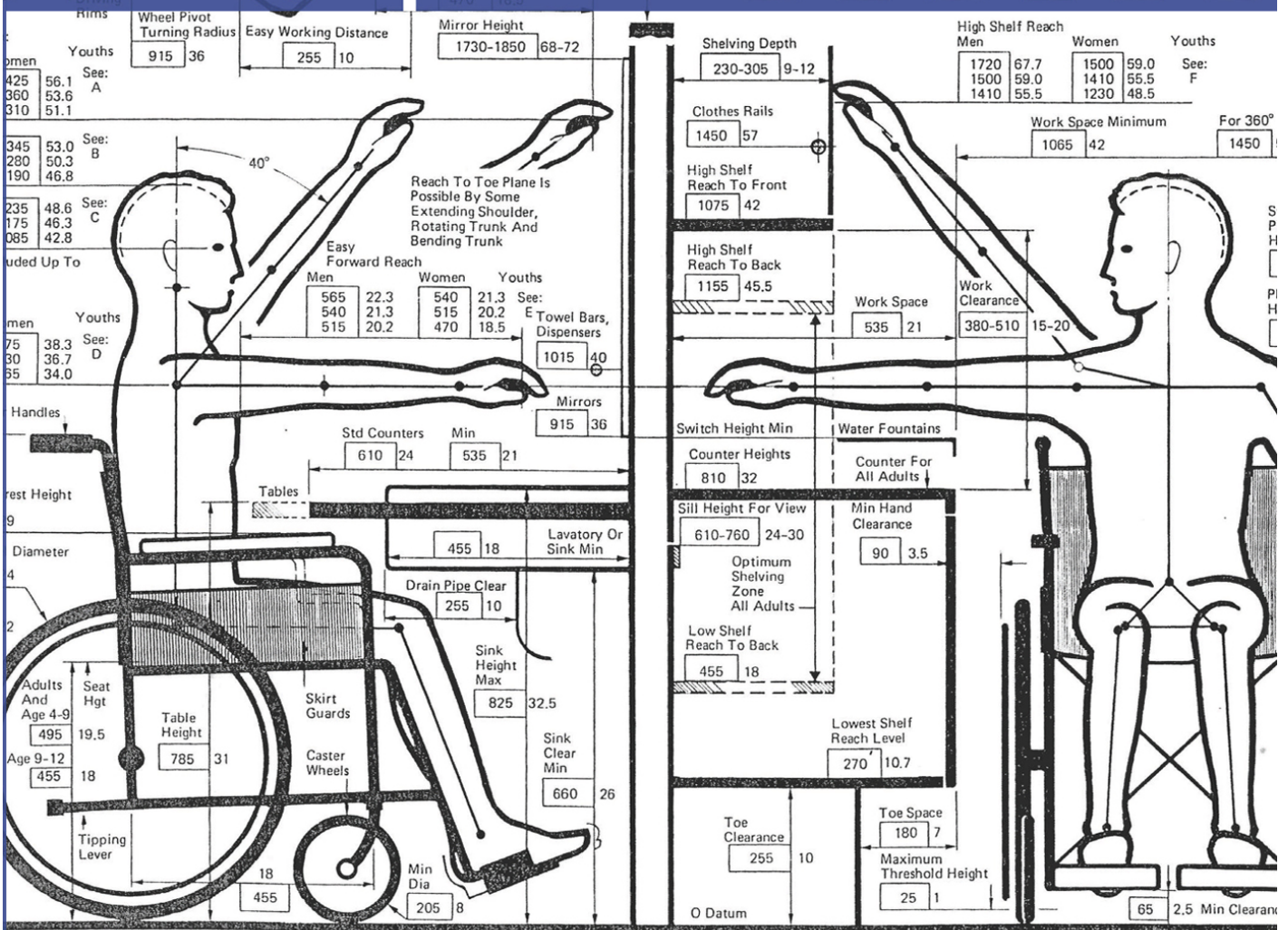


# BUILDING ACCESS

## Universal Design and the Politics of Disability

Aimi Hamraie



standing heights (including shoes):  
 70.4 large = 97.5 percentile includes 95% U.S. adults  
 65.5 average = 50 percentile  
 60.6 small = 2.5 percentile

Dimensional notation system:  
 1000 39.3  
 100 3.9  
 25.4 1.0  
 Numbers appearing in boxes in millimeters. Numbers out measurements in inches.

# BUILDING ACCESS

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Politics of Disability

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For the misfits

## UNIVERSAL DESIGN

### QUESTIONS DESIGNERS SHOULD ASK

*Why design something that can't be used?*

*Why say something that can't be heard?*

*Why write something that can't be understood?*

*Why draw something that can't be seen?*

*Why build something that is inaccessible?*

*Why construct something that can't be climbed?*

*Why paint something that is invisible?*

*Why sculpt something that can't be felt?*

*Why bridge something that can't be crossed?*

*Who are designers designing for?*

*What are designers designing?*

*When are designers designing?*

*How are designers designing?*

*Are designers making life elegant for everyone?*

*How do the blind turn off the lights?*

*How do the deaf listen to music?*

*How do the mute speak?*

*How do the paralyzed feel?*

*How do the tasteless taste?*

*Whose standards are standard?*

*Whose norms are normal?*

*Whose solution is universal?*

*Whose microcosm is worldly?*

*Whose exclusivity is inclusive?*

### BUT DESIGNERS WILL—

*Build the Building!*

*Design the Design!*

*Sculpt the Sculpture!*  
*Etch the Etching!*  
*Draw the Drawing!*  
*Draft the Drafting!*  
*Paint the Painting!*  
*Detail the Details!*  
*Communicate the Communication!*  
*Photograph the Photograph!*  
*Film the Film!*  
*Plan the Plan!*  
*Color the Color!*  
*Structure the Structure!*  
*Texture the Texture!*

BUT DESIGNERS SHOULD ASK—  
*WHO IS THE DESIGN FOR?*  
*WHAT IS THE DESIGN PROBLEM?*  
*WHERE WILL THE DESIGN BE USED?*  
*WHEN WILL THE DESIGN BE USED?*  
*HOW WILL THE DESIGN BE USED?*

UNIVERSAL DESIGN IS POSSIBLE IF THE ANSWERS ARE—  
*EVERYONE*  
*UNIVERSALITY!*  
*EVERYWHERE*  
*ALWAYS!*  
*UNIVERSALLY!*

—BRUCE HANNAH, professor emeritus, Pratt Institute, School of  
Art and Design. Universal Design Teach-in, Pratt Institute, January 14, 1994



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# Preface

Who belongs where, under what auspices or qualifications, and during what times or through what particular thresholds?

—TANYA TITCHKOSKY, *The Question of Access*

Let's begin by traveling.

If you are sighted, if the bus will take you there, and if the altitude suits you, you can see it from the outside. At the Blusson Spinal Cord Center in Vancouver, a colorful ramp winds around a glass atrium to three of the upper floors (Figure P.1), where rehabilitation professionals conduct bench science and people with spinal cord injuries receive therapy. Some use the ramp as a training space for wheelchair sports, ascending to increase endurance, speed, and efficiency. A statue of a wheelchair basketball player, holding arms upright as if poised to shoot, sits at the ramp's base. Amid the statue, the ramp, spacious bathrooms with grab bars, and the elevators with their large, wheel-in buttons, the most recognizable visual symbol of disability—the International Symbol of Access—is nowhere to be found.



Across the continent, at the Institute for Human Centered Design in Boston, access is everywhere, both marked and unmarked. A large silver button featuring the International Symbol of Access appears on the right side of a glass door (Figure P.2). Whether you press, kick, or nudge the button, a door opens into an airy, bright space, speckled with the green of plants enjoying natural light. An attractive retail area showcasing colorful kitchen products, chic felt tote bags, and toys feeds into a wide hardwood ramp, a library and comfortable reading space, accessible restrooms with hands-free toilets and faucets, a demonstration kitchen, and offices. Visual and Braille signs on three-dimensional art displays invite you to touch the work.



Just south of Austin, Texas, a crowd of children and adults gathers for admission to Morgan's Wonderland, an accessible theme park. Through the gates and past a line of "family" restrooms (each marked with the access symbol), a large, three-dimensional



Figure P.1. The glass and steel structure of the Blusson Spinal Cord Center in Vancouver, British Columbia, discloses a glass atrium with a winding, colorful ramp (2010). Photograph by author.

tactile map communicates the park's layout and offerings: wheelchair-accessible rides, swings, playgrounds, and a carousel; sensory activities such as fountains and xylophones; and an amphitheater for live performances. Cardboard cutouts of children dressed as superheroes—some with wheelchairs, crutches, glasses, or service animals, and others, like Morgan, an autistic girl for whom the park was named, without—double as signs directing you throughout the space. Follow the signs, feel free to play, and notice what happens when bodies that rarely access public space do so together.



In a dark hotel ballroom, two screens and two American Sign Language interpreters flank a table of presenters. On one screen, a speaker shows slides, and on another, a transcriber documents their words. “Would anyone benefit from a printed copy?” the moderator asks before each talk. “I have twelve- and eighteen-point font.” Many raise



Figure P.2. A view of the library and seating area at the Institute for Human Centered Design, Boston, Massachusetts (2010). Photograph by author.

hands or canes, wave, or call out. The event is a plenary session on race, disability, and literature, but across the Society for Disability Studies conference, similar affordances and very different bodies appear in nearly every room.

---

Each of these spaces illustrates at least some elements of Universal Design, a late twentieth-century design philosophy aimed at creating built environments that are accessible for both disabled and nondisabled users. But each space also embodies a very different way of understanding the concept of disability, whether as a medical category in need of correction, a category of identity and shared experience, a consumer designation, or an inevitable aspect of human community, which societies should anticipate and value.<sup>1</sup> Nearly a decade ago, when I began traveling to these and other spaces, I thought that I understood Universal Design. It was common sense, really: the world should be designed with all of us in mind. But as my bodymind came to inhabit some ways of sensing, perceiving, and moving through the world that are called “disability,” traveling and taking up space came to mean very different things:

not easy passage, but frictioned negotiations of access and privilege.<sup>2</sup> As I traveled, sensed, and inhabited these spaces, it became clear that the concept of Universal Design was not common sense at all. Rather, what designers, users, and advocates mean by this term can be as varied as their conceptions of and relations to the idea of disability. In each space, promises of Universal Design for “everyone” materialized in relation to particular types of users, and whether I (or anyone else) was part of that “everyone” depended on whether our presence had been anticipated, in what ways, and for what purposes.

*Building Access* explores these conditions of knowing, making, and relating. When the goal is to design for “everyone,” I ask, who counts as everyone and how do designers know?

## Critical Access Studies

The difficult intersectional, interdisciplinary work to be done includes within one frame the spaces of the political economic and the ontological, the battles of the activist and the epistemologist, the tracings of the historian and the artist.

—BEATRIZ DA COSTA and KAVITA PHILLIP,  
*Tactical Biopolitics*

ADA NOW! ADA NOW! ADA NOW!

One hundred stairs divide a gathering crowd from the U.S. Capitol Building above. Numbering in the hundreds, they chant and hold signs. A group breaks off, leaving behind wheelchairs and crutches to lay flesh on stairs and crawl to the top. Framed against the building's steps, the bodies are clearly misfits: unanticipated, non-compliant, and taking up space.<sup>1</sup> Walking to their offices, irritated lawmakers step over and around misfit bodies; onlookers snap photographs; news anchors interview activists as they crawl to the top. Framed by the stairs in a striking image, these public bodies communicate what signs and chants alone cannot: this building, a symbol of governance and democratic citizenship for all—an embodiment of the nation itself—was not designed with disabled people in mind.<sup>2</sup>

The event was the “Capitol Crawl,” a disability rights protest demanding that Congress pass the Americans with Disabilities Act (ADA) of 1990, landmark anti-discrimination legislation that identified a civil right to accessible buildings, public transportation, and workplaces for disabled citizens. Widely credited as the final push that resolved congressional deadlock, the Capitol Crawl demonstrated the power of disabled people as resourceful agents whose novel tactics showed visible evidence of disability discrimination, rather than patients in need of medical cure (Figure I.1).<sup>3</sup> But the critical work of these visible tactics went far beyond the ADA itself. The demonstration professed a particular disability theory of architecture: that built forms convey material rhetorics, which reveal cultural assignments of knowledge and power. In the Capitol Crawl, disabled people spoke back against the steps by deploying embodied speech and lived knowledge as architectural critique.

At the twenty-fifth-anniversary celebration of the ADA in 2015, a temporary mural appeared on the steps of the Carnegie Library in Washington, D.C., bearing President George H. W. Bush's historic remarks: “With today's signing of the landmark





Figure I.1. Disability protesters at the "Capitol Crawl," leaving behind wheelchairs, power chairs, and crutches to crawl up the steps of the U.S. Capitol Building in Washington, D.C. (March 12, 1990). Photograph by Tom Olin. Courtesy of Tom Olin Photographs Collection, MSS-294, Ward M. Canaday Center for Special Collections, University of Toledo Libraries.

Americans [with] Disabilities Act, every man, woman, and child with a disability can now pass through once-closed doors into a bright new era of equality, independence, and freedom.” Google’s charity organization Impact Challenge commissioned the mural and others like it on staircases near the National Mall, each featuring a disability rights leader who (in the organization’s words) had “asked, ‘What if we could create a more inclusive world for everyone?’” For those celebrating the anniversary, the murals (and their corporate donor) signaled the secure place of disabled Americans in U.S. culture and life. Bush’s words confirmed the post-ADA narrative that the time for disability rights had finally arrived. But working in concert with post-racial narratives, which insist that American racism ended along with state-sanctioned segregation, the post-ADA narrative uses the formal guarantee of disability equality to elide the existence of material inequalities.<sup>4</sup> By painting Bush’s promise of universal access on the built form of a staircase—the same structure that was the Capitol Crawl’s focal point—the murals hid in plain sight (and without a hint of irony) the persistent architectural, attitudinal, and economic barriers that disabled people continue to face in the post-ADA world.<sup>5</sup>

Despite the optics of disability rights, the causes of discrimination are often invisible and illegible. Disability law scholars and policymakers have documented the ADA’s failures to improve access to employment, housing, and public spaces, attributing these limitations to the law’s limited provisions and inability to address structural, systemic, and attitudinal discriminations that disabled people face.<sup>6</sup> Disabled people continue to leave evidence that the ADA has not resulted in a postdiscrimination world, emphasizing that normal, taken-for-granted aspects of built environments, such as the prevalence of stairs, work in tandem with discriminatory attitudes. Disabled painter Sunaura Taylor’s *Thinking Stairs* illustrates this argument through a series of comic book–style frames, showing a grayscale sidewalk flanked with cartoonish red stairs emitting empty speech bubbles (Figure I.2). “When I go out,” Taylor writes, “it’s as if the stairs are all bright red. It’s as if they are all talking about me. But I don’t know what they are saying. . . . They are manifestations of something more sinister: discrimination.” The landscape appears disembodied, impartial, until the final frame, in which Taylor herself appears as a black-and-white figure driving her power chair amid staring pedestrians. Wordlessly, the *stairs* communicate what the people—and their stares—appear to think: that Taylor is out of place; the world was not designed with her in mind.<sup>7</sup>

The post-ADA narrative thus misses a crucial point offered by disabled users, designers, and activists: that the built world is inseparable from social attitudes, discriminatory systems, and knowledge about which users designers must keep in mind. Put another way, how we structure knowledge, interact with material things, and tell stories about the users of built environments matter for belonging and justice. When these stories embrace as common sense such values as freedom, access, and “a more inclusive world for everyone,” it becomes all the more important to heed the

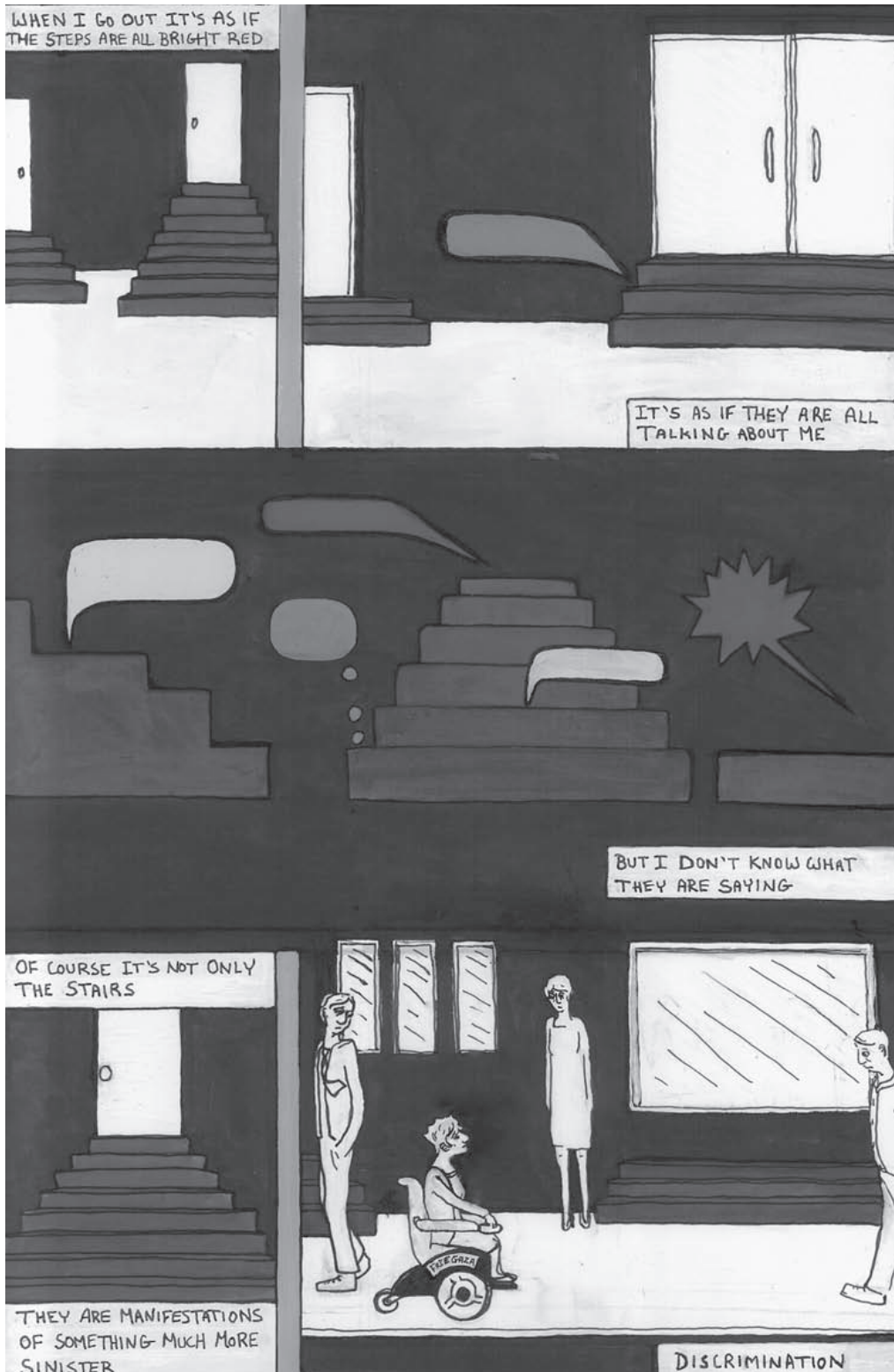


Figure 1.2. Art animates the unspoken discriminatory effects of built environments. *Thinking Stairs* suggests that buildings communicate what people do not. Courtesy of Sunaura Taylor. Previously published in *Modern Painters* (October 2014).

critical lessons of the Capitol Crawl protestors, whose embodied architectural critique raised critical, material, and epistemological questions: who *counts* as everyone and how can we *know*? These questions—how they arose and what impact they had on new approaches to environmental design since the twentieth century—are the focus of this book.

*Building Access* has three primary aims: first, to provide a more critical and historical account of accessibility and Universal Design than currently exists; second, to conceptualize the historical project of knowing and making access (or what I call “access-knowledge”) through critical disability, race, and feminist perspectives (and to develop a Universal Design theory that is attentive to issues of power and privilege); and third, to elucidate in broad strokes how the shifting figure of the user, particularly the disabled user, has shaped justifications for and material practices of Universal Design in the present. My focus is not to evaluate specific designed products or to endorse certain principles of design. Rather, I am concerned with the implications of how we imagine the figure of the user, justify design for particular users, and tell stories about the value of such design for broader questions of difference and belonging in the contemporary United States. *Building Access*, then, offers scholars, activists, designers, and others who support the project of accessible world-building a map of our paths to the present.

In the early twenty-first century, the term “Universal Design” gained popularity as an easy reference to the idea that inclusive design benefits everyone, regardless of disability or age. Its global circulation and reach into a number of disciplines beyond architecture, however, make it easy to forget that Universal Design is a very recent discourse, and that how this phenomenon is named, defined, and justified is a product of the post-ADA era. The post-ADA narrative dictates that accessible design, like freedom, is a self-evident, commonsense good. But how the built world *materializes* is inseparable from the value-laden politics of knowing. “All too often,” wrote disabled architect and accessibility expert Ronald Mace, “designers don’t take the needs of disabled and elderly people into account when they are designing a building.”<sup>8</sup> Focused on accessible design as a site of meaning-making and world-building, *Building Access* argues that since the twentieth century, the project of designing a more inclusive world for everyone has taken shape through specific arrangements of knowing and making: the phenomenon that I am calling access-knowledge.

Access-knowledge, a regime of legibility and illegibility, emerged from interdisciplinary concerns with what users need, how their bodies function, how they interact with space, and what kinds of people are likely to be in the world.<sup>9</sup> While twentieth-century U.S. rehabilitation experts, ergonomists, social scientists, architects, product designers, and policymakers claimed expertise about accessibility as an objective, functional practice, disabled users positioned themselves as experts credentialed by their lived experiences to remake the world. How designers negotiated

the politics of knowing-making, in turn, implicated their strategies and interventions. Behind the scenes of legible public events, such as the Capitol Crawl or the passage of legislation, Universal Design proponents conducted more subtle forms of activism, using research, technical guidance, and design education as spheres in which to challenge designers' dominant conceptions of users.

At its core, this book is about the material ramifications of stories, ideas, and representations as they coalesce into broader discourses of disability, knowledge, and nation. But it is also about knowledge and ignorance as material arrangements. To offer a more critical and theoretical understanding of Universal Design than currently exists, *Building Access* investigates how access-knowledge has animated the relationships between scientific, architectural, industrial, national, and embodied ways of “knowing” disability. Drawing on an expansive archive of ephemera, oral histories, design documents, handbooks, publications, marketing materials, physical objects and spaces, and personal papers from Universal Design's founders, *Building Access* places the claim that “designers do not design with disability in mind” in historical, theoretical, and cultural perspective. The emergence of access cannot be reduced to common sense, good will, or the affordances of the state. Nor is access simply a matter of keeping disabled users “in mind.” Since the mid-nineteenth century, specific relations of knowing-making—situated histories of embodiment, ideology, science, technology, and design—have shaped the possibilities for and the politics of accessible world-building.

## LOCATING ACCESS-KNOWLEDGE

“Like a bean sprout that emerges only after its root is deep and strong,” wrote Molly Story, James Mueller, and Ronald Mace, “universal design has its beginnings in demographic, legislative, economic, and social changes among older adults and people with disabilities throughout the twentieth century.”<sup>10</sup> In 1985 Mace coined the term “Universal Design” to describe the idea that many people, whether disabled or non-disabled, benefit from a more accessible built environment.<sup>11</sup> Mace concluded that architects and product designers should make all environments accessible, rather than requiring disabled people to request “retrofits” (or alterations) after a building has already been constructed. Although these ideas had circulated for decades, Mace's term propelled the concept into the ADA era.

While Mace's term preceded the ADA by five years, the dominant narrative about Universal Design is a post-ADA phenomenon. Since the late 1990s, Universal Design proponents have debated the concept's relationship to the ADA and, by extension, to the notion of disability itself.<sup>12</sup> These debates are at an impasse, however, because the term is used to describe a wide range of approaches, from design that begins from a focus on disability (and has added value to others) to design that begins by focusing on a range of users to design that is just intuitive, common sense, and usable. *Building*

*Access* resolves this impasse by historicizing the debates themselves in relation to shifting understandings of disability rights, good design, and human variation. By treating Universal Design as a shifting historical discourse, a tool for making distinctions to create meaning and shape material realities, rather than a stable idea or practice, this book disentangles the aspiration for a more accessible world from the ideologies and values used to promote it.

Although the ADA popularized the discourse of Universal Design, the meanings of this term soon proliferated. Builders' magazines, newspapers, textbooks, and conference workshops began to tell a new story about Universal Design: that this approach was not about accessibility for disabled users at all but rather about a commonsense approach to "good design" for everyone.<sup>13</sup> Even prominent disabled people, such as journalist John Hockenberry, a wheelchair user, adopted the post-ADA narrative. Describing accessibility renovations to his home kitchen, Hockenberry wrote,

In the end there was nothing "special" or "handicapped" about it. This kitchen was merely made to work with the real people who lived there. Its universality came not from abstract specifications but from the lives of real people, creating spaces for their daily lives. No detailing or style or luxury could possibly be more precious than this simple quality. Universal design is perhaps just an overly clinical name for something we think we know but perhaps we don't—good design.<sup>14</sup>

This new story, a crucial part of the post-ADA narrative, implied that accessible design was easy to achieve and simple to practice. It was good business as the population aged. It had little to do with disability. It was commonsense, good design.

Despite Universal Design's origins in the work of disability activists and in disability rights efforts preceding the ADA, the term has become a popular discourse in the post-ADA world—not by centering disability as a category of marginalization but by disavowing it. But how did Mace's concept come to signify a disability-neutral approach? In 1997 the Center for Universal Design at North Carolina State University in Raleigh, North Carolina, released "The Principles of Universal Design," a guide for inclusive and flexible design (Figure I.3).<sup>15</sup> Since 1997 the "Principles" have become the most-often-cited reference to Universal Design, shaping public perceptions of its theory. Although the "Principles" used terms such as "equitable" and "flexible," references to specific users, such as disabled people, do not appear in the text. Consequently, the public perception of Universal Design since the late 1990s has been shaped by what I term "barrier work," or claims that Universal Design is not about disability at all but rather about good design for everyone.

Widely cited as a representation of Universal Design writ large, the "Principles of Universal Design" has spread beyond architecture and industrial design into Web design, education, and even critical humanistic scholarship. As it spreads, however, Universal Design claims are largely taken as common sense. The concept remains largely

## THE PRINCIPLES OF UNIVERSAL DESIGN

### Principle 1: Equitable Use

The design is useful and marketable to people with diverse abilities.

### Principle 2: Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

### Principle 3: Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

### Principle 4: Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

### Principle 5: Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

### Principle 6: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

### Principle 7: Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Figure 1.3. "The Principles of Universal Design," Version 2.0 (4/1/97). Courtesy of the Center for Universal Design, North Carolina State University.

ahistorical and undertheorized as a result. With few exceptions, critical methodologies from the humanities and social sciences have not been applied to exploring Universal Design's interventions, possibilities, and strategies. *Building Access* reaches below the surface of post-ADA narratives to parse Universal Design's barrier work, marketing discourses, and public circulation from its more critical, material, and epistemological contributions, unearthing a range of heterogeneous justifications, material practices, and finely graded interventions into dominant modes of knowing and making.

Global attention to Universal Design has heightened since the late 1990s. Translated into at least eleven languages, including Dutch, French, German, Bahasa Indonesia, Italian, Japanese, Korean, Norsk (Norwegian), Portuguese, Spanish, and Swedish, the “Principles of Universal Design” and the concept they elucidate appear as mandates in the United Nations Convention on the Rights of Disabled Persons.<sup>16</sup> International conferences attract networks of experts, designers, and researchers from Japan, Norway, and India, among other countries, to explore Universal Design alongside approaches termed “Inclusive Design,” “Design for All,” and “Design for the Lifespan.” Advocates claim that these terms provide nonuniversalist alternatives for the philosophy that Universal Design describes. But like the barrier work of distinguishing between Universal Design and the ADA, the purported equivalency of these terms presupposes an ideal concept and approach that simply awaits a better title. Significant empirical questions remain, however, about whether these terms are constant in their meaning, scope, and practice as they circulate globally.

While all these approaches may aspire toward a more accessible world, their justifications, strategies, and conceptions of users transform across historical and geographic contexts. *Building Access* argues instead that the very notions of accessibility, inclusion, all, and lifespan are as contested, historically contingent, and value-laden as the design processes that materialize and dematerialize built worlds. Situating these concepts within the historical evolution of access-knowledge, I show that Western and often distinctly U.S. American ideas have shaped how experts, lawmakers, and designers understand the figure of the user. To mark the unmarked, I use the capitalized form “Universal Design” to designate a specific discourse, which congealed from U.S. material cultures, medical and scientific discourses, civil rights laws, racialized patterns of spatial planning, consumer ideologies, class relations, and gender systems. When I discuss Universal Design, then, I am referring not to an abstract ideal but to a specific phenomenon and the networks of social relations, expertise, and design experimentation that produced it. By focusing on the United States, *Building Access* excavates a geographically and historically specific range of hegemonies and resistances, enabling future research that decenters the U.S. American narrative about this phenomenon.

*Building Access* investigates the regime of legibility and illegibility at the heart of the U.S. liberal democratic project. That access to public space is a variety of freedom is hardly a contemporary idea, but in the twentieth-century United States, movements for race, economic, gender, sexuality, and disability rights focused their efforts on desegregating public space. While the segregationist causes they opposed were often distinct, these movements shared a demand for meaningful spatial citizenship: the right to occupy homes, workplaces, universities, restrooms, courthouses, and cities. Tactics of taking up space, such as marches and sit-ins, made these movements publicly legible. But when it came to legislating civil rights to housing, employment, and education, lawmakers and designers tended to treat the categories of race,



class, gender, sexuality, and disability as discrete. Although the idea of “intersectionality” came after the passage of major civil rights legislation in the 1960s and ’70s, there is another reason that laws and environmental design did not consider that people at the intersections of systems of oppression face unique barriers to exercising rights. The reason had to do with the systems of knowledge and expertise that policy-makers enrolled in defining human variation and prescribing ways of containing it. This book shows that the liberal project of including an ever-widening range of human variation was inseparable from processes of objectification, surveillance, and standardization. As race, gender, class, and especially disability became objects of expert study, scientific legibility shaped the political legibility of architectural inhabitants, users, and citizens.

Across twentieth-century social justice movements, however, another type of politics, often illegible and below the surface of public perception, focused on knowledge as a site of engagement and transformation. It may appear odd to characterize knowledge as a “site,” implying that it is a place. As we typically understand it, knowledge is abstract, immaterial; knowledge describes the world rather than being within it. But what activists knew, and what many academic disciplines eventually came to understand, was that knowledge is social, relational, material, and spatially situated. *Knowing* both reflects and shapes the world. Knowledge, in other words, is a kind of design. Treating knowledge as a contested domain for shaping the world, twentieth-century activists pushed against scientific and liberal conceptions of legible personhood, challenging the neutral, disinterested objectivity of Cold War-era science and asserting alternative ways of knowing, which tethered accounts of lived marginalization and analyses of historical, political, and cultural systems.<sup>17</sup> These strategies, which I term “epistemic activism,” rematerialized not only the built arrangements of segregated space but also the structures of knowledge production itself.

Access-knowledge challenged the norms of embodiment around which architectural design coheres. In the post-World War II era, proponents of barrier-free design argued that the world had been designed with an average user in mind, but the changing nature of human embodiment through war, industrial accidents, and medical advances demanded a new strategy. Unlike High Modernist architects, who defined “good design” in terms of standardization and uniformity, proponents of barrier-free design argued that if architects design a world with disability in mind, this built-in access would benefit “all” people, even adding value for nondisabled users. *Building Access* traces these concepts of *anticipatory access*, *broad accessibility*, and *added value* as they shaped the regime of access-knowledge.

Despite claims that accessibility benefits all users, however, barrier-free design was firmly situated in twentieth-century notions of productive citizenship, which defined liberal belonging through the capacity for productive labor, as well as through the evident fruits of that labor: wealth accumulation, homeownership, and consumerism. Midcentury advocates for barrier-free design claimed that accessible built

environments would help to rehabilitate injured soldiers and workers, contributing to the common good, public safety, and national capital. Public universities and the private, single-family home—two sites of pervasive racial segregation, gendered divisions of labor, and economic accumulation—served as the primary foci of barrier-free design research.

The post-ADA narrative about Universal Design tells a different story, however. Contemporary advocates distinguish Universal Design from barrier-removal, arguing that the former is a broad, creative, extralegal approach to design for everyone, while the latter is situated in legal codes and standards and focused only on disabled users. Before barrier-free design became a bureaucratic term for codes and standards, its discourses and claims were nearly identical to those of contemporary Universal Design. It was only in the post-civil rights era, when laws such as the ADA emerged to mandate and enforce barrier-free design, that it became possible to frame it as narrow and bureaucratic. *Building Access* proposes that Universal Design did not emerge as an alternative to barrier-free design. These mutually constitutive approaches and their shared proponents, experts, and knowledge bases were instead part of a broader experiment with how to frame, negotiate, and deploy the project of design with disabled users in mind. But is Universal Design a critical project, and if so, what is its intervention? *Building Access* explores this question through several lines of thought, considering Universal Design's relationship to norms, the concept of disability, and the entangled dimensions of race, class, and gender, which intersect the politics of environmental design.

## CRIPPING UNIVERSAL DESIGN

How does Universal Design relate to the concept of disability? Post-ADA narratives insist that Universal Design is disability-neutral: the focus is not on disability but rather on everyone.<sup>18</sup> This claim is confusing, however, because it does not clarify what “everyone” means in a world that devalues particular bodies. Similar to the idea that we live in a post-racial society, wherein race is a fiction and civil rights laws have mandated equality, rendering oppression immaterial, terms such as “everyone” give the impression that legible belonging in a population is unmediated by historical, political, or social ways of knowing. Accordingly, it is often taken as common sense that because aging is a form of impairment, everyone is or will be disabled at some point. It follows that better design will benefit not only our present, youthful, able-bodied selves but also the bodies that we will be in the accessible future.

But for those of us whose bodies do not follow these smooth, predictable temporalities, whose ways of being and moving find friction with our social and built environments, and whose present and future belonging has been shaped by past conditions of inequality, the idea of universal disability is perplexing at best. For scholarly fields, such as disability studies, this idea and its prominence in Universal

Design discourse calls into question foundational models, epistemologies, and ethical positions.

The history of access-knowledge, of which Universal Design is a part, is also the history of the field of disability studies. Around the time that Mace first wrote of Universal Design in the mid-1980s, the field emerged as a kind of epistemic activism, working within academia to challenge dominant medical and rehabilitation models of impairment and pathology. The generative intervention of disability studies paralleled (and later allied with) the rise of critical race, feminist, and queer studies from social movements.<sup>19</sup> At the core of disability studies, the field's foundational "social model" translated the insights of U.S. and UK disability activists into an academic theory.<sup>20</sup>

As the social model is often described, disability is a construct of built and social environments rather than pathology requiring cure or functional limitation demanding rehabilitation. Two decades earlier, however, rehabilitation experts developed a similar understanding of disability as an environmentally produced phenomenon, arguing that inaccessible built environments exclude disabled people from accessing necessary services, work, and public participation.<sup>21</sup> These experts emerged from within the rehabilitation profession, used established research methods in their field, and worked with architects and builders to produce the first U.S. accessibility standard, ANSI A117.1. Barrier-free design was a rehabilitation project, aimed at engineering more productive workers and citizens. In the 1970s, disability activists pushed back against rehabilitation researchers and their assumptions that disability is a failure of human performance, and thus a problem in need of elimination. While they agreed that disability is a socially and architecturally produced disadvantage, activists asserted that their lived experiences made them better experts on the subject of disability and challenged the rehabilitation norm of compulsory productive citizenship.

What distinguished the social model from rehabilitation, then, was not its focus on environmental precipitants of inequality but rather a new disability epistemology. Disability studies grew around this epistemology, deemphasizing medical and scientific knowledge in favor of critical theory, qualitative data, and humanistic texts. But in the early twenty-first century, around the time that Universal Design became a predominantly disability-neutral discourse, critical and crip theories of disability emerged to challenge the social model for overemphasizing the environmental construction of disability oppression over embodied experiences of disablement.<sup>22</sup> "Crip," a reclamation of the term "cripple" dating to the 1970s independent living movement, resists imperatives for normalization and assimilation.<sup>23</sup> Crip theories contribute that disability is a valuable cultural identity, a source of knowledge, and a basis for relationality.<sup>24</sup>

Rather than focusing exclusively on environmental inequality, the critical disability turn addresses ideology, political economy, and cultural systems responsible for characterizing disability as disqualification.<sup>25</sup> *Building Access* approaches Universal Design through the framework of crip and critical disability knowing-making. Unlike

crip theories, disability-neutral Universal Design discourses often reference rehabilitation notions of human performance and functional limitation, taking for granted that restoring function improves productivity and is thus a self-evident good. But by framing Universal Design as a productivity-enhancing feature of built environments, these discourses reduce the critical project of access-knowledge to the status of a rehabilitation technology for disabled users and an enhancement for nondisabled people. Accordingly, constructs such as limitation and enhancement, far from neutral or self-evident, produce a “depoliticized” perception of disability, which, Alison Kafer explains, treats as common sense the notion that disability is a “problem to be eradicated.”<sup>26</sup> Paradoxically, depoliticized and neutralized approaches to disability make it possible to imagine a world without disability in it. Shifting toward a more value-explicit, intentional, and crip understanding of disability, *Building Access* situates access-knowledge in relation to the liberal project of normalizing public space, assimilating misfit bodies into public life, creating reserves of productive labor, segregating the unproductive, and, as in the case of eugenics, eliminating the physical presence of disability in the world.<sup>27</sup>

Crip theory, too, requires a more robust account of the politics of knowing-making. A core assumption persists that accessibility and rehabilitation are epistemologically discrete.<sup>28</sup> Well-rehearsed arguments—that the problem is not unrehabilitated bodies but the lack of access—have reproduced the social model as a kind of common sense and Universal Design as a metaphor for meaningful access. In one sense, these arguments demand accountable knowing-making. As Jay Dolmage has productively explored it, meaningful access should go beyond piecemeal efforts at “retrofit” and “accommodation,” addressing knowledge, values, ideologies, and systems.<sup>29</sup> This idea resonates with the generative notion of “collective access,” offered by contemporary organizers in the disability justice movement, which is led by disabled people of color.<sup>30</sup> Universal Design’s open-ended, creative promise, its unfinished qualities and “ongoing negotiation[s]” inspire projects of both individual and collective access, in the sense of going beyond the technical aspects of inclusion to address broader systems and ideas.<sup>31</sup> The sticking point here, however, is that the material world and the social arrangements within it are not just abstract ideals. Working toward meaningful inclusion does not make the conditions of its materialization any less reliant on the politics of knowing. The social model, along with crip theories that treat accessibility as an alternative to medical knowing, offered a first wave of disability theorizing that I call “access studies.” *Building Access* extends this work into what I term “critical access studies,” a relatively new field that challenges the treatment of access as a “self-evident good.”<sup>32</sup>

Black disability scholar Chris Bell argues that disability studies fails to “engage issues of race and ethnicity in a substantive capacity, thereby entrenching whiteness as its constitutive underpinning.”<sup>33</sup> Bell’s critique applies to both access studies and critical access studies in their current formations. Despite unsettling medical norms

of embodiment, access studies frequently centers liberal disability rights perspectives toward race, class, and gender oppression, and critical access studies has largely failed to address issues of whiteness, gender normativity, or class privilege, despite rejecting the mandates of able-bodiedness. *Building Access* centers the intersections of disability with race, gender, class, and aging in its historical study of how concepts of spatial access materialized in the twentieth-century United States. Although access-knowledge was a critical project aimed at unsettling norms of the user, I argue that our contemporary understanding of access has been shaped by historical perceptions of the user as a white, middle-class, productive citizen. Pushing crip theory toward a more robust account of the politics of knowing-making, *Building Access* argues for accountability toward these histories and their manifestations in contemporary post-disability and post-racial narratives.

## MAPPING ACCESS-KNOWLEDGE

*Building Access* traces the work of knowledge and ignorance, legibility and illegibility, transparency and opacity in the phenomenon of access-knowledge. At the core of the commonsense refrain that “the world was not designed with disability in mind” is the notion that *making* built environments is an exercise of power entangled with the politics of *knowing*. But what kinds of knowing would make it possible to design a world with disability in mind? The twentieth-century regime of access-knowledge emerged to answer this question. In the quest to make a diverse range of users beyond the average legible to architects and designers, this regime of legibility and illegibility often defined the user in relation to productive work, recognizable citizenship, and political agency.

### The User and the Norm

*Building Access* contributes to a growing field of inquiry that historicizes and theorizes the figure of the user as a site of architectural, technoscientific, and cultural meaning-making. Science and technology studies (STS) scholars and architectural historians propose that in the twentieth century, the user was both a subject and an object of knowledge.<sup>34</sup> Since antiquity, architects imagined the inhabitant as an ideal or universal body reflecting cultural ideals of beauty and proportion. Unlike the universal architectural *inhabitant*, the nineteenth- and twentieth-century figure of the *user* signified a range of variation. Statisticians, industrial scientists, and engineers identified this wide-ranging variation, termed the “human factor,” as an unpredictable threat to industrial, military, and other technological systems. Studying this threat would enable its smooth assimilation into the machinery of production. As a scientific understanding of human diversity enabled the design of increasingly productive, efficient systems, flexible design for a range of users became the stuff of standardization and normalization.

Concepts of human variation, disability, and injury configured the user as a site of human engineering and rehabilitation. Scientific managers such as Frank and Lillian Gilbreth turned their attention to the injured soldier as a body amenable to productive citizenship, a unit of nation, industry, and war carried from one engineered system to another. Human factors research followed the disabled veteran into postwar civilian life. Before the twentieth century, the need for accessible design as a matter of public policy was unthinkable because disabled people were segregated from public space by eugenicist “ugly laws” (as historian Susan Schweik has shown), confined in institutions, and hence illegible as public citizens.<sup>35</sup> Access-knowledge bridged human factors research, ergonomics, and postwar rehabilitation cultures, which brought particular disabled bodies—often white, male, physically disabled soldiers rather than people of color, women, or mentally disabled people—into public legibility as both users and citizens. As Anna Carden-Coyne, David Serlin, and Beth Linker have argued, rehabilitation brought the disabled user into public view by marrying bodily reconstruction to postwar efforts to rebuild the nation.<sup>36</sup>

Access-knowledge was an experimental project. At every phase, experts and users engaged in new types of research, experimented with design features, and debated standards of practice that could shape mainstream design discourses. In the mid-twentieth century, U.S. industrial engineer Henry Dreyfuss ushered in a new paradigm of “human engineering,” borrowing human statistics gathered by military sources, physical anthropologists, and eugenicists to offer designers data as a tool for design. But as *Building Access* reveals, flexible design for a range of users always referred to standardized forms of knowledge and conceptions of a vulnerable and manipulable body, whose disabilities required elimination through better environmental design. As a postwar intervention, barrier-free design challenged the idea that physical able-bodiedness is a prerequisite to occupying built space, but proponents did not challenge the imperatives of normalization. This was evident in the experts enlisted to create accessibility guidelines: architects and builders worked with rehabilitation scientists, industrial designers, and scientific managers in tandem to produce barrier-free environments that would enhance productivity and human performance. Disabled soldiers entering universities as students under the G.I. Bill, most of whom were white disabled men, became natural objects of research for early accessibility guidelines. A rehabilitation program for students at the University of Illinois at Urbana-Champaign served as the testing ground for these guidelines. A second prototypical user, the white, disabled housewife, followed, as rehabilitation research turned to the home as a domain of engineerable labor.

Midcentury access-knowledge tethered the project of inclusive public space to the objectification of disabled people in scientific research. But soon, users began to push back. In the 1960s, the independent living movement challenged the authority of nondisabled experts to know and design *for* disabled people. But rather than reject rehabilitation or architecture outright, activists worked within these fields to position

users as experts, experiment with new technologies of access, and reject productivity as a requirement of citizenship. Where the independent living movement intervened into rehabilitation practice, a new field of environmental design research (EDR) injected the architecture profession with more critical approaches to the user. Although these strategies of epistemic activism took place below the surface of legible protests and sit-ins, their tactics, frames, and design practices redesigned the normative basis of access-knowledge. *Building Access* shows that Ronald Mace's notion of Universal Design emerged from critical access-knowledge, particularly efforts in the 1970s and '80s to challenge the prototypical white male and white female wheelchair users as emblems of barrier-free design.

As this brief history shows, the user is a value-laden figure with significant history and politics. Commonsense claims that Universal Design is simply a form of good design tend to ignore that the legibility of disabled people as users has been contingent on their historic legibility as scientific objects, citizens, and workers, whose white, middle-class privileges remained unmarked. These claims also tell us very little about the entangled experiments and reiterations through which Universal Design materialized, or how these sedimentations made it a seemingly coherent, static, and namable practice in the late twentieth century.<sup>37</sup> This history matters not only for disability studies but also for the broader fields of American studies, science and technology studies, and design studies because the figure of the user has been a node around which normalcy, fitting, productivity, and national belonging are articulated.

### The Politics of Knowing-Making

Science, argues feminist philosopher Sandra Harding, is "politics by other means."<sup>38</sup> *Building Access* develops the concepts of "crip technoscience" and "epistemic activism" as analytics for understanding the ambivalent relationships between disability activism, scientific research about disabled users, and liberal political discourses in the project of creating a more accessible world.<sup>39</sup> These concepts extend the work of feminist science and technology studies to histories of disability and design. Because disability studies emerged from activists' critiques of medical expertise, the field on the whole has not explored technoscience as an arena of world-building and meaning-making. In addition to studying the normative dimensions of science, however, *Building Access* provides an account of knowing and making as social and political practices. Refusing the terms of productive citizenship, disability activists of the 1960s and '70s turned to research and design as politics by other means. If liberal citizenship demanded smooth belonging and rehabilitation, crip technoscience involved strategies of friction, disorientation, and nonconformity. Activists engaged in self-taught design practices, creating their own tools, curb cuts, and ramps with repurposed materials, learning to code and hack computers, and tinkering with the structures of everyday life. For crip technoscientists, disability was the basis of shared

culture and identity, a valuable resource for environmental retooling, and hence not a de facto disqualified condition.

Crip technoscience thus took shape as a politicized, world-altering practice with overt and subtle manifestations. In this sense, crip knowing-making redesigned the terms of legibility and illegibility in relation to liberal inclusion or economic citizenship. In public, disability protests such as the Capitol Crawl represented the struggles of illegible users to become legible. But for others, including Ronald Mace, illegibility served as a productive resource for challenging norms of the user. In tactical but imperceptible ways and within mainstream domains of power, epistemic activists like Mace chose scientific research, architectural education, accessibility code development, disability policy, and other seemingly mundane, often bureaucratic domains as arenas of political contestation.

*Building Access* unearths this epistemic activism as Universal Design's politics by other means. Examining legal documents, technical guidance, handbooks, media publications, design curricula, and user research methods, I show that Universal Design's interventions and critical practices have been largely illegible to scholars and contemporary advocates. But Universal Design is not a uniform practice. As a flexible discourse, it holds in tension the disability activist and the rehabilitation scientist, the human engineer and the noncompliant body, the accessibility standard and the resistant designer. It is within these entangled arrangements of knowing and making that Universal Design materializes, both in the sense of the built forms of curb cuts, automatic lights, and lever-style door handles and in the sense of appearing to cohere as a practice that we can reproduce, negotiate, and remake.

## A USER'S MANUAL

This book begins a critical historical discussion about Universal Design, but it is not meant to serve as a conclusive, all-encompassing narrative of this history-in-the-making. The story told in this book is still materializing. Examining the very recent past presents many challenges and opportunities. In our digital age, the vast archive of Universal Design history can enrich our understanding of this phenomenon, but there are limits to what a single book can include. Many of the people, designs, and encounters that were part of this story are not included here.

For context and critical distance, I have designed this book to convey a long-term history of access-knowledge. Although organized chronologically, each chapter offers a genealogy of a key idea, claim, or refrain of Universal Design: equity (chapter 1), flexibility (chapter 2), design for "everyone" or "all" (chapter 3), the curb cut (chapter 4), design with users in mind (chapter 5), the term "Universal Design" (chapter 6), and the "Principles of Universal Design" (chapter 7). While my focus is on the history of ideas and discourses, this book is also a study of material culture, including how



objects, advertisements, photographs, design documents, and ephemera coalesce to shape our understanding of Universal Design, as well as the questions that we are willing to ask about it.

Part of the material culture of accessibility and user-centered design has been an emphasis on the primacy of the wheelchair user as an embodiment of disability.<sup>40</sup> Another part of this material culture has been an emphasis on visual rhetorics. Images throughout the book tell a story about the optical material culture of access-knowledge, particularly regarding the shifting figure of the user. But there are many ways to engage with these illustrations, whether as evidence, landmarks, or guides to the narrative. Working with them on their own without the text tells a story, but engaging with the details and descriptions embedded in the narrative text does the same.

*Building Access* spans the nineteenth, twentieth, and twenty-first centuries. Ending at the “Principles of Universal Design,” the arc of the book spans the rise of design for users, first normative (chapter 1) and later more particular (chapter 2). The middle chapters offer a prehistory of the concepts, strategies, and epistemic communities through which the Universal Design principles materialized, from barrier-free design (chapter 3) to crip technoscience (chapter 4) to epistemic activism (chapter 5). The final two chapters focus on Universal Design since 1985, tracing its rise in relation to the ADA (chapter 6) and its primary document, the “Principles of Universal Design” (chapter 7). Finally, the conclusion examines the present and future trajectories of Universal Design, given contemporary trends in urban development, population change, and disability politics. While *Building Access* is a history of the Universal Design movement, it is perhaps even more importantly understood as a critical history of epistemology, politics, and the built world as mutually enacted.