Introduction

*Disability, Design, and Rights in the Twentieth Century*

Every day in my city, I use the things I write about. I am not disabled in any conventional sense of the term, but I use curb cuts, feeling under my feet concrete grooves and rubberized bumps that signal a shift in terrain. I see parents pushing strollers, travelers wheeling bags, and street vendors and movers with hand carts all using curbs and ramps to go about their daily tasks. Returning an armful of books to the library, I hip-check the large metal button that opens the automatic door. In a crowded bus, I look up at the LED words telling me (if they are working) which stop is next. As a historian of design, I can even note a few relevant works from design history: the long, smooth ramp of Frank Lloyd Wright’s 1943 Guggenheim Museum, not designed explicitly as a wheelchair ramp but suggesting alternative means of traveling up and down a grand building; the round Honeywell thermostat, easy to read and rotate, designed by ergonomics pioneer Henry Dreyfuss in 1948; and the black rubber-handled OXO Good Grips vegetable peeler, developed in 1989 by Betsey Farber, who had arthritis, with her husband, Sam, a product designer. Some sites surprise me with unconventional approaches to accessibility, like the gentle bird-chirping and wind-chime sounds piped in to mark key pathways on the campus of San Francisco State University, or the light displays along quiet underground walkways between terminals at the Detroit Airport that provide a break from the audio and visual overload of the rest of the airport. More commonly, features of accessible design seem to materialize the decades of struggle that it took to put them into place: subway elevators reeking of pee or out of order; accessible toilets repurposed for storage or inexplicably locked.

“Accessible” design—design that is usable for people with physical, sensory, and cognitive disabilities—is a ubiquitous part of the contemporary built environment in the United States and, increasingly, the
world. Over the last half century, legal and social mandates for disability inclusion have brought about changes in nearly every public space in the country and influenced a new range of forms in office equipment, household products, and personal technologies. Initial efforts to address physical barriers in public spaces came in the 1940s and 1950s, partially in response to the return of disabled veterans from World War II and the well-publicized effects of the polio epidemic. Congress passed the first federal law requiring accessibility in government buildings with the Architectural Barriers Act of 1968, and followed with a series of mandates that culminated in the 1990 Americans with Disabilities Act, calling for accessibility in all aspects of American life, including private businesses. Along with these legal measures, a growing segment of consumer products responded to variations in the body, from ergonomic keyboards and large-text reading material, to bright and colorful walkers and wheelchairs, to customizable audio and visual features built in to electronic devices. While design cultures around the world give attention to disabled and elderly populations in different ways, the notion of “access” as a civil right has distinctly American roots. The United States was the first country to establish architectural access as a national law, and its statutes form the basis of global declarations such as the United Nations Convention on the Rights of Persons with Disabilities, which includes a commitment to ensure access “to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public.”

The objects and architecture we describe today as “accessible” are artifacts of a period in which many Americans revised their perceptions of disability and the place of disabled people in U.S. society. The idea that disabled people could and should participate in public life took hold in the medical, legal, and social mainstream of the twentieth century in a shift that Henri-Jacques Stiker refers to as making disability “ordinary”: rather than pitied or reviled, Stiker writes, in this new era the disabled were to be “folded into the commonplace” through rehabilitative efforts to normalize. Design played a significant role in this task of normalization. The resulting designs, however, were often controversial or ineffective. Often these features were added reluctantly, as technical afterthoughts, or were difficult to use, requiring people who needed them to
ask or search for supposedly accessible services. Regulations on access addressed only a limited segment of the disabled population when they prioritized physical mobility more often than other concerns such as communication, comprehension, or social dynamics.

This history finds in the concept of “access” a story of twentieth-century design politics. As Langdon Winner wrote in his 1986 essay “Do Artifacts Have Politics?,” the political implications of technologies are as likely to be a product of their circumstances as inherent to their design. In contrast to the most overt of political technologies, such as large-scale systems that are compatible with strong, centralized authority, the politics of what Winner calls “technical arrangements” are less apparent, seemingly minor details in the construction of everyday spaces and things. With “arrangements,” Winner is really discussing details of design—elements such as the clearance height of highway overpasses that restrict public buses from driving on scenic highways, or the openness of university campus plazas that might minimize student demonstrations. The accessible design we know today became a part of the norm in American material life because of a public acknowledgment that these technical arrangements had a direct relationship to the rights of people with disabilities—the right, as Jacobus tenBroek wrote in 1966, “to live in the world.” The means by which these arrangements became rearranged was highly political as well. Initial legal measures had little material effect when accessibility requirements were rarely followed or enforced. It was not until citizen activists pushed for specific and stringent enforcement that meaningful change began to appear. Once in place, the artifacts of access took on new meaning, particularly for opponents who saw accommodations as moves of a “nanny state” intervening in private life and business. As Winner might point out, advocates of access and their opponents shared a deeply political reading of everyday design.

Access became a measure of new priorities in design of the twentieth century. Design, a catchall term for the many practices of shaping and organizing human tools and environments, has often been deployed within modern agendas of organization and standardization. Whether in reform of public housing and industrial work conditions, or in more recent plans to improve environmental performance, mediators suggested that design was a tool of social improvement. When
it came to disability, as medical professionals, veterans’ advocates, and community activists pointed to stairs, buses, parking lots, phone booths, and everyday appliances as barriers to inclusion, they defined the social experience of disability through the material world. Through this line of thinking disability itself could be seen as a product of design, and design the potential maker of an inclusive society.

Efforts to improve access contributed a new sense of the social potential of design, but also revealed deeply held American beliefs about technology, space, and society. From the start, conversations about access touched a sensitive nerve in American political discourse—namely, the bias against collectivism and shared resources, rather than private property and individual economic power. Throughout the late twentieth century, advocates favored approaches that centered on an individual, economically mobile actor rather than a figure representing general social welfare. These concerns recall other design histories in which U.S. government agencies and consumers have favored approaches that center individual rather than collective participation. This preference did much to shape the realities of the American home and its gender roles. In the early twentieth century, efficient, modern conventions such as commercial kitchens and laundries lost favor in a consumer culture that painted ideal middle-class households as spaces where an individual woman performed housework using her own appliances. The same biases worked to reinforce a strict definition of homeownership as the purview of individual, white, heterosexual households in the post–World War II housing boom. Investors rejected designs that suggested greater communal support, hewing firmly to racially redlined maps and blocking plans for neighborhoods proposed to include social services such as childcare or even shared yard space. As the first three chapters of this book show, this normative household image also shaped prescriptions for the kinds of accessible design that should be developed—namely, that which maintained expectations of race, class, and gender roles.

In the case of disability policy, American design conventions favoring the individual, autonomous user merged with the equally powerful bias against social safeguards as a threat to individualism. Proposals for and against improved access both invoked core American ideals of independence and autonomy. For advocates of access, design could create pathways to individual choice and expression. In disability protests
of the 1980s and 1990s, activists who could not walk dragged themselves up stairs or onto inaccessible buses, making a striking statement that it was not their physical impairments, but the built environment that kept them from public life. Meanwhile, critics of accessibility efforts pointed to the very same ideals of individualism and autonomy as reasons not to require design change. Federal mandates signaled the worst of bureaucratic generalization, a “death of common sense” for critics who saw these regulations as favoring the concerns of a few over the cost to the many. Even apart from architectural codes, automatic, robotic, and ergonomic technologies of the later twentieth century seemed to many to portend a weakened human state. The 2008 Pixar film WALL-E, for example, projects a future in which people simply give up on walking, lifting, or other physically taxing activities. Instead, in the dystopic future world of the film, people simply float around on carts, being delivered food and drink on voice command. The very inventions that promised freedom and mobility to some represented constraint to others; or, read another way, biases against physical impairment and technological reliance persist even after the successes of the disability rights movement.

Disability and Modern Material Culture

This book explores the ways national ideals of individualism and rights came to shape the material environment, often with unexpected consequences. Scholars have explored the rich connections between people and their material surroundings, tying, as Bruno Latour puts it, the knot that interweaves nature and culture, objects of science and technology with workings of human society. Historians of material culture remind us that the seemingly banal objects of daily life, the “small things forgotten” that archaeologists find in the corners and trash piles of historic sites, play significant roles in human lives and rituals. When it comes to material traces of disability, objects such as canes, splints, and eye patches preserved over time remind us of the persistence of physical variation as well as its social nature. The circa-1880s Marks adjustable folding chair (figure I.1), for example, is an artifact of a past disability culture. The iron lounge chair, with a moveable back, folding legs, plush cushions, and fringe, was advertised as “a Parlor, Smoking, Reclining, or Invalid Chair, Lounge, Full Length Bed, Child’s
The chair captures the cultures of novelty and domesticity that coexisted in the nineteenth-century home, but also suggests that physical impairment and illness were visible in the nexus of refined social life: the parlor. By contrast, the brightly colored, lightweight sports-inspired wheelchairs of a century later no longer fell into the category of domestic furniture, but instead trumpeted the cultural values of speed and lightness. The changes in wheeled chairs over time reflect shifting expectations of flexibility, portability, and terrain. These are more than just shifts in material experience of disability, as they also influence visual forms such as the stick-figure International Symbol of Access that reinforces public notions of disability as a static, and visible, phenomenon.

The physical objects and environments associated with disability have often been ignored or discarded from the historical record. As disability
studies scholars point out, disability remains taboo despite being among the most common of human experiences.20 We inhabit vulnerable bodies, prone to temporary and permanent ailments; we nondisabled are TABs—“temporarily able-bodied.” These realities are not always evident in the writing and collecting of history: wheelchairs, canes, and other equipment were often hidden in photographs, removed from personal records, and unlikely to be preserved in historical monuments.21 These traces, when they can be found, represent a physiological reality at odds with assertions of autonomy and self-reliance as the core characteristics of the citizen in Western democracy. Disability poses a direct challenge to declarations such as Ralph Waldo Emerson’s, that when we are free, “we are men . . . not minors and invalids in a protected corner,” or constructions of a universal “body politic” and the citizen’s right to “property in one’s person” in the U.S. Constitution.22

If objects related to disability are often invisible in official accounts of U.S. history, personal narratives and ephemera reveal disabled people’s experiences accommodating themselves to worlds not designed for them. The American essayist Clarence Day, who had trouble walking due to arthritis, commented on the grand stairways of public buildings in a 1921 essay entitled “Legs vs. Architects.” Day decried “the debonair habit architects have of never designing an entrance that is easy to enter.” Any “dignity and beauty” in a grand stair, he found, was a “hard-hearted” kind.23 Day took readers on a revisionist architectural tour of the New York Public Library, where “some architect has built the thing like a Greek temple . . . mounted on a long flight of steps.” He looked for a side entrance, but found more steps; he sent in a young friend, but the book was in the reference section, and could not be taken out.24 The presence of people like Day in spaces planned for the sturdy-legged recalls Dell Upton’s assertion that landscapes are “fragmentary,” with overlapping but distinct experiences for different groups who use and inhabit them.25

Disability narratives of public spaces provide the missing fragments of an architectural history usually told from the perspectives of architects. Objects, too, document histories not covered in written texts. Katherine Ott defines the category of “disability things”: “artifacts owned and used by people with disabilities and those that are used upon them.”26 Ott has accrued a collection of these things in her role as curator of medicine and
science at the Smithsonian National Museum of American History. Manufactured things such as crutches, glasses, wheelchairs, alongside singularly evocative objects such as a homemade key found at a mental asylum closed for abuses and a glass eye printed with the Chicago Cubs’ logo as an eyeball, stand in for myriad undocumented histories of disability.27

While disabled people have navigated public spaces not designed for them throughout recorded history,28 differences of the body took on new significance in the modern era, given the increasing standardization of architecture, equipment, and consumer goods. Sarah Rose chronicles how the modern social category of disability itself was formed in the era of mass production. Rose describes a nineteenth-century industrial world where missing toes and fingers, bent spines, and other forms of physical trauma were common marks of the worker’s body in railways, shipyards, and factories. This work took its toll on the body, she asserts, but people continued to work with these impairments. The modernized routines and equipment of the twentieth-century assembly line, by contrast, increasingly excluded disabled people from work.29 The assembly line also churned out products that separated disabled bodies from the image of a “typical” American worker or consumer. In the cars, radios, furniture, telephones, and other gadgets of the automated and electrified twentieth century, small details of design echoed the assumptions that users of technology were generally spry, and male by default (alternatives might be provided in “ladies” models).30

If modern technology often excluded disabled people through inadvertent bias, some designers made direct links between ideal products and ideal bodies. As Christina Cogdell has documented, designers of “streamlined” Modernist products and buildings in the 1920s and 1930s imagined the smooth surfaces of chrome machines as physical manifestations of the eugenic ideologies of their time. The science of aerodynamics and speed evoked, for some of these designers, the ideal of eliminating the “drags” in the flow of human evolution—including racial “undesirables” as well as people with physical and cognitive disabilities.31 These ideas circulated not only within the well-appointed studios of New York designers, but through broader efforts to educate Americans about ideals of form and function. Carma Gorman describes educational programs of the interwar period that presented posture and exercise regimes through
comparisons to engineering. Cogdell and Gorman’s work sheds light on the ways that design culture and designed objects defined certain bodies as preferable to others.

In contrast to these dreams of a streamlined world, design has also played a part in more inclusive narratives of improvement. Nowhere is the enthusiasm for technological responses to disability more evident than in discourses surrounding prosthetics. Prosthetic limbs—particularly when intended for veterans of war—featured in dramatic paeans to the possibilities of technology to restore the body and, in a more abstract sense, a sense of personhood. Following the Civil War, journalists and advertisers linked national Reconstruction and medical treatment, imagining that those who had “save[d] the Nation from dismemberment” would now find reconstitution through prostheses. After both World War I and World War II—increasingly industrialized conflicts—military and government leaders argued for the necessity of developing modern, advanced replacements for lost limbs. As the first chapter of this book describes, Congress’s enthusiasm for the prosthetic limb as a tool for reintegrating disabled veterans of World War II led to the first government funding for accessible design when it extended subsidies to cover adaptive cars and accessible housing. Publicity images of amputee veterans learning to drive cars (figure I.2) encompass a postwar technological culture of military-industrial collaboration, with an American vehicle and a high-tech prosthetic hand in a single frame. Given that most of the adaptive tools for automobiles were designed for legless, not armless, veterans, these publicity images staged a fictional version of accessible technology.

Disability things often defy the intentions of their makers—whether that intention is to heal, cure, accommodate, or eliminate disability. When it comes to prosthetic limbs, the actual experiences of limb wearers rarely meet the futuristic fantasies promised by manufacturers or circulated in popular culture. In contrast to publicity images of veterans wearing limbs as they smoked, shaved, or drove cars, for example, post–World War II studies of limb use showed that only 12 percent of arm amputees used prostheses at all, and only 6 percent used them for “work and routine life” as opposed to mere cosmetic purposes. Historical sources further show that disabled people used both accessible and inaccessible design in unexpected ways. Clarence Day wrote of slowly
making his way up steps, defying their cruel form of beauty; others with mobility impairments drove cars, rode in wheelbarrows, and even shipped themselves using freight services to access the inaccessible.\(^{37}\) These experiences of design show the limitation of reading objects and monuments alone as evidence of who used them and how. In this book, disabled people’s accounts often document aspects of use that go beyond the plans of designers alone.

Another significant shift over the twentieth century was the increasing participation of disabled people in design processes, rather than as subjects of pity or scientific research. One way to summarize this change is that disabled people became visible in new ways. Modern design and policy had done much to render disability invisible, removed from sta-
In early proposals for accessible design, advocates often replicated or at least capitulated to this invisibility by proposing design that was as discreet as possible, “without extra cost,” as Timothy Nugent, the author of the first building standard for access, wrote, “without loss of space or function to the general public.” As disabled people made their own access, whether at home on their own or through political and design action in public, it was often more obvious and more ambitious. It is notable, for example, that it was not a U.S. authority who proposed an International Symbol of Access, but a British architect and wheelchair user who rejected what he saw as an American-style “secret” approach to access in favor of marking and showing disability in plain sight. In more recent times, disability advocates call for another kind of visibility with the hashtag #saytheword, rejecting euphemisms such as “special needs” or “differently abled” in favor of an unabashed naming of disability and its social realities.

In this book I define access in a very literal sense: in terms of physical usability of architecture, infrastructure, and products by disabled people. As a result, the book joins the many histories of disability that focus on physical disability with little attention to sensory, cognitive, and intellectual disability. This bias partly reflects the emphasis of the disability rights movement itself, many prominent leaders of which were people with physical disabilities for whom “accessible” meant “wheelchair-accessible.” It also reflects the logic of an accessible design, in which the very visibility and materiality of basic components such as curb cuts and ramps made useful rallying points for change. These material solutions could also undercut the complexity of disability inclusion by creating the perception that access was “done” when ramps were built. The shortfalls of accessible design as addressed by government and the private sector remind us of the ways technological discourse can make promises “both too large and not large enough,” to borrow from Matt Ratto and Robert Ree’s writing on humanitarian applications of digital technologies. Promises of an accessible world are too large when they glorify small changes, viewing a ramp or a limb as an activator of change alone. And yet, they are also not large enough when they overlook the complexities of technological change, including
the populations left out, the compromises of collaboration, and the outside manipulation of economic, social, and political pressures.

**Design as a Tool of (Disability) Rights**

While I refer to this story as a history of design, professional designers play a relatively small role. Instead, I approach the history of design as a study of the broader practices of planning and making the material world, performed by people individually and in groups. The term *design*, as many scholars have noted, is difficult to pin down, encompassing both actions and products, and spanning the spectrum from seemingly inconsequential widgets of mass production to the luxurious products of consumer society.43 For my purposes, the definitions of design as, first, a human activity based on intention, and, second, one that shapes the physical environment, are most relevant, and relevant in tandem. Accessible design emerged as a result of a new consciousness about the effects of the built environment on the lives of disabled people. But intention alone does not capture the history of accessible design: the material reality of these things, sites, and technologies is also significant to the story.

This is also a history of design that incorporates perspectives of many actors other than those who plan and make design works. Many discussions of design focus on specific objects—especially attractive, well-functioning objects—with little mention of their lives after they have been made and sold. In accessible design, the gap between intention and reality is hard to ignore: the “handicapped” parking space with a mislaid curb that blocks it, the broken elevator, and the captions that do not sync with their audio counterpart all confront the user with a design intention not fulfilled. As a result, the story of accessible design would be incomplete without attention to the people who used, adapted, and outright rejected its artifacts.

The design focus of this book also refers to the optimistic nature of design, drawing from Judy Attfield’s analysis of design as the “material culture of innovation driven by a vision of change as beneficial.” Attfield identifies this optimistic move to change as widely dispersed—not just the domain of “good design” but also informing the design world of “poor taste, badly behaved ‘trifles,’ fancy goods, the kitsch, the fetish, the
domestic, the decorative and the feminine, the bric-a-brac that exudes unashamed materiality. Disability itself is a challenge to the Modernist progressive mindset that focuses on improvement; disability activism has often called for design change through adaptation, not invention of something new. ADAPT (American Disabled for Accessible Public Transportation) printed a political bumper sticker (figure I.3) in support of the Americans with Disabilities Act and featuring the slogan “To boldly go where everyone else has gone before,” a riff on the Star Trek tagline and, perhaps, the general American cultural orientation toward the frontier. Seeking to bring disabled people into the realm already inhabited by others, advocates of access did not call for technological or aesthetic leaps, but for inclusion in familiar, typical sites and structures. Given the eugenic history of futuristic design, access to “where everyone else has gone before” presents an alternative to design’s focus on improvement through change.

Nearly thirty years later, ADAPT’s slogan also seems wildly optimistic, embracing the idea that architectural and technological change would bring about an all-encompassing access to U.S. society. As Aimi Hamraie writes, the idea of design for “all” or “everyone” is an appealing one, with roots in civil rights-era discourse around equal U.S. citizenship. But it also reinforces a neutral ideal of U.S. spatial politics, as if “everyone else” were a unified and equal group that could simply be expanded to include disabled people. The claims for a seamless “design for all” conceal the inequalities embedded in design and space themselves. As Hamraie points out, the primary sites of accessible design development
were the most segregated spaces in twentieth-century America: education and housing (a list to which I would add public transportation). ADAPT was and is on the forefront of movements redefining equality and, in its current iteration, places race and class consciousness at the core of disability activism. That this organization adopted a version of “everyone” gaining equal access to spaces and technologies indicates the pervasiveness of this terminology.

The history of access in America shows the many players involved in design, including not only the makers of things but also users, policy makers, medical specialists, and a host of commentators and observers. Chapter 1 reveals the origins of government involvement in the technological culture of the post–World War II era, when a nation fresh from an industrial–military victory embraced the idea of advanced tools transforming human lives. As part of the GI Bill’s veterans’ benefits, Congress defined measures to rehabilitate disabled veterans through provisions for high-tech prosthetics, customized cars, and house renovations. While veterans’ special status helped convince legislators of the validity of these measures, some administrators cautioned that these went too far, and might cause detriment to a character-building process of adjustment. Chapter 2 explores how some of the same contradictions informed medical rehabilitation practices for the civilian population. In an era before any legal requirement, rehabilitation specialists became spokesmen for access. Their interventions into the inaccessible environment were often accompanied by intense pressure on disabled individuals to perform and prove their worth, a contradiction that also inflected the nature of the design measures that the specialists proposed.

Where government and medical authorities defined access in sparing terms, disabled people themselves devised creative tactics within their own communities. Chapter 3 unearths a little-known history of people with disabilities who took a “do-it-yourself” approach to access. As documented in community newsletters of polio survivors and disabled veterans, individuals and families found technological fixes in their immediate environments, and redesigned houses, cars, and consumer products for their own lives. In chapter 4, these individual efforts to create personal access met a new and undeniable change in American culture: a growing sense of civil rights and resistance to the pressures and norms of postwar society. In the eccentric and progressive
city of Berkeley, California, students and activists advocated for access in housing and urban space as a means of securing disabled people's autonomy. While their approach was influential on the national movement that emerged in the 1970s, Berkeley retained its own distinctive form of access embedded in a larger anti-authoritarian, disability-centric worldview.

As the U.S. disability rights movement gained a national profile in the 1970s, access became a key component of its agenda, and a shaping issue for its public image. In chapter 5, I discuss access as a visible and controversial representation of the rights cause on the national stage. Arguments over accessibility mandates, I argue, produced a form of public design criticism, as both supporters and opponents of regulations described design's purposes to support their own priorities. Chapter 6 provides a more optimistic view in contrast to the vexed reception of federal regulations, as certain designers embraced disability access and inclusion as a new and promising direction. The notion of Universal Design promised to meet the needs of disabled users while also appealing to a broad audience. Successful commercial products redefined disability within the design world, but in doing so often simplified disability narratives in favor of generalizations about users and markets. The final chapter looks at more recent reappraisals of disability in design. A number of design projects of the early twenty-first century brought elaborate style and an interest in personal expression to the field. Brightly colored wheelchairs, elegantly styled prosthetics, and experimental prototypes in a range of media all provided a contrast to more conventional approaches to access that aimed to blend innocuously into the landscape.

As a relatively new public issue of the last half century, the ideal of access raised new questions about what design can do for people—and what it should do. Design is a hopeful practice, one that looks to improve the current state of things and connect to functionality with a human, creative, sensitive touch. In the period covered by this book, designers and the users of design sought to define access as a practical, legal, or utopian goal. Is access a ramp—a way to avoid steps, even if it is stuck on the side of a building, pushed to the side and possibly the long way around? Is it an open passageway, with no barriers to avoid or markings to distinguish it? Or does it make itself known, as in a bright orange
grippable handle or a playground with platform swings for wheelchairs? And how do we define design’s successes: by who fits, or who does not?

The design solutions offered in medical, legal, commercial, and experimental arenas over the last seven decades did not offer a definitive answer to these questions, but they redefined relationships between design, the law, and the diverse needs of human beings. Disability itself changed in the late twentieth century, moving from the margins of acceptable discussion to a category of legal protections and a political and cultural identity that challenges core American beliefs about individual autonomy. This change had deeper resonance than we might initially assume looking at the bare bones of access around us. Sidewalk cuts, elevator beeps, and bumpy subway platforms can go virtually unnoticed or can create new material relationships and design conversations. The frequent failures of these designs due to poor planning, neglect, or outright disdain, too, are part of the story of an accessible America.