median}\ [|X_i - \text{median}(X_i)|]$. This estimator is the most robust

Table 3. Median average deviation scores in each locality.

	New York City	Los Angeles	San Francisco	Civic Center	Financial District
CONTROL (TOTAL)	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)
CONTROL (ACCESS)	1 (1)	1 (1)	1 (0)	2 (1)	1 (0)
CONTROL (SURVEILLANCE)	1 (0)	1 (1)	0 (0)	1 (1)	1 (1)
CONTROL (BEHAVIOR)	1 (0)	1 (0)	1 (0)	1 (1)	1 (0)

measure of dispersion for ordinal data and is more resistant to outliers than standard deviation.

Although median and MAD scores appear quite similar across localities, statistically significant differences do exist (see table 4). To assess differences across geographies, I conducted the nonparametric Mann–Whitney *U*-test to determine whether two independent samples of ordinal observations come from the same distribution.

These tests reveal three statistically significant findings. First, security zones in both New York City districts are more intensely controlled (overall) than those in the Los Angeles or San Francisco districts (see figure 3). Second, security zones in the New York City and Los Angeles districts have more surveillance controls than those in the San Francisco districts. Third, security zones in the New York City and San Francisco districts have more behavioral restrictions than those in the Los Angeles districts.

Nonetheless, I am more interested in understanding whether security zones manifest themselves differently in public versus private districts, as this helps us

Table 4. Comparisons across localities.

	NYC versus LA	NYC versus SF	LA versus SF	CC versus FD
CONTROL (TOTAL)				
Mean rank	45.6 (NYC) 35.1 (LA)	47.7 (NYC) 34.8 (SF)	35.0 (LA) 32.1 (SF)	64.2 (CC) 54.5 (FD)
Mann–Whitney *U*-test	594**	589**	496	1357
CONTROL (ACCESS)				
Mean rank	42.8 (NYC) 39.5 (LA)	42.5 (NYC) 42.5 (SF)	32.1 (LA) 34.8 (SF)	63.2 (CC) 55.2 (FD)
Mann–Whitney *U*-test	736	849	499	1407
CONTROL (SURVEILLANCE)				
Mean rank	43.4 (NYC) 38.5 (LA)	52.2 (NYC) 28.2 (SF)	39.3 (LA) 28.0 (SF)	62.8 (CC) 55.5 (FD)
Mann–Whitney *U*-test	703	364**	358**	1425
CONTROL (BEHAVIOR)				
Mean rank	45.5 (NYC) 35.3 (La)	47.7 (NYC) 34.8 (SF)	28.1 (LA) 38.6 (SF)	58.0 (CC) 58.9 (FD)
Mann–Whitney *U*-test	601**	802	373**	1357

Note. CC—Civic Center, FD—Financial District, LA—Los Angeles, NYC—New York City, SF—San Francisco. No direct interpretation of the Mann–Whitney *U*-test statistic itself; it is a test statistic to be compared with a critical value.
** Significant at 0.05 level.

Figure 3. [In color online.] Pop-ups, security booths, armored street furniture on Wall Street (photograph by the author).

determine the extent to which the shifts noted in the introduction are actually occurring in the six districts studied. Although the mean rank scores in table 4 indicate higher levels of control in Civic Center zones versus Financial District zones, none of these differences is statistically significant (but see figure 4). I discuss the implications of this later in the paper. I also determined whether associations exist between the CONTROL variables and the remaining descriptive variables. Table 5 displays correlation coefficients and significance levels.

The strongest correlations are between the CONTROL variables themselves because the sum of the surveillance, behavior, and access variables equals the CONTROL (TOTAL) variable. Only one other variable—POLICY (COORDINATION)—has even moderate correlations (0.4 or greater) with any other variables. Specifically, this variable has low to moderate positive correlations with CONTROL (TOTAL) and CONTROL (SURVEILLANCE). This relationship indicates that security zones covered by multiple, overlapping policies are likely to have a higher intensity of human surveillance and overall control present. This is an important finding: in the districts studied, security zones are the most intense and militarized if overlain by federal and local-level policies.

Security landscape level

I also analyzed the aggregation of these zones into broader security landscapes. Figures 5–7 present the security landscape and its varying intensity in the six districts studied. I then provide tables showing the results of these data collection efforts, followed by brief descriptions of any particularly germane findings.

Column C of table 6 presents total security landscape acreage across districts; column D presents this value as a percentage of the total public space footprint. Column A is the total land area of the district, whether occupied by buildings or not. Los Angeles's

Figure 4. [In color online.] Fortifications around City Hall Park, New York's Civic Center (photograph by the author).

Table 5. Correlations.

CONTROL	CONTROL (TOTAL)	CONTROL (BEHAVIOR)	CONTROL (SURVEILLANCE)	(ACCESS)
CONTROL (SURVEILLANCE)[a]	0.728**	0.261**	1.000	0.063
CONTROL (BEHAVIOR)[a]	0.681**	1.000	0.261**	0.215*
CONTROL (ACCESS)[a]	0.545**	0.215*	0.063	1.000
POLICY (COORDINATION)[a]	0.393**	0.174*	0.448**	0.045
BUILDING OWNER[a]	−0.240**	−0.050	−0.244**	−0.113
POLICY (TIME)[a]	−0.162*	−0.167*	−0.023	−0.158*
DURATION[a]	0.135	0.096	−0.026	0.165*
SIZE[b]	0.114	−0.040	0.157*	0.097
CLUSTERING[b]	−0.029	−0.020	−0.096	0.089

* Correlation significant at 0.10 level (2-tailed); ** correlation significant at 0.05 level (2-tailed).
[a] Spearman's ρ as test statistic (nonparametric test).

Civic Center includes the highest total acreage of security landscape at 22.9 acres (see column C). This is likely a function of the vast amount of public space in this early 20th-century district (see figure 3). But reading down column D, we see the highest *percentage* of security landscape is in New York City's Civic Center neighborhood. Also notable is that San Francisco is the only city in which the percentage of security landscape is higher in the Financial District than in the Civic Center. In fact, San Francisco's Civic Center contains only 1.5 acres of security landscape: a quick walk around the district presents a dearth of security measures, but also a lack of people more generally.

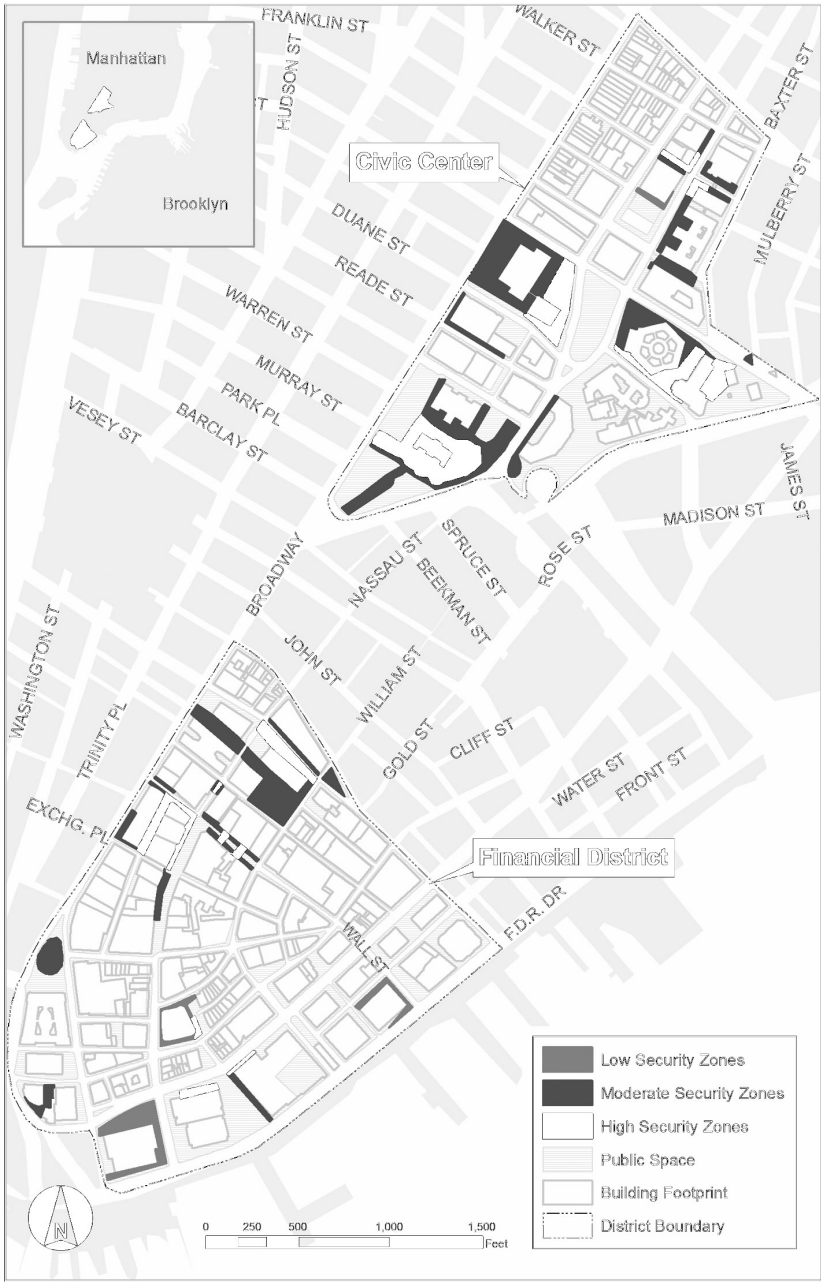

Figure 5. Security landscape map: New York City (map produced by: Michael Hinke, Decision Support Resources).

Results of the more detailed data-collection efforts are found in table 7. Note that percentages in columns A and B, as well as columns C and D, respectively add to 100%.

To calculate columns A and B, individual security zones were considered temporary if they included predominantly movable objects (eg Jersey barriers or metal security gates) or if a set of seemingly provisional regulations was posted (eg signs saying "bags subject to search"). Much of the security landscape in New York City

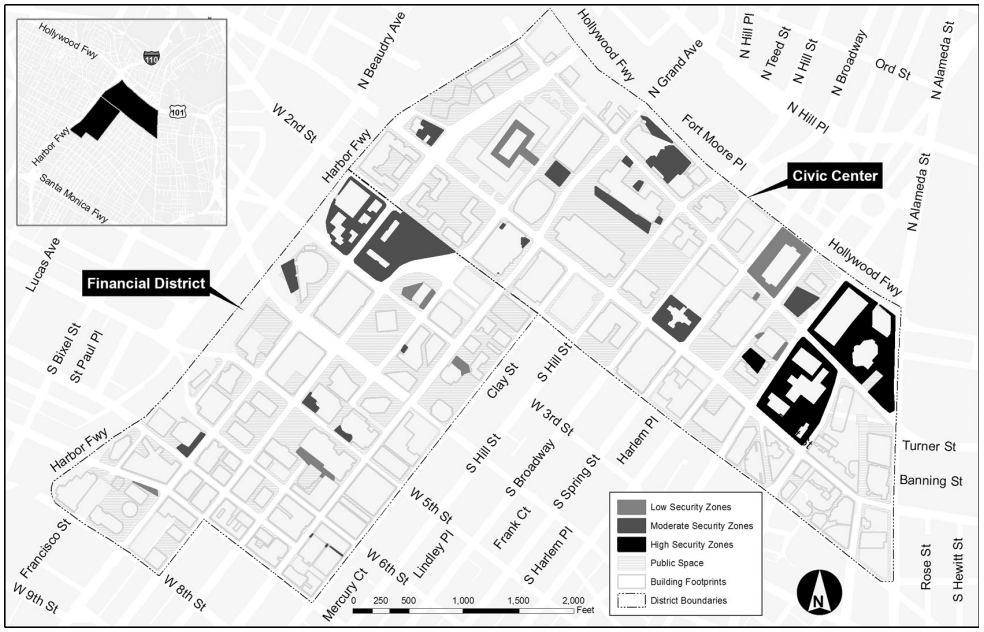

Figure 6. Security landscape map: Los Angeles (map produced by: Michael Hinke, Decision Support Resources).

is temporary; this holds true in both districts examined. While the percentage of temporary versus permanent landscape is similar in Los Angeles's Civic Center, the city's Financial District contains 93% permanent zones, compared with only 7% temporary. Also, all security zones in San Francisco's Civic Center district are permanent, with all security measures built into the material fabric of the space itself.

Columns C and D indicate whether the individual zone surrounds, abuts, or forms a perimeter around a publicly owned or privately owned building. If the security zone was located within a pedestrian-only street, we placed this in the 'public' column. I expected that Civic Centers with more public buildings would have higher percentages of security zones located at public buildings, and vice versa. But while this model holds in the New York City and Los Angeles districts, the opposite is true in the San Francisco districts. Nevertheless, because the total security landscape area in San Francisco's Civic Center is so low, this percentage only represents 1.4 acres of total space, a negligible total compared with the district's 198.4 acres of total land area. Column E displays the median of spatial autocorrelation standard scores of all zones in the respective district; recall that higher values indicate more clustering among zones in the district.

As stated earlier, the data-collection effort also yielded relative intensities of security landscapes in each district (see figures 2–4 for mapped intensity gradients). Table 8 presents the numerical results of this analysis. Note that columns A–C add to 100% across each district.

Particularly notable is that the majority of security landscape is considered 'moderate' on the intensity scale. In the New York City districts, figure 2 shows that most of the moderate to high-intensity security landscape is clustered around higher profile buildings in each district, such as City Hall and the Javits Federal Building in the Civic Center, and the New York Stock Exchange in the Financial District. Los Angeles's Civic Center district does have a large proportion (57%) of high-intensity

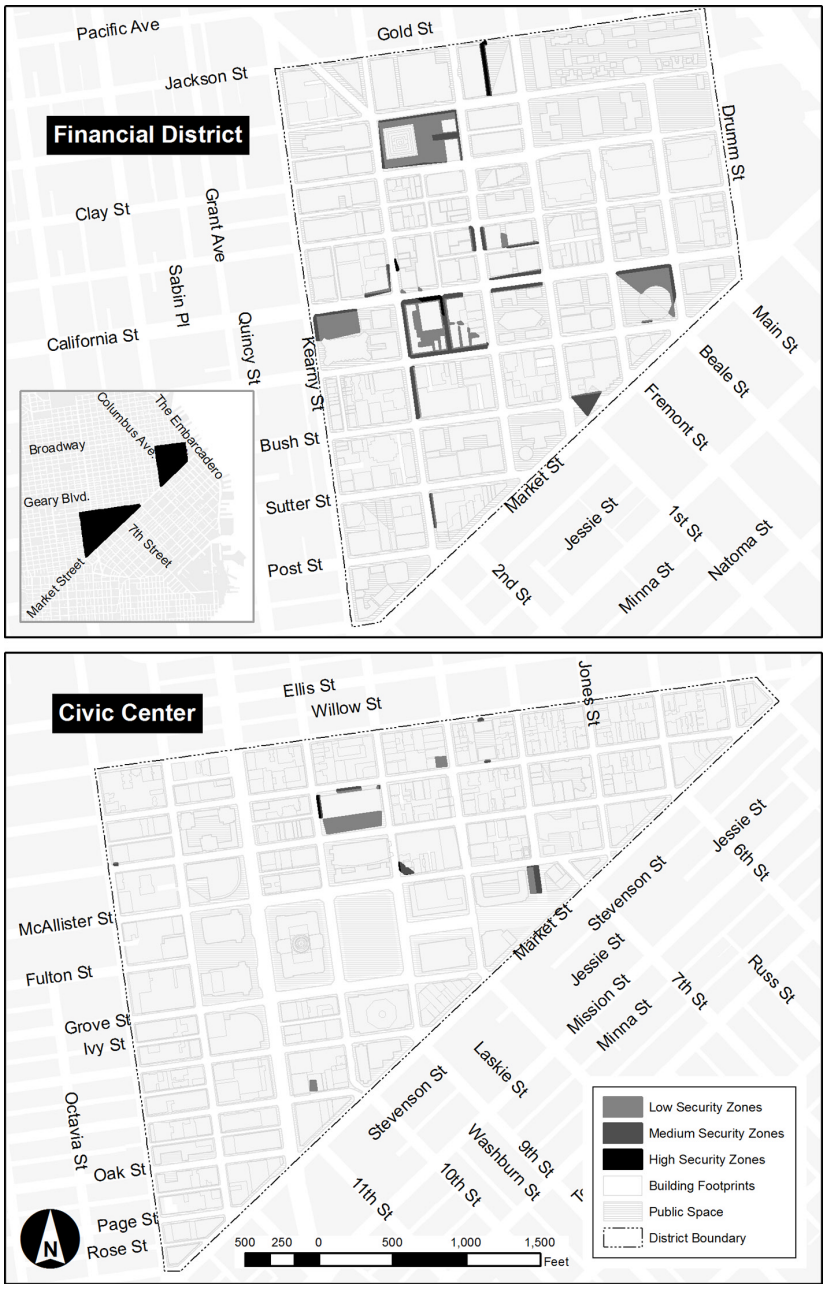

Figure 7. Security landscape map: San Francisco (map produced by: Michael Hinke, Decision Support Resources).

security landscape, although most of this is concentrated in two adjacent zones containing the Federal Building and the County Jail (refer to figure 3 near Hollywood and Alameda Street intersection). These analyses reveal several important findings, each of which I outline below.

Table 6. Security landscape totals.

	A: Total land area (acres)	B: Public space footprint (acres)	C: Total security landscape	D: Column C/B (×100) (%)	E: Column C/A (×100) (%)
New York City					
Civic Center	78.4	32.5	11.6	35.7	14.8
Financial District	103.1	28.5	6.6	23.0	6.4
Los Angeles					
Civic Center	250.2	85.7	22.9	26.7	9.2
Financial District	185.8	56.7	10.2	18.0	5.5
San Francisco					
Civic Center	198.4	42.5	1.5	3.4	0.7
Financial District	124.1	35.3	4.6	13.1	3.7

Table 7. Security landscape—detailed results.

	A: Temporary zones/total security landscape		B: Permanent zones/total security landscape		C: Security landscape at public building		D: Security landscape at private building		E: Spatial auto-correlation
	%	raw acreage	%	raw acreage	%	raw acreage	%	raw acreage	
New York City									
Civic Center	86.9	10.1	13.1	1.5	98.4	11.4	1.6	0.2	0.18
Financial District	65.1	4.3	34.9	2.3	30.5	2.0	69.5	4.6	0.09
Los Angeles									
Civic Center	44.9	10.3	55.1	12.6	91.6	21.0	8.4	1.9	0.24
Financial District	7.0	0.7	93.0	9.5	9.4	1.0	90.6	9.2	0.35
San Francisco									
Civic Center	0.0	0.0	100.0	1.5	5.7	0.1	94.3	1.4	0.58
Financial District	47.8	2.2	52.2	2.4	2.5	0.1	97.5	4.5	0.30

Table 8. Security landscape—relative intensities.

	A: Low-intensity landscape/total security landscape (score = 2)		B: Moderate-intensity landscape/total security landscape (score = 3–4)		C: High-intensity landscape/total security landscape (score = 5–6)	
	%	raw acreage	%	raw acreage	%	raw acreage
New York City						
Civic Center	2.8	0.3	58.0	6.7	39.2	4.6
Financial District	23.7	1.5	55.0	3.6	21.3	1.4
Los Angeles						
Civic Center	13.2	3.0	29.8	6.8	57.0	13.1
Financial District	13.3	1.4	86.7	8.9	0.0	0.0
San Francisco						
Civic Center	0.0	0.0	92.0	1.3	8.0	0.1
Financial District	74.8	3.5	20.2	0.9	5.1	0.2

Discussion

In this paper I have attempted to answer two questions. First, what do security zones look like, how do they function, and do they manifest themselves differently in different contexts? Second, what policies govern the implementation of these zones and what connections, if any, exist between policies and security landscapes? The following results are based on empirical data and all relationships discussed are statistically and theoretically significant.

Overall, security zones cover a large percentage of public space in these districts

Across all six districts, security zones cover 20.4% of the total public space footprint. As noted earlier, all spaces must meet an intensity threshold just to be considered a security zone, and all have militarized measures present. These security landscapes swallow up vast amounts of valuable land and potentially limits opportunities for the democratic and social purposes noted earlier (Hollander and Whitfield, 2005; Németh and Hollander, 2010; Savitch, 2008). Nonetheless, planners and policy makers fail to include security zones on official maps. If over 20% of a district were zoned residential or light industrial, these landscapes be surely be considered worthy of such documentation. This study confirms that the security zone is a new land-use type deserving more earnest consideration by planning and development communities.

Also notable is the discrepancy across cities. At the upper end of the spectrum, security zones cover 35.7% of New York City's Civic Center but only 3.4% of San Francisco's Civic Center. Interestingly, this higher percentage of security landscape is coupled with a difference in intensity of these landscapes: New York City's security apparatus is significantly more intense than those in Los Angeles and San Francisco across several control categories (refer to table 4). These discrepancies are likely due to the recent history of terror attacks in New York City and the acute attention to simultaneously intensifying and coordinating security plans to both appease a terror-fearing public and satisfy DHS mandates (Marcuse, 2004). In addition, differences in land-use patterns and densities across districts skew the public space denominator and shift percentages up or down. Another potential explanation—one explained further below—is that the extent and intensity of security landscapes are directly related to the security policy governing the area in which the zone is located.

Security zones are at their most intense/militarized when controlled by federal and local policies

Statistical analyses revealed that correlations exist between zone intensity and policy coordination. In other words, when MSNs were identified—and namely when the federal government was involved in designating a target—these zones were at their most intense or militarized. While this relationship is not necessarily causal, I did identify a statistically significant relationship. This is likely due to the sensitive/critical nature of the target—no policies or MSNs would have been instituted if the site were not a critical asset—but the relationship also demonstrates that shifts toward multiple stakeholders and local-level policies are, in fact, accompanied by a shift toward more intense/militarized/visible security, at least in the districts studied.

So while this relationship might seem intuitive, it builds on work from Coaffee and Rogers (2009) claiming that networks of expert actors, including planners, private security officials, local officials, and federal government actors, are playing a significant role in mediating and regulating the governance of urban space. This research not only demonstrates that MSNs are, indeed, common across districts, but that their presence is seemingly related to a more militarized *physical* security response. This relationship is most acute in New York City, likely due to the presence of the Lower Manhattan Security Initiative (LMSI), a federal–local partnership implicating both the public and private sectors in developing a strong security apparatus and governing

large swaths of the study areas. LMSI was developed in 2008 and includes measures to bolster patrol presence while encouraging the uptake of networked 'domain awareness technologies' including retinal scans, license plate readers, and weapons detectors, all surveilled by a cutting-edge central coordination center.

The security landscape is more widespread, but not more intense, in public than private districts
Results show that security landscapes cover higher percentages of public space in Civic Center districts. This percentage difference is likely a function of land-use patterns and densities in the two district types, which are themselves functions of public and private ownership regimes. But I also find no statistically significant difference in the *intensity* of control measures present in security zones across districts. This suggests that geography matters less than the identification of specific target buildings worthy of protection. It also implies that the presence of visible 'rings of steel' around financial districts and private buildings—increasingly present in the late 1990s and early 2000s (Coaffee, 2003)—are less prominent, but just as intense, as security zones surrounding public infrastructure. Interestingly, variations in the intensity of individual security zones do not depend on whether a measure is temporary or permanent, small or large, disconnected or clustered.

Put another way, the imposition of security landscapes not only affect the architecture of landmark buildings—the bunker-like architecture of embassies and supposed terrorist targets like the new Freedom Tower manifest a distinct 'architecture of fear'—but they also introduce new geographies, or landscapes, of security. In New York City, Los Angeles, and San Francisco, landmarks have been cordoned off since 2001, entire blocks are still open only to those with security clearance, and pedestrians and automobiles are subject to search at major checkpoints throughout certain districts like Lower Manhattan. These concerns help justify the closure or limited use of over 20% of all publicly accessible space across these six districts, and is clearly witnessed via the extensive walls, gates, and other fortifications surrounding City Halls, Federal Courthouses, and high-profile financial institutions (Marcuse, 2004). This equal treatment of public and private buildings demonstrates our commitment to protecting both market and civic imperatives (Németh and Hollander, 2010).

Conclusion

The paradox in these findings is that the very visibility of security measures is what makes them so powerful, a fact not lost on urban planners, policy makers, and building managers charged with securing public space. Visible security measures can simultaneously reassure and disassure users, alternately imparting and impairing feelings of safety and control. Yet the shift toward less intrusive, invisible measures is, potentially, just as harmful as the fortress architecture common in mid-1990s interventions. First, the lack of visible measures invites criticism from watchdog groups charged with ensuring adequate security levels, and, second, these invisible measures are still visible to many would-be terrorists. So while this paper specifically addresses the physical imposition of security measures in three US cities, it is clear that "the fortress exists in two zones", as these overt control architectures features are buttressed by an ever-growing set of covert virtual technologies tracing movements and communications of civilians (Graham, 2010, page 107).

These visible elements mark sites as potential terror targets but, despite the proliferate fortifications in place, nearly all visible measures are aimed at preventing vehicle-based attacks (Boddy, 2008). The events of September 11 and frequent pedestrian-based bombings around the world call into question the effectiveness of this design innovation. Indeed, overt security measures may be no more effective than

covert, advanced intelligence techniques, but the architecture of disassurance aims to comfort both property developers concerned with investment risk and residents and tourists with the notion that terror threats are being addressed and that daily life will soon 'return to normal' (Coaffee, 2003).

Future studies in this vein might examine individual perceptions and experiences of these security landscapes. Using similar methodology and software to those used in this study, one could assess whether certain security tactics are more or less acceptable to different populations, recognizing that perceptions of safety and security differ from person to person. These studies might then provide specific, successful examples of how to balance security, safety, liberty, and acceptability. Another potentially fruitful research avenue would further interrogate and explicate the complex relationship between the physical measures found in security landscapes and the public and private policies that call for these zones to be created.

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