Design has a history of violence. Yet as a discipline, design tends to trumpet the ways it has bettered society, rarely acknowledging its complicity in the malevolence and brutality that has for too long been a part of human life. Design and Violence investigates this often ignored and murky terrain, defining violence as a manifestation of the power to alter circumstances, against the will of others and to their detriment.

This volume assembles a cross section of design projects, each with an ambiguous relationship to violence, pairing them with an author’s response that brings in expansive perspectives from fields as diverse as science, philosophy, journalism, policy, activism, and law. Nearly all the projects were designed after the year 2001, a watershed moment in the collective experience of violence that calls for a new appraisal of the forms and manifestations of violence in contemporary society. By marrying critical thinking with examples of challenging work, design becomes a lens to garner a deeper understanding.

Paola Antonelli
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This book represents the culmination of a pioneering curatorial experiment at The Museum of Modern Art exploring the intersection of contemporary design and violence in its myriad forms. Born first as an online platform, and then as a series of public debates, Design and Violence, organized by Paola Antonelli and Jamer Hunt, examines the ways in which violence manifests in the post-2001 landscape and asks what makes these manifestations unique to their era. The project is not only emblematic of our contemporary moment; its unusual format and challenging, provocative content test the boundaries of traditional exhibition making and represent a paradigm shift at the Museum.

Today, humankind enjoys better health, longer life spans, and greater access to material goods than ever before. Connecting to friends and strangers across both short and vast distances has likewise never been easier. The field of design, whether through applied medicine or mechanical engineering or computer science, has helped to propel these advances. As such, design has been rightfully trumpeted as a force for good, a facet of creative production that touches all of our lives.

Yet, this narrative, albeit comforting and easy to digest, troubles in its simplicity. Throughout history, design has both perpetuated and mediated violence, giving rise to tools that harm, control, manipulate, and annihilate—from the simple, handheld weapons of ancestral times to the undetectable, self-propagating computer malware of contemporary ones. The potential violence wrought by these tools is compounded by systemic power imbalances and their reification in our bureaucratic, social, and economic structures. It is the reexamination of this omnipresent yet shadowy narrative that drives the investigation at the heart of Design and Violence.

Over the last decade, several of the Museum’s design exhibitions, including Safe: Design Takes on Risk (2005), Design and the Elastic Mind (2008), and Talk to Me (2011), have staked the claim that design encompasses not only tangible objects but also information architectures, user interfaces, and communications protocol. Design and Violence is born of this legacy, engaging with graphic, industrial, speculative, and architectural design, among other forms. The essays in this book, commissioned from a roster of talented writers, activists, and scholars, cast a suitably wide net. Among the various objects considered, some are designed to propagate violence, others to subvert it; mass-produced plastic handcuffs used by law enforcement and spray bottles repurposed as protest tools succinctly illustrate the two poles on this spectrum. Still other ideas presented in these pages animate violence in order to condemn it, such as the roller coaster designed to induce euphoria at the same time that it euthanizes its passengers. The terror evoked by guns and by prison architecture may be palpable and incontestable; but as with interface designs that engage with political lies or that celebrate the fraught processes of natural selection.
Violence can also present in subtle and ambiguous ways, empowering and disempowering simultaneously. Since its inception in 1932, the Department of Architecture and Design has provided a platform for groundbreaking exhibitions and projects. Design and Violence, insofar as it bravely charts novel territory, represents yet another example of the department’s ambition. The design concepts in this volume often evoke discomfort, not only because they cast a harsh light on contemporary humankind—for whom death, destruction, and the deliberate infliction of harm are by no means unfamiliar—but also because they bring into relief our own often unwitting, and sometimes willing, complicity in the field’s darker recesses. The Museum is proud to support this project as part of its commitment to facilitating engagement with a broad cross section of contemporary art, architecture, and design discourses, no matter how challenging they may be. Design and Violence does not always make for easy reading, but the dialogue it provokes should not be shied away from.

Glenn D. Lowry
Director, The Museum of Modern Art
against these polymorphous forms of discrimination as the “rights struggles.” And while he credits these struggles with redefining violence as we know it, his argument does not extend far enough to convincingly account for the impact of such violence on those forced to contend with it day in and day out.¹

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Where there is transformation, there is design: indeed, the reshaping of everyday experience is at the core of the designer’s work. Whether under the guise of industrial design, but only a very few of them.”¹² From the Three Gorges Dam to the Cross-Bronx Expressway, from police batons to high-heeled shoes, designers often generate forms for social, psychological, and material violence. Nevertheless, within the profession, voices that trumpet design’s commercial and aesthetic successes have dominated. Design’s history of violence, unless linked overtly to political and social suppression, too often goes unexplored. How is it possible, for example, that Mikhail Kalashnikov, designer of the AK-47 assault rifle, now considered the most widely adopted firearm in the world (and used by armed forces in more than eighty countries), could naively reflect in his later years, “My spiritual pain is unbearable. If my rifle claimed people’s lives, then can it be that I . . . a Christian and an Orthodox believer, was to blame for their deaths?”¹³ Turning a blind eye to the depth of design’s complicity in destroying as much as (or more than) it creates, our profession has been institutionally incapable of gauging the full extent of its impact. Design and Violence confronts this head-on. It considers the manifestations of violence in contemporary society through the lens of design, contemplating the ambiguous relationships between creation, destruction, and everyday experience.

Launched in 2013 as an online curatorial experiment, Design and Violence features controversial, provocative, and compelling projects that raise unsettling questions about designers and their complicity in violence. Each week, over the course of a year and a half, we invited one author to respond in writing to a selected design (occasionally contributions have included illustration, animation, and even sound art). We then published the encounter online, alongside a leading question that distills issues raised in the author’s response, and invited the public to respond. In doing so, we opened a space for comment, reflection, and active (sometimes fierce) debate. As designers and curators we aspired to challenge ourselves and a wider community to consider whether and how contemporary violence has mutated, as well as the role of design in engendering these new forms—or not.

Violence evades easy definition primarily because the term accommodates so many configurations, spanning the symbolic and the real, the individual and the collective. As we define it for this project, violence is a manifestation of the power to alter the circumstances around us, against the will of others and to their detriment. In its various guises, violence tempts us all. Once more we invoke Arendt, for whom power belongs to the order of politics and manifests only in the aggregation of people and political agency. Violence, on the other hand, is of a completely different order. She writes, “Violence, we must remember, does not depend on numbers or opinion but on implements, and the implements of violence share with all other tools that they increase and multiply human strength. Those who oppose violence with mere power will be surprised to find that they are confronted not with men but with men’s artifacts, whose inhumanity and destructive effectiveness increase in proportion to the distance that separates the opponents.”¹⁴

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With few exceptions, Design and Violence focuses on the myriad ways violence has manifested since 2001, a watershed moment in the American collective experience and a traumatic one for the world. September 11, 2001, was a turning point in the socio-technical construction of violence; it is for this reason that we situate this project in the years since this cataclysm. Two related and equally trenchant topics frame a contemporary exploration of design and violence since 2001 particularly revealing: the dematerialization of the means of warfare, from clubs, knives, guns, and bombs to propaganda, counterinsurgency, and cyberwarfare; and the shift from symmetric, nation-based war strategies to asymmetric, decentralized ones.

In the wake of the attacks of September 11, 2001, the U.S. government under George W. Bush launched a global “war on terror.” Rooted in political pretzel logic, the war rationalized an all-out assault on whomever, whenever, and for whatever reasons. The approach has also redefined war as we know it, entailing not a collision of nation-states or superpowers, their battles wagging attacks in fields, skies, and oceans, but rather a continuous struggle to root out an enemy that is everywhere and nowhere: the caves of Afghanistan; the religious centers of London; the jogging path of the Buttes-Chaumont park in Paris; or the orbit homes of the government’s drones. It is for this reason that we consider questions of engagement: “enhanced interrogation techniques,” the usurpation of sovereign airspace, remote-controlled drone attacks, and targeted assassination have revived torture and tossed aside the Geneva Conventions. With no easily defined enemy or endgame, the conflict may never end.

Much of the post-9/11 havoc came about because “terror’s” earliest incarnation in the United States’ collective imaginary, Al Qaeda, presented a new form of opponent: stateless, distributed, decentralized, and highly networked. For a conventional military power, a new configuration of ontological warfare had to be created to seize, or populations to pacify. A 1996 Rand Corporation monograph, The Advent of Netwar, foresaw as a consequence of the information revolution’s networked organization a shift toward decentralized, amorphous, and diffuse forms of conflict. The term “netwar” depicts “societal conflict and crime, short of war, in which the antagonists are organized more as sprawling, leaderless networks than as tight-knit hierarchies.”¹⁵ The Rand researchers suggested that netwar capabilities were being developed by terrorists, criminals, fundamentalists, ethno-nationalists, revolutionaries, and militant radicals alike, with new doctrines, strategies, and technologies emphasizing networked forms of organization.
“Netwar may be the dominant mode of societal conflict in the 21st century,” they concluded.10 Nonstate combatants integrating network theory reveal that asymmetrical strategies can confound much more powerful, albeit lumbering adversaries.

The U.S. and NATO occupations of Iraq and Afghanistan following 9/11 also rewrote the terms of combat. With overwhelming force no longer the objective— it would only further destroy Afghanistan’s social and political infrastructure—a different tactic was in order: “Protracted popular war is best countered by winning the ‘hearts and minds’ of the populace,” reads the 2006 U.S. Army/Marine Corps Counterinsurgency Field Manual.11 The shift in strategy from overwhelming force to counterinsurgency means that foot soldiers today act more like anthropologists and less like combatants. Their aim (apart from their own survival in a combat zone) is social and political accommodation, not military conquest. These changes in strategy are redefining violence and force as we know them. Mass armed warfare begins to look more like violence in its everyday guises: invisible, intangible, and immaterial.

As further evidence of the quicksilver nature of warfare, in 2005 the U.S. Air Force adapted its mission statement to include, along with air and space, a new dimension of control: cyberspace.12 Increasingly, it seems, the terms of warfare, and the possibility’s centrifuges spin out of control and effectively destroy themselves (neither government has admitted its involvement).

DDoS attacks incapacitate target websites by directing to them high volumes of network traffic. The tactic has existed since the mid-1990s, but was popularized in recent years by the hacker collective Anonymous, who has often resorted to the strategy as a form of electronic civil disobedience. In 2013, Google introduced the Digital Attack Map (p. 134), a real-time tool that visually maps the origin, target, and geographical distribution of DDoS attacks. Dotted tracers light up like fireworks over a map of the world, visualizing the profusion of attacks at the moment (as well as over time) and their near-worldwide ubiquity.

No institution or organization is immune.13 As of late 2014, cyberattacks have been successfully launched against banks (JPMorgan Chase); newspapers (New York Times); retailers (Home Depot, Target, Neiman Marcus); service providers (Apple’s iCloud); governments (China, Pakistan, Canada); and even the U.S. Pentagon, headquarters of the Department of Defense. We have, by all appearances, entered a very different era of warfare, terror, espionage, crime, and violence.

Design and Violence is not a gallery-based exhibition simply translated online. From our earliest conversations, we conceived it as a platform for multiple projects—a series of public debates, a set of academic course materials, a symposium, and this book, for instance—with the website as anchor. Unlike traditional exhibitions, which do not easily accommodate direct dialogue, the project’s multiple formats invite commentary, feedback, questions, and even discord from audiences. Among the many benefits of this approach, accessibility is available to visitors who may never cross the physical threshold of the Museum, and clearly indicates the institution’s interest in the opinions of its audiences. We called the project a “curatorial experiment” to signal its inherent adaptability and responsiveness to the hope that could have been developed to launch the conversation into public awareness.

We have strived to make Design and Violence an open invitation to discussion rather than the last word on any one subject, although this stance is often hard to negotiate. To better understand the broader impact of design, we invited authors from outside the field to write about many of the projects we selected, hoping they might jolt us out of complacency, professional blindness, and simple unfamiliarity. Our respondents bring perspectives diverse and unique. Pinker himself discusses Spatial Information Design Lab’s Homeland Security Visualization Million Dollar Blocks (p. 140), Nobel Peace Prize winner Jody Williams’ comments on Massoud Ghannadi’s decimating tool, Mine Kafon (p. 170), New York District Court Judge Shira Scheindlin, who famously declared the NYPD’s stop-and-frisk procedures unconstitutional, takes on plastic hand cuffs and the anti-bite or anti-spit mask (p. 64). Former Ugandan child soldier China Kiletisi reflects on the AK-47 rifle (p. 214). United Nations High Commissioner for Refugees, António Guterres, considers Hyperakt and Ekene Ijeoma’s Refugee Project (p. 144). Sex-trafficking survivor ShandraWoworuntu responds to the stealthy Pivot by Public Pactiv (p. 26). And the speculative architect Angélique Kidjo examines Amnesty International’s campaign posters intended to stop female genital mutilation (p. 96).

To expand the range of voices even further, we opened each post to comments from the reading public, invited the object’s designer to weigh in, and encouraged both author and designer to share the post and solicit comments through social media. The results have often been surprising. Two designs in particular have become lightning rods for discussion and dissent. The post on Temple Grandin’s Serpentine Ramp (p. 188), featuring a powerful response by PETA’s president Ingrid Newkirk, brought heated discussion over the ethics of meat production and consumption to one of our public debates (p. 220) and precipitated our longest comment thread to date. John Thackara’s no-holds-barred critique of Michael Burton and Michiko Nitta’s speculative design project, Republic of Salvation (p. 60), engendered a similarly intense discussion in the comments section. Drawing in voices from around the world, the dialogue shed as much light as heat on the global politics and ethics of speculative and critical design.

One remains the debate on whether police may best demonstrate the value of inviting into the Museum the participation of outside voices. In April 2014, we published a post on the Euthanasia Coaster, an intentionally provocative conceptual design by Julijonas Urbonas (p. 194). Urbonas’s roller coaster features seven loops, each tighter than the one before, propelling the rider through successive degrees of g-force acceleration until a final, inescapable death.

Urbonas’s design aspires to offer agency to the fatally ill, an antidote to an otherwise grim end. Respondent Antonio Damasio, leading professor of neuroscience at the University of Southern California, gently critiqued this speculative fiction: “Euthanasia is death . . . compounded by myriad questions regarding the
circumstances in which it may or not be acceptable.” His objection to the pos-
sibility of a “joyful euthanasia” lay in the very chilling possibilities for its misuse
by an increasingly technocratic society. In a comment, one reader countered
with the following:

Your post extends from a singular premise—that death is necessarily
a tragedy. As somebody who is in pain every day, I do not believe this is
the case. Sometimes life is the tragedy. When one’s only experience is
overwhelming pain, it is a tragedy to be prevented from release. For many
there is only one option for release and that is the final option. I feel it likely
that one day in the distant future I may choose this option myself. Doing so
through the experience of something so amazing that the human body can-
not withstand it sounds a whole lot better to me than a boring gray room.

To remove all violence from humanity would be to utterly sanitize
life, to remove the experience of anything but grays. Certainly the specter
of interpersonal violence is undesirable, but I wish to be violently happy,
violently sad, violently moved. I wish to feel violent acceleration and violent
relief. Conflating violence with anything that challenges us is to remove all
value from the human experience, to paint the world gray.14

Profound, wrenching, revelatory, this comment reframes certain experiences
of violence and affirms the worth and necessity, even, of the project’s open, partici-
patory framework.

Many commenters have shifted the evolution of Design and Violence and
along with it our thinking. Free of the time-based constraints of a gallery exhibi-
tion that begins and ends on specific days, we launched the project with an
open-ended checklist, an unusual curatorial freedom. This extraordinary flexibility has
allowed us to contemplate our ongoing exchanges, both with each other
and the public, and extend the period of research and development far beyond
what is normally available. When we initially conceived Design and Violence,
we focused on projects that challenged our understanding of violence. These
works—Diller + Scofidio’s Vice/Virtue water glass series (p. 113), for instance, or
James Bridle’s Drone Shadows (p. 154)—a collection of
unofficial embroidered patches from the “black world” of classified intelligence:

The Museum of Modern Art posed an inherent risk: aestheticizing violence and
recasting it as this week’s out of joint. Our critics were not slow to suggest this.
“Patrick,” for instance, inveighed against the Museum under William Gibson’s
response to Trevor Paglen’s Five Classified Aircraft (p. 154), a collection of
museums can now classify the new hot style of the month. Violence . . .

So chic. So 2013.

Once an object is stamped “violent” by MoMA, does that make it so?
The inherent problem with showing symbols and pictures of violent
design [outside of their] context is an extreme fetishization of those symbols.
It’s like gratuitous, sexed-up violence without the “story” (insert unchal-
lenging content). We wonder if “chicks with guns” is around the corner.

The blog format of this project seems only to heighten the state of
fetishism and separation from context, more flattened imagery in an al-
ready crowded landscape.

Indeed, “Patrick” vividly outlines the very hazards we have been trying to cir-
cumvent from the outset: the stylizing of violence, the flattening of affect, and
the frisson of risk and danger in the comfortable context of a safe institution.
Granted, Paglen’s work was only the fourth in our series of posts, and we had
not yet reached a critical mass of examples. The reaction led us to fine-tune the
way we wrestled with the concept of violence and its impact, while acknowl-
edging its relevancy to design discourse and to culture. What more opportune
channel for dialogue than through a free and accessible Internet site at a highly
visible and influential establishment like The Museum of Modern Art?

This book is not a literal transposition of the website. Instead, you are read-
ing a curated condensation of our experiment. Here we include a selection of
more than forty design artifacts, each entry composed of images, the author’s
response, the leading question, and a selection of comments that illuminate new
avenues for discussion. Certain projects live more comfortably in an electronic
environment, so we opted not to reproduce them: Christoph Niemann’s antic
animated GIFs; Jad Abumrad’s dazzling sound piece; and many of the data
visualizations. Unlike on the website, we have organized the selected entries
into four animating the disturbing cruelty of designed violence. By no means are
we implying that some forms of violence are more authentic than others, or that
some authors have more authority to speak on these issues; only that design
shapes violence in various ways, and we had been omitting those experiences
most immediately felt. To put it in concrete terms: the visionary prospect offered
by Sputnik’s Menstruation Machine of a world in which all genders understand
one another (p. 52) differs markedly from the sanitary napkin designed by Public
Practice Studio to counter female sex trafficking even though both illuminate
forms of violence.

We recognized from the very outset that a project on violence hosted by

Design and Violence

14

Essay

15
Throughout this experiment, one simple mission has inspired us: to wade into the ethical mire that design, and every act of human intention, draws us into. Considering the broad influence of design on the world and the contemporary pace of innovation—requiring continuous alterations and adaptations—design shoulders a heavy, yet shadowy responsibility. It needs to be brought into the light and grappled with. This project is our attempt.

Paola Antonelli  
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The Museum of Modern Art  
and Director of R&D

Jamer Hunt  
Director, Graduate Program in Transdisciplinary Design,  
Parsons The New School for Design

A complete archive of Design and Violence lives at the original URL:  

5. Sanbabilini is a far-right movement from the 1970s, so called because its members used to gather around Piazza San Babila in Milan, Italy.
6. Paola, the Italian half of this author duo, experienced adolescence in Milan amid armed extremists warring among themselves and with the police. Her walk to school was rerouted almost daily to avoid danger zones that would often shift overnight.
7. “Still Sussex the call” (from the speech of the poet) is a slogan coined by Italian anarchist and critic Ernesto Nathan Rogers to describe the phenomenon of man as a kind of “nakedly present being” in contemporary life—sometimes very difused and sometimes more easily visible to lesser extent. There is some disagreement about when Rogers said this. Deyes Studj infections notes that Rogers wrote something like this in a 1942 edition for Domus. The Language of Things: Understanding the World of Desirable Objects (New York: W. W. Norton, 2009), p. 34.
8. “Dal cucchiaio alla città” (From the spoon to the city) is a slogan coined by Italian architect and critic Ernesto Nathan Rogers to describe the Milanese architectural and design process, which at the time encompassed all scales—and still does, unfortunately to a lesser extent. There is some disagreement about when Rogers said this. Deyan Sudjic notes that Rogers wrote something like this in a 1942 edition for Domus. The Language of Things: Understanding the World of Desirable Objects (New York: W. W. Norton, 2009), p. 34.
12. Ibid.
14. Pamela L. Woolley, “Defining Cyberspace as a United States Air Force Mission” (unpublished graduate research project, Department of the Air Force Air University, Air Force Institute of Technology). The term “cyberspace” was added to the U.S. Air Force’s mission statement on December 7, 2005. Woolley writes, “On December 7, 2005 the Air Force (AF) Chief of Staff released the following new mission statement for the AF: ‘The mission of the United States Air Force is to deliver sovereign options for the defense of the United States of America and its global interests—to fly and fight in the Air, Space, and Cyberspace.’” The addition of ‘Cyberspace’ to the mission statement led [sic] many to ask, what is Cyberspace? And what does it mean to have cyberspace as a mission area?”
15. Except, as Gabriella Coleman points out in her essay for this book (p. 136), those territories without the infrastructure of the Internet, itself a different measure of social, political, and economic violence.
16. Here as elsewhere in this volume, comments extracted from the Design and Violence website may be truncated (indicated by an ellipsis). Saved for minimal editing, usually for reasons of space and comprehension, comments are otherwise quoted as they appear online—warts and all.
The single-edge razor blade enclosed in a protective handle, now known colloquially as a box cutter, is believed to have originated in the 1920s as a hand tool derived from much earlier utility knives and straight razors. The model pictured here (p. 20) was first patented in the 1950s in the United States. In the United Kingdom, a slightly different model, referred to as the Stanley knife, was named after the company that began manufacturing it in the 1920s. The box cutter continues to be redesigned by many companies and manufacturers interested in leaving their mark on the classic and widely used blade. The tool earned notoriety in the early twenty-first century after the 9/11 Commission Report revealed that it may have been used by the hijackers in the September 11, 2001, terrorist attacks on the World Trade Center. The exact design of the allegedly used blades was never verified.

John Hockenberry

A box cutter is the perfect tool for our time, for thinking “out of the box.” We create boxes that require a blade to liberate ourselves and the other things we place in them. These self-referencing iterations of irony transform the utility knife into the clown acrobat of industrial capitalism. The blade punctures the fiction like a hammer smashing a nested set of Russian dolls.

The fashionable out-of-the-box thinking of the late twentieth century put a utility knife into each of our hands and set aside all of the carefully crafted blades we had carried for thousands of years. A traditional knife is an extension of the hand, cutting and shaping the materials preindustrial humans consumed as food, wore as clothing, and constructed as shelter. The utility blade can do nothing in a world of hunters, builders, and farmers. The utility knife is invisible and useless in this traditional world, and yet the tribal postindustrial assault on boxes needed a sacred tool. Out-of-the-box thinking required a ceremonial weapon.

Men in planes screaming about God performed the initiation ceremony of the box cutter. On a day in September 2001 it became the postindustrial murder weapon. Cutting itself out of this final box, the utility knife slashed its way out of the twentieth century, never to return.

Online packagers seem careful to use soft tape for their boxes so consumers won’t have to reach for the twenty-first century’s murder weapon to see the lovely things they have purchased.

In a world where shoes are bombs and shampoos can bring down jetliners, you may still find a utility knife in your own drawer, in your own kitchen. See if I’m right. I’m betting that it is no longer invisible.

John Hockenberry is an Emmy and Peabody Award–winning journalist and host of public radio’s live morning news program The Takeaway.

Q: Which other “invisible” everyday objects can become lethal weapons?

COMMENT 1. Susan Yelavich: I am struck by how remote violence is from all of us contributing to this site. We are either the lucky survivors expunging our guilt or we’re harboring wounds too deep to share.

The Box Cutter (Designer unknown, c. 1920)

To utilize the structure or code of an object or system against itself either through subversive reconfiguration or by the introduction of an active foreign element.
Designer unknown. Box Cutter c. 1950s.
Stainless steel. 4 ¾ x ½ x ¼ (10.6 x 5.4 x 0.3 cm)
Stuxnet: Anatomy of a Computer Virus
(Patrick Clair, 2011)

Patrick Clair’s motion infographic Stuxnet: Anatomy of a Computer Virus thoughtfully animates the inner workings of the elusive malware Stuxnet. This intricately constructed computer virus, consisting of a worm, a file shortcut, and a rootkit, was designed to disrupt programmable logic controllers, or PLCs, run on Microsoft Windows operating systems. PLCs typically control automated manufacturing and monitoring processes, such as industrial plant assembly lines. The Stuxnet virus works in two waves: first, it maps a blueprint of the plant operating systems; second, it disrupts these systems. By exploiting unknown security gaps, the virus was able to destroy 20 percent of Iran’s nuclear centrifuges, while simultaneously relaying normal readings to the plant operators. The attack was delivered via USB thumb drive, and although it was first detected in June 2010, it may have been circulating for up to a year prior. The malware, which has been linked to a policy of covert warfare allying the United States and Israel against Iran’s nuclear armament, is considered to be the world’s first weaponized piece of software and heralds a change in twenty-first-century global military strategy. Its creators remain unidentified.

Lev Manovich

My own first encounter with design and violence was at the age of fifteen. As a high-school student in Moscow, I was required to take two years of mandatory classes in military education. Over many months, we practiced disassembling and reassembling the masterpiece of the “design meets violence” genre: the legendary Kalashnikov rifle. Because it consists of only a handful of pieces, I was able to dismantle it in eleven seconds, and put it back together in sixteen. (Dismantling the rifle within a certain time was required for passing the course.)

I suppose this background gives me some qualification to reflect on projects in the Design and Violence initiative, such as Patrick Clair’s video infographic on Stuxnet, a computer worm unleashed on Iran’s nuclear program, among other target sites, and discovered in June 2010. Computer worms, as with viruses and executable scripts, constitute part of the various tools and techniques in the arsenal of cyberwarfare and cyberspying. If mid-twentieth-century non-networked weapons such as the Kalashnikov are location specific, operating only within their user’s immediate line of sight, viruses and worms are not hampered by geography: worms such as Stuxnet can replicate and move from computer to computer around the world, attacking not only the host system but also its hardware and the other computers it controls.

Stuxnet is the first known computer worm to spy on and reprogram industrial systems. It indiscriminately hops across computers that run Windows-based operating systems, but its malware specifically targets industrial software from Siemens that is used to control a variety of large-scale infrastructure systems, including manufacturing plants. Stuxnet affected facilities in a number of countries, including Iran, Indonesia, India, and the United States. Due to its size, and the unusual complexity of its code, it has been speculated that the worm was developed by a nation-state. (According to a 2012 New York Times op-ed, the United States and Israel collaborated on its design.)

Because Stuxnet has been in and out of the news for several years now, there are a number of well-designed media presentations explaining its history, effects, and operations (besides dozens of articles). These include a compelling diagram by Guilbert Gates that accompanied a New York Times op-ed, and a dynamic 2011 TED video from the German scientist Ralph Langner, who worked on an analysis of the worm. (At the time of writing, the video had received over one million views.) As always, the most detailed single source is the Wikipedia page, which, as of December 2014, has been edited 1,529 times by 716 distinct authors, and has received over 62,035 views in the last thirty days alone.

Knowing about all this coverage of the Stuxnet worm helps in thinking about Patrick Clair’s video, produced for an Australian TV program in 2012. In contrast to the more complete historical narrative presented on Wikipedia, Clair’s video presents only one of its dramatic episodes: the discovery that Stuxnet affected Iranian nuclear reactors. The video uses the contemporary language of motion graphics, with animated 2-D and 3-D text, unexpected 90-degree camera turns, superfast zooms, and 3-D vector graphics. As is typical of such videos, the movement never stops; forms are transposed, transfigured, added, and multiplied without pause. This constant movement is visually engaging but also troubling. The constantly flowing animation works differently than broadcast-news segments that typically cut between the newscaster’s narration, live and recorded interviews, and on-the-scene reporting. These cuts or breaks may interrupt the viewer’s immersion in the story, but they also leave space for the viewer to digest and better understand the information presented. In the motion-graphics narrative, however, there are no such breaks or juxtapositions of media types; instead the story unfolds in one continuous three-minute-long animation accompanied by a constant music beat in the background. The color wireframes and robotic-camera moves look cool, but all too often at the expense of the important facts and details of the events being described.

Branding Stuxnet as “the first weapon made entirely out of code” (this may be true or not, depending on one’s definition), the video tries to convey the
worm’s operation through visual forms and metaphors. For example, at 1 minute, 30 seconds, the familiar Kalashnikov rifle appears on the screen, presented as a wireframe model. The rifle multiplies and shrinks to form the word “code,” linking the physical and electronic forms of assault weaponry. (It reminds me of how, at the end of our course in my Moscow high school, we were taken to a real military range out of town to practice what we had learned. My fellow students and I, each with a heavy Kalashnikov in hand, lined up across a white winter field and then shot at the targets.)

Projects such as Clair’s exist within a paradigm I call “info-aesthetics.” These projects, which arise not only from the field of data visualization but also from motion graphics, human-computer interaction (HCI), architecture, music, and custom hardware, to name a few, have as their true subject the “stuff” our software society is made from—data (big and small), algorithms, distributed client-server systems, global networks, networked hardware. And, as with these other works, Clair’s video tries to give this stuff a visible form in order to make sense of it and to produce knowledge from it. But because data and code largely exist at a scale outside of that of the human body and perception—because they are too big, or too fast, or too dispersed—the task is quite hard.

Which leaves me with the same questions I’ve been asking for years: Can our information society be represented iconically, if all its most characteristic activities are dynamic processes? How can the superhuman scale of our information structures be translated to the scale of human perception and cognition? Clair’s video dramatizes how challenging a task this is for contemporary designers. Were we to remove the video’s familiar objects—the microscope, the schematic diagram of a nuclear plant, the rifle, and the text—what would be left? Is it possible to visually represent a software “thing”—in this case, Stuxnet—that operates on a scale radically different from the old, familiar Kalashnikov rifle?

Lev Manovich is the author of three books, including The Language of New Media (Cambridge, Mass.: The MIT Press, 2001), and a professor at The Graduate Center, CUNY.

Q: Can malware ever be used for positive ends, or is it inherently a weapon for wrongdoing?

COMMENT 1. Jason Persse:

The notion of any weapon being used for “positive” outcomes is so problematic that it makes the question seem ludicrous. The better the weapon’s design, the more assuredly it will outstrip even the most noble of intentions and lead to widespread harm. Stuxnet and the AK-47 are both especially apt examples: when applied to weaponry, “user-friendly and supremely durable,” the one-two punch that every designer hopes to land, becomes a genie you can never push back into the bottle. All weapons are inherently intended for wrongdoing; designing them well just means more people can do wrong to more people with greater reliability.
I'm a little girl dancing with butterflies in the garden. I hold a blossom and lift up the corner of my tiny, floral-print summer dress while singing, "Little butterfly, where do you go?" I'm a typical ten-year-old girl who loves to play in the river, let the current take me out to sea. Climbing to the top of an oak tree, looking down at what seems to be the bottom of the earth, I reach out to grab the stars under the moonlight of the Indonesian night sky.

Everything is perfect.
Everything is beautiful.

And then—a glimmer of hope. A spark of courage ignites something within me. I determined. I will find a way out. I will find my way home.

From a tiny bathroom window in a second-story apartment building I jump. From a dream to a living nightmare, in an instant.

Just months earlier my anxious fingers danced on the keyboard at the international bank where I worked. Then my concern was tracking the stock market’s pulse. Currency and exchange-rate speculation kept me awake at night. Now what keeps me up is fear. Suddenly I awake. Not in a garden or by the banks of a river, and certainly not in an old oak tree. Not even in Indonesia. I find myself locked in a cold, dark room. Cigarette smoke burns my eyes. The smell of sweat on the sheet I lie on is repulsive.

From a dream to a living nightmare, in an instant. The humiliation I feel from strangers gazing at my naked body forces me back to the dream. The memories of dancing with those butterflies keep me distracted, keep part of me alive. When they put a gun to my head, I return to those butterflies, asking them to chase the fear away.

I feel so small.
I am nothing.
I am lost.
My life is over.
What have they done to me? Deprived of food, locked in darkness, barely clothed... I am powerless.

My nose is filled with the residue of the cocaine they’ve forced me to sniff, the lingering odor of marijuana smoke hanging in the air, and the bittersweet traces of the crack I was made to smoke. My throat burns with the taste of stilt, cheap whiskey—one of the only things they offer to nourish my weak body.

Sleep deprived and fading in and out of consciousness, I’m forced to serve any paying client, men old and young, fat and lean—their money unites them as buyers, reducing me to a commodity.

They throw me down on the dirty mattress; the stench of it has made me vomit more than once. Sometimes they turn me around and have their way with me; at least like this, I don’t have to see the evil in their eyes. When I’m on my back, I blankly stare at the ceiling, allowing my tears to fall down the sides of my face while praying the clients will finish quickly. I’ve become their human rag doll, one with a $30,000 debt.

When they’re finished, I’m moved to another room; maybe it’s a hotel or an apartment building. All I know is that my captors’ routine is to transfer me under a cloak of darkness. Always at night when the city seems so quiet, so distant.

I wonder: How many others suffer this same hell? How many more were lied to? How many young women in New York are hidden away and forced to give up tiny pieces of their soul one trick at a time?

And then—a glimmer of hope. A spark of courage ignites something within me. I determined. I will find a way out. I will find my way home.

Pivot: Design against Trafficking (Public Practice Studio, 2012–13)

Below: Contact information for a national human-trafficking hotline disguised as a fortune-cookie slip.

Preference
Regular maxi
normal maxi
Regular maxi

Play these lucky numbers for a brighter future.
Hacked Protest Objects
(Various designers, ongoing)

Tunisian street vendor Mohamed Bouazizi set himself alight on December 17, 2010, after being repeatedly harassed by Tunisian authorities. His act galvanized the Tunisian revolution, the wider Arab Spring, and, in part, the Occupy protests across Europe and America. Although each of these movements adopted a unique set of goals and yielded varied consequences, the protests remain connected in many ways, including, as designer Carlotta Werner and artist Johanna Sunder-Plassmann highlight here, their use of everyday objects that have been hacked. These objects take many forms and are created for various ends. In Cairo, chemical spray bottles held to the eyes of protestors may at first suggest violence but are revealed instead to mitigate its effects. In Hamburg, the seemingly benign toilet brush symbolizes public anger. In Kiev, the baseball bat morphs from a sporting implement into a punitive weapon decorated with protest slogans. Bouazizi’s self-immolation underscores the grassroots and often desperate nature of these acts of repurposing; as unrest continues in Syria, Nigeria, Thailand, and elsewhere, protestors will use any means at their disposal, from mundane objects to their own invaluable lives.

Carlotta Werner and Johanna Sunder-Plassmann

Istanbul, September 2013, nighttime: I find myself among a crowd, unaware that the ongoing Taksim Gezi Park protests against Prime Minister Recep Tayyip Erdoğan’s government have shifted to the Asian quarter of the city. Tear gas—my lungs are burning. A man next to me holds a bottle of household cleaner and sprays its contents into his girlfriend’s eyes. I am shocked by his violent act but not overly so, and soon it’s clear why: the cleaning agent is actually milk mixed with water and is used to ease the effect of tear gas on the eyes.

During the next few days, I notice that many more everyday objects have been modified or hacked for use in the protests. Although I am visiting from my native Germany, from 2010 to 2011 I lived in Istanbul, and so share with my Turkish friends a common understanding of the objects around us. Since the protests started, however, many everyday objects have taken on an added layer of meaning. Cleaning-spray bottles have turned into medical supplies. Painting respirators have become teargas protectors, as well as fashionable accessories that identify people as protestors. Later, these respirators would become decorative objects in the protestors’ flats. Goggles, scarves, and plastic bottles— their intended uses have also changed.

The emergence of these modified everyday objects is an epiphenomenon of the political protests in Istanbul. Born of necessity, these newly transformed objects help the protestors cope with many different tasks. They protect the body and provide first aid. They allow individuals to announce events and to organize demonstrations; to identify with or dissociate from a group; to defend, attack, and provoke.

Designed by individuals outgunned and facing professional, well-equipped forces, the hacked objects share some common features: they are readily and cheaply available, and they appear and disappear as they change their symbolic and practical meanings. Made in reaction to suddenly changing social circumstances, these objects convey information about the mode and nature of the protests themselves, including their level of violence, their subgroups and organizational forms; and the protestors’ means of communication. They also recall, or stand in as symbols for, past events of particular significance, as well as the changed nature of civic and social relationships among protestors and in the city at large.

The phenomenon of hacked objects is not unique to Taksim. Protesters in Tahrir Square in Cairo used reflective safety vests to identify themselves as members of the self-organized community group Tahrir Bodyguards. Reacting to the numerous instances of sexual harassment that occurred during the protests, the group organized in order to protect female demonstrators. In Maidan, the central square in Kiev, self-made and archaic-looking weapons speak to the brutal violence of this protest-turned-conflict. Some of the altered clubs and bats are decorated with nationalistic writings or Christian symbols, revealing the personal attachments of the owners to their objects. In Hamburg’s so-called danger zone, toilet brushes became an ironic symbol of unjustified police control. Hours after a short video aired on national television showing a policeman confiscating a toilet brush from a demonstrator—the person had legally obtained the brush and was doing no harm with it—toilet brushes sold out of stores as demonstrators carried them into the streets. This event evoked a creative wave of digital image alterations, graphical illustrations, and caricatures.

The sheer variety of repurposed objects is proof of the creativity and ingenuity that arise in mass movements. What do these objects reveal about both the differences and similarities among the various protests and their respective geographic locations? How do social media influence the distribution of these objects and their local adaptations?

The research project Hacked Objects in Political Protests invites everyone to contribute images, videos, objects, and stories of participation from protests around the world, along with the designs born in tandem with these protests. The project will discuss and reflect on this globally crowdsourced design process. A spray bottle is not just a spray bottle anymore.

Q: Do you know of any other seemingly neutral objects that can step up and become heroes in times of need?

COMMENT 1. Josh MacPhee:

Social movements have been repurposing everyday items for as long as capitalism has been producing them. The wooden shoe, or sabot, was shaved off early machinery at the advent of the Industrial Revolution. The mass-produced glass bottle was likely converted into the molotov cocktail early on in its lifespan (at least as early as the 1930s). For that matter, the Christian cross was repurposed by the Romans as a tool to punish enemies of the state—long before the advent of capitalism or mass production. . . . Struggles to create and uphold systems of value other than monetary profit are always in tension with the capitalist economic imperative to crush and/or to recuperate these alternative systems.

Carlotta Werner and Johanna Sunder-Plassmann are a German product-designer and media-artist team.

Hacked Protest Objects
Hacked spray bottle filled with milk and water, Istanbul, Turkey. 2013.

Toilet brush at a protest, Hamburg, Germany. 2014.
It is hard to think of a single institution or individual who has not been affected by the global economic crisis that began in 2007. Yet, for many, including those who suffered the consequences most directly, deciphering the complex systems that caused the collapse seems nearly impossible. But knowledge is power, even as these shadowy banking practices continue. Jonathan Jarvis’s animated video, *The Crisis of Credit Visualized*, demystifies terms such as the Glass-Steagall Act and subprime lending; the fraught relationships between the banking system’s various stakeholders; and the casualties left in the wake of the system’s collapse. His design in the service of public good, one weapon among many in the arsenal sorely needed to combat the economic violence preoccupying us all.

*The Crisis of Credit Visualized* (Jonathan Jarvis, 2009)

Gillian Tett

Knowledge is power. Or so the old adage goes. And during recent decades, Wall Street has utilized that timeless principle to its benefit—and to its vast profit. For as finance has swollen in scale and complexity, the number of people who actually understand how this modern, shadowy behemoth works has shrunk. Little wonder, then, that most politicians, journalists, pundits, and ordinary voters failed to see the size of the credit bubble last decade; or that most people were utterly shocked and baffled when that bubble burst, causing pain for millions of Americans. In our twenty-first-century society, finance has become akin to weather: something deeply capricious that affects all of our lives, but which few of us can understand or predict. Control has sat in the hands of a tiny, technocratic elite.

But this is what makes Jonathan Jarvis’s animated video *The Crisis of Credit Visualized* so interesting and compelling, if not subversive. His art uses simple graphics, catchy images, striking messages—and a wonderfully irreverent shade of green. And by combining these everyday images, he makes the complexities of finance seem accessible. Breezy cartoons blow apart gravitas, undermining the aura of experts. This is pop banking as it affects us all.

By stripping finance of its pretension and complexity, his video makes two important points: Firstly, the madness of the credit bubble cannot be blamed on just one or two people; an entire system was at fault, interlinked through financial flows (or, in the case of his art, stick figures, boxes, and arrows). Secondly, when the aura of mystery is stripped away from this network of financial flows, it is clear just how unsustainable the entire system had become; the comic nature of the trading patterns shows us that a collapse was inevitable.

Indeed, in retrospect, the only thing that is more striking than the scale of last decade’s credit bubble is the fact that the madness went unnoticed so long. Or to put it another way: if more people such as Jarvis had produced videos like this one a decade ago, with chirpy green screens and laughable stick-figure bankers, the public might never have turned such a blind eye to finance and allowed the bubble swell to such a monstrous size. And that would have been better for us all; even (or especially) those stick-figure bankers.

Q: This project defines violence as a manifestation of the power to alter circumstances against the will of others and to their detriment. In light of this definition, can we regard the financial sector’s actions that led to the credit bubble as overt violence?

COMMENT 1. B Comenius: Ancient teachings equate the game of credit creation and erasure to violence. You can find that interest-bearing money was banned in Vedas, Buddhist, and Muslim teachings. It was banned in Christian teachings, too. There was a reason for this.

COMMENT 2. Steffi Duarte: Like the interconnected web of motivations and systems that triggered the credit bubble itself, the classification of the financial sector’s actions as overtly violent may seem complex. Yet, through actions and illustrations like those of Jonathan Jarvis—through design—we can come closer to an answer, and eliminate the information asymmetry that made so many people unwitting players.

The Crisis of Credit Visualized

Defense Distributed, a Texas-based nonprofit group, was formed in 2012 with the goal of creating a firearm that anyone could fabricate using a 3-D printer. Invoking civil liberties, and challenging notions of gun control and perceived information censorship, the group created a block-like, .380-caliber polymer gun printed in sixteen pieces, now known as The Liberator. Their project trumpeted newly available 3-D-printing technologies as tools of political and social subversion. The 3-D weapon’s fabrication files were immediately made available online where they were downloaded over one hundred thousand times before the State Department Office of Defense Trade Controls Compliance, adhering to arms-export control regulations, forced their removal from the web. On May 1, 2014, Defense Distributed released a Bitcoin application called Dark Wallet that allows the digital currency to change hands anonymously. Part of a larger umbrella strategy called Dark Market, this crypto-anarchist provocation highlights The Liberator as but one design in an arsenal of weapons built to disrupt regulatory systems and entrenched modes of governance.

Rob Walker

Cody Wilson first demonstrated The Liberator for the masses on May 5, 2013, by way of a YouTube video and a barrage of media coverage. It was a curious-looking pistol, cream colored and blocky, but it appeared to work. This was remarkable, because this deadly object was built almost entirely from plastic parts produced by a 3-D printer. (“Almost” because its design included a common nail that served as the firing pin.)

The implications were clear enough. We’d already been hearing, for years, how 3-D printers could enter our lives as an efficient, humane, and empowering alternative to mass manufacturing. Now Wilson’s video suggested that the very same techno-magic that produced fun toys and handy housewares could also be used to whip up a functioning firearm. The design plans were made available online and downloaded one hundred thousand times before the government intervened (and the plans, of course, resurfaced via unofficial channels).

It’s possible that, as an actual weapon, The Liberator is overrated. It still requires traditional ammunition, not to mention a rather expensive 3-D printer. And at least one set of police tests found it had a tendency to essentially blow up on discharge. But if we concede that it nevertheless appears capable of the core task of inflicting violent damage, then I think we can only conclude that it is a highly successful design.

That’s because the real function of The Liberator has very little to do with making an excellent weapon and everything to do with making a point. Wilson, whose work on the gun competed with his law school studies, is a strident libertarian. He might choose a different label, but clearly his project means to express a point of view about the individual’s relationship to the state in general and to gun regulation specifically. Thus The Liberator—consistent with its self-important name—has been promoted with bombastic, sometimes bellicose, and essentially propagandistic rhetoric and aesthetics. Wilson and his associates, for instance, operate under the name Defense Distributed. They are freedom-loving rebels, you see.

This is why it’s almost more useful to think of The Liberator not as an object but as an example of “design fiction”—the practice of devising plans for or prototypes of objects and systems that, while impractical, express some critique
Defense Distributed (USA, est. 2012). The Liberator. 2013. CAD/3D: ABSplus thermoplastic pistol and aluminum rail. 2 ¾ x 8 ½" (6 x 21.6 cm).
of the present or vision of the future. It’s a trendy strategy these days, but the politics behind it tend toward the progressive. Similarly, tech enthusiasts who have rhapsodized about the “disruptive” possibilities of 3-D printing and who frequently strike quasi-libertarian notes have largely recoiled from Wilson and his Liberator, preferring to focus on happy and optimistic scenarios involving home-made alternatives to mass consumer goods or the creation of clever art objects. To them, Wilson and the controversies he courts are mucking up their project, setting back their progress, spoiling their utopia.

But really, Wilson has done nothing more than call the enthusiasts’ bluff. He didn’t subvert the dream of a future where we can all manufacture whatever we want, whenever we like—he hijacked it. And in doing so, he made plain the full stakes of that dream, something that should probably happen more often in our global discourse about how to reckon with technology’s powers.

I don’t share Wilson’s politics, so I’m somewhat sympathetic to the technologists’ frustration with his effect on 3-D printing as an idea. But I wish they would recognize that there’s something more important going on here: Wilson is not out to thwart someone else’s utopia; he is pursuing his own. And with The Liberator, he’s made his vision so clear that it deserves—demands, even—a considered and reasoned response that accounts for the full implications of the system he has so cunningly exploited.

For a design provocation, there is no higher goal.

Rob Walker is a technology and culture columnist for Yahoo Tech.

**Q: Is there such a thing as a right to violence?**

**COMMENT 1. Anne Burdick:**

The real threat behind this gun—and behind all open systems—is to the governments, corporations, and institutions that have historically controlled the means of production, distribution, and access. Regardless of whether the gun works right now, crowdsourcing has proven to be quite reliable, and a 3-D gun better than you can imagine will appear soon enough.

**COMMENT 2. James Auger:**

I have to admit that I am jealous—The Liberator is the perfect speculative-design piece, extrapolating the potential of a disruptive technology to suggest and communicate a plausible future use.
Laura Antrim Caskey is an independent photojournalist and the author of several books, including *Spook Country* (New York: G.P. Putnam’s Sons, 2010), and her most recent, *The Regimentary New* (G.P. Putnam’s Sons, 2014), she lives in Vancouver, British Columbia.

Elizabeth Gray, p. 52

Elizabeth Groz is the Joan Ditzion Women’s Studies Professor in Trinity College of Arts and Sciences in the Women’s Studies and Literature programs at Alas,

Antonia-Guerre, p. 144

Antonia Grover became the tenth U.N. Commissioner for Refugees in 2010. In April 2013, the General Assembly reappointed Grover to a second five-year term. As High Commissioner, Grover heads one of the world’s foremost humanitarian organizations providing protection and assistance to people living in war zones, natural disasters, conflict zones and to displaced people, and stateless persons. The UNHCR has been awarded the Nobel Peace Prize three times for its work in the field, often in difficult and dangerous stations.

John Hackenberg, p. 19

John Hockenberry is a radio public’s live morning news program *The Day*. An Emmy and Peabody Award-winning journalist, he is a former anchor of *NBC Nightly News*. He is also a co-founder of the influential book *Spy: The Many Faces of Anonymous* (New York: Firebrand Books, 2008). Hockenberry is an award-winning journalist whose work ranges from writing to editing and strategy, including video-game development and toy design. She is the author of *The Last Mountain* (London: Bloomsbury Publishing, 2010), and *Moving Violations: War Zones, Wheelchairs, and Declarations of Independence* (New York: Verso, 2014), which was a finalist for the National Book Critics Circle Award.

Christopher L. Hackett is an activist fighting for freedom and justice among some of the world’s poorest people. He has worked alongside organizations in Bolivia, India, Moldova, and the United States to establish small-scale businesses, and micro-enterprise initiatives as alternative incomes for women working in the textile industry. He has been honored with several publications such as the *Washington Post* and has contributed to the books *Sudanese Chicken* (Washington: ProPublica, 2013). He is currently living and working in Bangladesh, where he works as a freelance photojournalist, with a focus on the plight of Rohingya refugees. Dr. T. Chirico is a Professor of Neuroscience and director of the Brain and Creativity Institute at the University of Southern California. Damasio has made significant contributions to the understanding of illness processes underlying emotions, behavior, decision making, and consciousness. He is the author of numerous scientific articles and the recipient of many awards. He is also the author of *Descartes’ Error: Emotion, Reason, and the Human Brain* (New York: G.P. Putnam’s Sons, 1994), *The Feeling of What Happens* (New York: Harcourt, 1999), *Descartes’ Error: Emotion, Reason, and the Human Brain* (New York: Harcourt, 1999), *Looking for Spinoza* (New York: Vintage, 2006), and *Self Comes to Mind: Constructing the Brain’s Sense of Self* (New York: Penguin, 2007).

Clive Critchlow, p. 170

Clive Critchlow is professor of design studies at Parsons The New School for Design. Originally educated as a fine artist, he today combines human-centered design, information architecture, and systems design. Apart from design topics, Critchlow has also written and edited several books on design and design thinking. He is interested in the role of the designer as both designer and change agent. His work has been shown in numerous exhibitions and has been featured in the New York Times and Wired. Design and the Question of Human Potential is forthcoming from Bloomsbury Academic.

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Shira A. Scheindlin is a United States District Judge for the Southern District of New York. She is the author of The Better of High-profile cases, many of which advanced important new doctrines. A graduate in art and architectural history from Cambridge University, she has taught since 1984. She is the author of six books, including The Idea of America: Keeping Faith with Our Values in a Dangerous Time (New Jersey: Princeton University Press, 2004) and The Open Society Foundations. She researches the intersection of art, design, and architecture, and building energy use. She holds a master of architecture degree from Harvard University. Scheindlin was awarded an OBE (Order of the British Empire) in 2013 for services to design and arts.

Leslie Savan, p. 46

Leslie Savan is a writer and critic currently blogging about media and politics for the Nation. Her three-time Pulitzer Prize finalist for her blog Salon.com, she has written extensively about the intersection of art, design, and politics, and has written for publications ranging from The New York Times to Vogue and The Wall Street Journal. She is the author of The Idea of America: Keeping Faith with Our Values in a Dangerous Time (New Jersey: Princeton University Press, 2004) and The Open Society Foundations. She researches the intersection of art, design, and architecture, and building energy use. She holds a master of architecture degree from Harvard University. Scheindlin was awarded an OBE (Order of the British Empire) in 2013 for services to design and arts.

Leila Sekander, p. 46

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