

# Safety Not Guaranteed: The Future of Defensive Architecture

ASHLEY BIGHAM

University of Michigan

**Safety Not Guaranteed proposes that all architecture is a reaction to some measure of paranoia. It is possible that an “architecture of defense” runs so deep within the genetics of the discipline that it is the silent companion of contemporary architecture.**

## INTRODUCTION

As an alternative to the term defense architecture, a category which typically refers to forms and types (fortresses, citadels, bastions, urban walls), this project proposes the idea of an *architecture of defense*. An *architecture of defense* sees all of architecture as a reaction to some measure of paranoia. It is possible that an *architecture of defense* runs so deep within the genetics of the discipline of architecture that it is the silent companion of contemporary architecture; it is the water in which we are swimming. This thesis was used in the development of a research design project entitled *Safety Not Guaranteed*. The project envisions a possible design future for the American suburb in an increasingly fortified world. Based on historical research on the role of architects in the formation of defense typologies, the project speculates on the role that technology, surveillance, and fear continue to play in creating the possibility of even more extreme new typologies of defense, including conditions latent in the mundane neighborhoods of suburbia today. It studies the built environment to recognize measures and methods used to subdue those fears.

This work highlights the tendencies already found in the discipline of architecture that suggest possible futures based on an existing culture of defense. Fortification today occurs on the scale of the front door, the home, the cul-de-sac, the neighborhood. Our homes project fear with increasingly exaggerated features, figures and postures. We face the rear, abut neighbors with fences, stand erect toward the street, and expand toward the backyard. We are entrenched.

## METHODOLOGY

*Safety Not Guaranteed* took the form of three architectural models which draw specific inspiration in content and representation from historic military precedents—exploring the interplay between the infrastructure of neighborhoods and the domestic interiority found within the system. This project misreads precedents of contemporary types and tendencies, recasting them as defensive features in a speculation that

oscillates between possible pasts and likely futures. It was the goal of this design project to draw formal inspiration from historical typologies, but to also consider the design of fortifications as a series of strategies, formulas, and relationships which are repeated throughout the discipline, independent of era. The study of historical fortifications was foundational to the project but did not dictate the outcomes. The work ultimately found relationships between the digital processes of today and the mathematical foundations of early Medieval and Renaissance defense typologies.

## FOUNDATIONS

Architecture is inseparable from defense. At its most primitive, architecture is defense against an environment. For hundreds of years, defensive civic architecture for wealthy sovereigns drove the discipline through the design and construction of countless fortresses, castles, palaces, villas and city walls. The design and construction of these defense systems was among the favored topics of early architectural treatises. Thus, from its most primitive and revered “origins,” architecture was rehearsed in environments of conflict. The lineage of architecture’s defense history is clear. We can trace the relationship between architects and military engineers in many surviving treatises including those of Vitruvius, Palladio and Violett-le-duc in which architects set forth guidelines for fortification design.<sup>1</sup> In these and other texts, the topic of defense architecture was intrinsically tied to issues of representation. It was only through representation that architects were first able to map, project, and understand their enemy’s movements and constructions, and thus, create counter-moves.

## DEFENSE AND INVENTION

As the firearm became a standard weapon of military engagement, the role of the architect as military or fortification specialist shifted. The usefulness of geometric rules for mapping new bastions and ravelins weakened as long-range artillery firearms became more accurate and powerful. By World War I the use of airplanes for aerial reconnaissance and bombing shifted the construction of fortresses from themes of boundary and edge to conditions of concealment, endorsing fully encased, underground, or camouflaged bunkers which needed to provide physical security while remaining hidden from the spying eyes of the enemies.

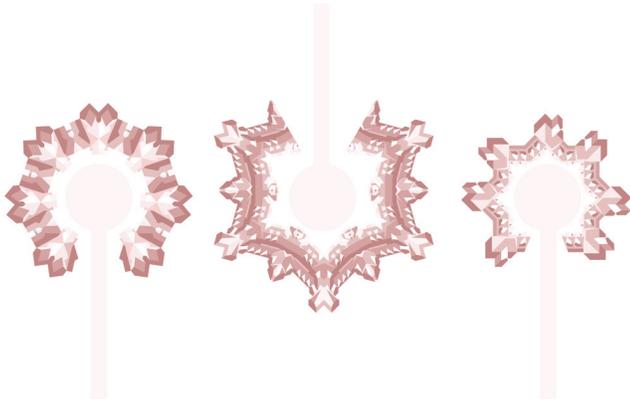


Figure 1: *Safety Not Guaranteed*, cul-de-sac plans and suburban house model (project by author)

The primary challenge of military planning in the modern era has returned to problems of representation, to accurately represent the enemy and the territory they inhabit—the battlefield. Representations of the conflict arena often represent technological advances and ideological shifts in visual understanding and technique. Scrolling through the history of military inventions of representation one can see a progression from a battlefield defined by clear boundaries to one of global perspectives—from early panorama paintings and photographs taken from hot-air balloons or homing pigeons to drone photography, infrared imaging and LIDAR scanning.<sup>2</sup> Each perceptual advance challenged its viewers to see the world from a new perspective, and thus, to understand their enemies from another viewpoint.

Representations of the battle itself, whether they come in the form of paintings, photographs or as digital images, are used to present what was previously only an imagined territory or hidden sphere of conflict. Contemporary images of battle disseminated instantaneously connect the viewer with worlds unknown, with new experiences and conflicting emotions. The viewer, often consuming images of battle from within their protected domestic sphere, is challenged to quantify or ‘make sense’ of intense or alarming imagery. The collision of the domestic sphere and the conflict arena through the mediums of television or internet streams is possibly the defining image of our generation’s ability to compartmentalize and visualize international conflicts in real-time, nestled between our domestic objects, in our ‘safe and secure’ neighborhoods. It is perhaps no surprise that the inundation of media narratives surrounding terrorism and global conflicts has moved the culture, and architecture along with it, into the realm of domestic fortification.

#### WHY SUBURBIA?

This project uses the American suburb both as a typology for study and as a testing ground upon which to project future architectural possibilities. American suburbs straddle a unique space in the discipline of architecture. While many Americans strive for these enclaves as an aspirational or even “default” way of living, the design and development of large suburban areas or gated communities are often ignored by architects.<sup>3</sup> The ubiquitous nature of the spaces leaves little room for imagination or provocation. It is for this very reason that this project



sought to tackle the American suburb as a site, to mine the generic typologies of suburbia to its advantage.

In addition to observing the defensive stances of individual houses, gates and circular cul-de-sacs, suburbs offer specific examples of contemporary fortification. Residents in suburbs clearly mark their territory with fences, often battling with neighbors over inches. Front porches have been replaced with backyard decks which offer increased privacy and a socially accepted method of interacting with (or avoiding) neighbors. Large gated communities host a network of distributed centers—club houses, golf courses or swimming pools—and clearly defined but physically weak periphery boundaries, such as gate houses, fences and security checkpoints.

Although there are no definitive statistics on the number of gated communities in America, research suggests that more than 3 million households exist within gated or fortified systems.<sup>4</sup> Zooming in and around any major American city on Google Earth, it is impossible to ignore the pervasiveness of the enclave suburb as the default of American developers.<sup>5</sup> However, there is one striking difference between the historic urban fortifications and those of today. Whereas pre-modern city walls or fortress designs based their success on physical strength during attacks, today’s communities are rarely, if ever, tested physically. Indeed, most would fail if tested by current military standards. Instead, they are symbols or signifiers of a social order, reinforcing the inclusion or exclusion of certain members in a society in a direct move toward ‘privatization’ and community ‘stability’.<sup>6</sup>

Since its development in the 1820s, the American suburb has been embedded with social aspirations about the nuclear family, gender norms, religion, inclusiveness and maybe most importantly, exclusiveness. The problem of escaping into suburbia has only increased since that time; as Dolores Hayden notes, “By 2000, more Americans lived in suburbs than in either central cities or rural areas combined.”<sup>7</sup> American suburbs have slowly developed into enclaves defined by gates, fences, berms, and other forms of defensive origin. In most cases, gated communities provide only the illusion of protection. Public space has been replaced by the shopping mall, a type which feels public but precludes many by its location removed from the urban centers, inaccessible by public transportation or in areas where vehicular traffic makes walking or cycling dangerous, or at the very least, unpleasant.



Figure 2: *Safety Not Guaranteed*, section model

In *Domesticity at War*, Beatriz Colomina states, “The home front in fact is a lawn, a green facade, a horizontal facade, as if seen from the air—as in the endless aerial views of the suburbs that recall the aerial photography that played such a strategic role in military reconnaissance and bombings.”<sup>8</sup> Today this view of the home front is mediated by the fonts, icons, and personal imprints of Google, becoming the new frame or lens through which we understand our surroundings. Zooming in and out, panning across the screen, and toggling layers of information have fundamentally altered our understanding of our own built environment, and of those which we have never experienced. This privileged aerial view, once only afforded to military reconnaissance agents, is now free and accessible to anyone with internet access.

Architects have often straddled the line between designing for state actors and for the general public. In the collective spirit of the domestic World War II effort, designers including Normal Bel Geddes and Charles and Ray Eames developed design projects for the military on a range of scales, from the practical ‘Eames splint’ to Geddes’ more fantastical plans to camouflage ships to look like icebergs.<sup>9</sup> George Nelson, a contemporary and collaborator of the Eameses, reiterated the link between design and war production in his ironic and deadpan commentary on a CBS television program in 1960 called “How to Kill People: A Problem of Design.”<sup>10</sup> The performance was complete with an illustration depicting various weapons and their effect on the human body.

When military manufacturing giant Lockheed needed to disguise its California production plant in 1940 from possible aerial reconnaissance, it covered the factory not with fake landscape, but employed Hollywood set designers, architects and artists to create a mock suburb on the roof of the plant.<sup>11</sup> From above, the fictional suburb was indistinguishable

from the neighborhoods nearby. In contrast to the obsession of accuracy in the field, these projects show a rich history of falsifying architectural images. By first understanding a specific viewpoint (in this case, the aerial photograph) one can specifically design to distract and distort the representation of the physical world.

Like the spread of fortification typologies in Europe from the Middle Ages to the Renaissance, suburban enclaves are spreading throughout the world. Cities around the world have co-opted forms of American suburbanization in response to local socio-economic shifts and perceived or real physical threats. To use Keller Easterling’s metaphor of the spatial germ infecting *the zone*, the proliferation of fortified domestic space is an infection spreading on the scale of military precedents.<sup>12</sup> The protocol for the division of space in a suburb, its orientation, or fortified boundary are repeatable systems which behave much like previous formulas for bastions or glacis.

### 3 MODELS

*Safety Not Guaranteed* began with an interest in prescribed viewpoints and a specific mode of representation—the scale model. The architectural model remains one of the best tools architects have to convey and share information regarding the built environment. The goal of this project was to create three models which engage the viewer at different scales and vantage points, presenting the content in a way which biases certain aspects of the design. Three modes of representation were chosen, based on their extensive use in Renaissance military architecture precedents: the plan, the section perspective, and the bird’s eye view.<sup>13</sup> Combined, these three types of representation could provide a complete picture of the field of play, but with notable distortions.

The first model, begins at the scale of an entire neighborhood as seen from a drone. A triangulated model distorts the perceived scale and imagines a sky filled with a range of UAVs (Unmanned Aerial Vehicle). The model is placed on the floor, engaging the viewer to walk around the model and construct the direct plan view in their imagination. At eye level, a collection of drones, accurately scaled and modeled, juxtapose the aerial plan view with the viewer’s own bird’s eye view of the physical model.

The second model, a sand table (fig. 4), offers a privileged viewpoint from above, recalling the use of bird’s eye paintings to denote the extends of a territory or scene. Sand tables are still commonly used by the military as the most widely understandable and adaptable form of communication between troops and are particularly helpful for multi-national coalitions whose members do not speak the same language. Often these ad-hoc constructions are made with the found materials or discarded waste of the camp. To test the broad appeal of this type, the exhibition used 3-D printed molds and invited the public visitors to create their own fortification system using wet sand. The temporary, participatory aspect of this model reflects more commonplace strategies for defense systems where users amplify or adapt existing buildings or suburban spaces.

The third and largest model (fig. 3), combines both the measured section and the distortions of panorama paintings to show multiple viewpoints at once and oscillate between the real and the fictional, the past and the



Figure 3: *Safety Not Guaranteed*, section model

present. The model incorporates 3-dimensional imagery (digital camouflage) and a 2-dimensional image (panorama drawing) as a background to show depth and suggest a 3-dimensional space beyond the model.

The panorama painting first evolved as a method of representing cityscapes and was later used to portray battlefield events which happened over time.<sup>14</sup> Panorama drawings are also useful in their ability to create a world within a world—subscribing the extent of the visible world onto the space of the globe—collapsing scales and creating a false center around which homes are fortified. It completes the formal and social ambitions of the cul-de-sac. In some ways, suburbia is already half-way there—creating landscapes which are about viewing an endless array of similar forms, organized across vast vistas of the American Landscape, in colors that suggest a naive and placated understanding of the typological origins.

Together the three models present possible pasts, presents and futures in order to understand through subtle distortions how paranoia shapes our world. The project offers a glimpse into the world of military tactics deployed in the most typical environs. Through this medium, it was possible to explore the spatial properties of social and political acts.

### NOT HIDING, PERFORMING

Historically, cities pooled resources to erect walls, gates and towers to survey the approaching forces and guard against their attacks, but today these physical defenses are most commonly seen at the scale of individual buildings or neighborhoods. With the dispersal of city centers and the influx of periphery zones, suburban landscapes become the physical barriers between urban and rural spaces; the frontline has again formed concentrically. This time, however, it is not a wall protecting an urban center; the barrier built in the form of a neighborhood becomes the space of inhabitation. The frontline has migrated to the shopping mall, the parking lot, or the front porch. The obsessive paranoia of today is not that of fortifying or portraying our military bases abroad; instead, it is about the so-called “domestic threat” within our own communities. This term, while referencing the distinction between domestic and international, takes on a new meaning when applied to actual domestic scenes—those most commonly associated with spaces of privacy, safety, and security.

With each new physical barrier built to separate the domestic and public realms, new reconnaissance machines have been welcomed inside the domestic enclave of the home. Where once sophisticated tradecraft was necessary to implant listening devices in bedrooms, the lure of convenience and novelty allows for the collecting of data rhizomatically by

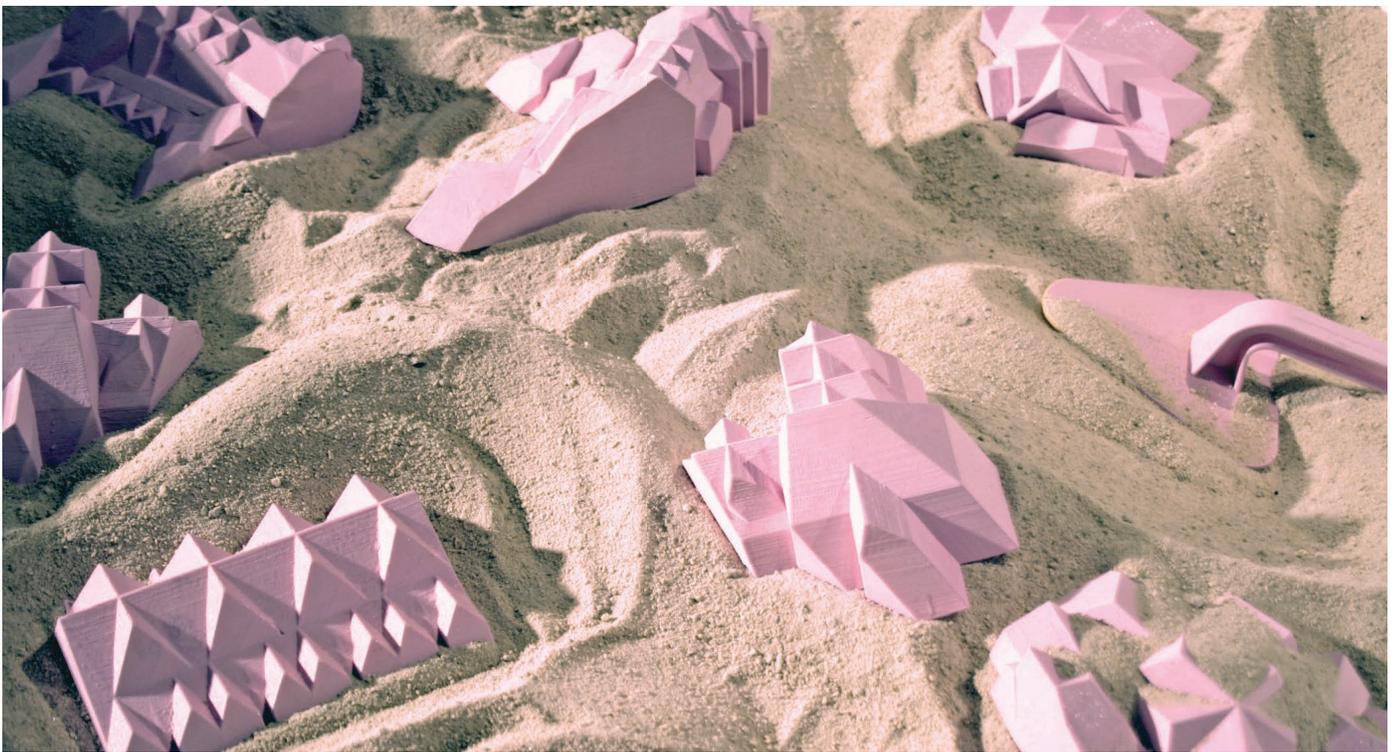


Figure 4: *Safety Not Guaranteed*, overall exhibition and sand table model

Amazon or Google. The new domestic is connected through a digital circus where information is the price of admission. Perhaps, the invisibility of these networks actually makes them feel more private, a more secluded form of burrowing in the trenches. Perhaps, their physical form is so comforting, so accepted, that we ignore their reconnaissance missions in lieu of a different narrative.

Our new domestic, the space between the literal and digital trenches, has been mapped, viewed, observed, and heard by a variety of entities before we arrive on the scene. It is possible that in this new landscape, where even the swing in our backyard has been LIDAR scanned by Google Earth, that hiding in plain sight becomes our greatest countermove. Obfuscation, and its family of camouflaged tactics, is the greatest opportunity for defense. As writer Walter Kirn suggests, “You’ve got two options when you find out you are under surveillance. And only two. One is hide and the other is perform. We’ve picked perform.”<sup>15</sup> Perhaps rather than concealment, which seems nearly impossible today, we have opted to provide false narratives, misunderstandings, ambiguous communications in order to retain a level of privacy or ‘inner self’.

### CALL TO ACTION

Coinciding with the resurgence of medieval military methods, fortress typologies are making a comeback. Unconsciously, or possibly subconsciously, American, and increasingly international, suburbs are designed with fortress forms and typologies. As with many modern fortresses, we remain halfway there—a delicate balance between openness and security. It is a struggle that is truly American in spirit; the simultaneous desire to be welcoming, yet protected—open, yet closed.

Where once leaders reveled in the designs of their fortresses and the power it presented to the world, we find our comfort in opaque glass and environmentally friendly moats—true oxymorons of the architectural variety. This is not a project in aspirations or ideals, rather realities and half-truths. It may be possible to engage in a sub-urban mission, not one that merely takes place in suburbia but a mission that deploys military techniques to subvert urban enclaves.

To counteract these spatial systems, one may be able to draw from the history of falsifying images, a rich tradition of understanding a particular viewpoint and designing to distract and distort the physical world. This project ultimately asks the questions: Could we physicalize our fears in order to understand them better? Can we change the present by projecting the future? Subverting the hidden forces at work in suburbia may reveal the deep paranoia that shapes our built environment and provide hopeful solutions for the future. While this design project is an exploration in the formal logics of suburban space and defensive tactics, to be clear, this is not a design proposal, rather a canary in the coal mine. It is better to see the worst future and rejoice in its absence, than to wish longingly for another present. Proceed with caution. *Your safety is not guaranteed.*

### ENDNOTES

1. See Marcus Vitruvius Pollio, *Ten Books on Architecture*, ed. Ingrid Rowland (Cambridge: Cambridge University Press, 1999); Andrea Palladio, *The Four Books on Architecture*, trans., Richard Schofield and Robert Tavernor (Cambridge: MIT Press, 2002); Eugene Emmanuel Viollet-Le-Duc, *Military Architecture (1907)*, Whitefish, Montana: Kessinger Publishing, 2010.
2. Andreas Beitin, “Imagination, Elevation, Battlefield Automation: From the Elevated View to Battle Drones,” in *Mapping Spaces: Networks of Knowledge in 17th Century Landscape Painting* (Munich: Hirmer Publishers, 2015).
3. One recent exception to this statement might be the exhibition *Foreclosed: Rehousing the American Dream*, MoMA, 2012.
4. Edward J. Blakely and Mary Gail Snyder, *Fortress America: Gated Communities in the United States* (Washington, D.C.: Brookings Institution Press, 1997), 2-3.
5. See Dolores Hayden, *A Field Guide to Sprawl* (New York: W. W. Norton, 2004).
6. Edward J. Blakely and Mary Gail Snyder, *Fortress America: Gated Communities in the United States* (Washington, D.C.: Brookings Institution Press, 1997), 44.
7. Dolores Hayden, *Building Suburbia: Green Fields and Urban Growth 1820-2000* (New York: Pantheon, 2003), 10.
8. Beatriz Colomina, *Domesticity at War* (Cambridge: MIT Press, 2007), 115.
9. Alastair Gordon, *Naked Airport: A Cultural History of the World’s Most Revolutionary Structure* (New York: Metropolitan Books, 2004), 132.
10. John Harwood, “The Wound Man: George Nelson and the ‘End of Architecture’,” *Grey Room* 31 (2008): 91-115.
11. “Lockheed During World War II: Operation Camouflage,” *Lockheed Martin*, accessed September 14, 2016, <http://www.lockheed-martin.com/us/100years/stories/camouflage.html>.
12. Keller Easterling, *Extrastatecraft: The Power of Infrastructural Space* (London: Verso, 2014).
13. Ulrike Gehring and Peter Weibel, eds., *Mapping Spaces: Networks of Knowledge in 17th Century Landscape Painting* (Munich: Hirmer Publishers, 2015).
14. Stephan Oettermann, *Panorama: History of a Mass Medium*, (New York: Zone Books, 1997), 5-48.
14. Manoush Zomorodi and Walter Kirn, “Is My Phone Eavesdropping On Me?” *Note to Self*, Podcast audio, Nov. 4, 2015, accessed September 18, 2016, <http://www.wnyc.org/story/walter-kirn-paranoid-crazy/>.