

# In the Wake of Universal Design: Mapping the Terrain

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Whom is the world designed for? Is there space for coalition politics in design? It seems that design for inclusiveness is undergoing a paradigm shift, but the expansion of design for disability has been so rapid and multifaceted that it is raising unsettling new questions—and answers—for the field. The expansion of our understanding of ability and a rapidly changing technological landscape are moving us beyond Universal Design, the term often given to design for disability, and into an entirely new discussion.<sup>1</sup> These currents rise from deep scholarship; practice-based, interrogative design; and a new recognition of the creativity that disabled people can bring to the design process. As the outlines of a post-Universal Design practice are emerging, this essay attempts to map this new terrain.

The new thinking draws on the dynamic emergence of critical disability studies, a scholarly discipline developing in the past two decades and in the United States often associated with the so-called ADA (Americans with Disabilities Act) generation.<sup>2</sup> This body of critical thought draws its authority from the civil rights movement as well as the rise of feminist and critical race studies and a fundamental rethinking of ideas of justice and power. The writings of Michel Foucault, especially his work on knowledge creation and how systems of power have shaped “normalcy,” is seminal.<sup>3</sup> Political theorists like Nancy Fraser, whose work on the importance of social identity in larger systems of culture, also loom large.<sup>4</sup> Equally influential are cultural critics like Rosemarie Garland Thomson, whose recent work introduces disability as “a concept that pervades all aspects of culture: its structuring institutions, social identities, cultural practices, political positions, historical communities, and the shared human experience of embodiment.”<sup>5</sup>

Overcoming the chasm separating design for disability and consumer culture has intrigued a subset of designers for some time. Introduced in the 1980s, Universal Design was developed as a product and environmental design strategy that might make accessibility appealing while also planning for the greatest range

- 1 See Elizabeth Guffey, *Designing Disability: Symbols, Space, and Society* (London: Bloomsbury, 2018); Aimi Hamraie, *Building Access: Universal Design and the Politics of Disability* (Minneapolis: University of Minnesota Press, 2018); Rob Imrie, *Inclusive Design: Designing and Developing Accessible Environments* (London: Taylor and Francis, 2016); Wanda Lieberman, “Humanizing Modernism?: Jaap Bakema’s Het Dorp, a Village for Disabled Citizens,” *Journal of the Society of Architectural Historians* 75, no. 2 (2016): 158–81; Graham Pullin, *Design Meets Disability* (Cambridge, MA: MIT Press, 2008); David Serlin, *Replaceable You: Engineering the Body in Postwar America* (Chicago: University of Chicago Press, 2004); Bess Williamson, *Accessible America: A History of Disability and Design* (New York: New York University Press, 2019).
- 2 Anjali J. Forber-Pratt, “(Re)Defining Disability Culture: Perspectives from the Americans with Disabilities Act Generation,” *Culture and Psychology* 25, no. 2 (2019): 241–56; Tom Harkin, “Celebrating the ADA—Reflections from Tom Harkin,” *Ability* (2014), <https://abilitymagazine.com/celebrating-the-ada-reflections-from-tom-harkin/> (accessed November 7, 2019).
- 3 Michel Foucault and Colin Gordon, *Power/Knowledge: Selected Interviews and Other Writings, 1972–1977* (New York: Pantheon Books, 1980).
- 4 Nancy Fraser, “Contradictions of Capital and Care,” *New Left Review* 100 (2016): 99–117.
- 5 Rosemarie Garland-Thomson, “Integrating Disability, Transforming Feminist Theory,” *NWSA Journal* 14, no. 3 (2002): 4.

- 6 Universal Design evolved as an imperative of socially inclusive design practices that focused on the needs of disabled users, developing from many directions in the 1960s and 1970s but the term was not coined until Ron Mace, "Universal Design: Barrier-free Environments for Everyone," *Designers West* (1985): 147–52.
- 7 Williamson, *Accessible America*.
- 8 See Jos Boys, *Doing Disability Differently: An Alternative Handbook on Architecture, Dis/Ability and Designing for Everyday Life* (New York: Routledge, 2014); Jane Bringolf, "Universal Design: Is It Accessible?," *Multi* 1, no. 2 (2008): 45–52; Joe Clark, "Universal Design Is a Myth," *Carthage Must Be Destroyed* (blog), October 15, 2009, <https://blog.fawny.org/2009/10/15/universal-design-myth/> (accessed November 15, 2019).
- 9 See Aimi Hamraie, "Designing Collective Access: A Feminist Disability Theory of Universal Design," *Disability Studies Quarterly* 33, no. 4 (2013); Hamraie, *Building Access*; Andrea Bellucci, Jason Nolan, and Aurelia Di Santo, "Research in the Wild(s): Opportunities, Affordances and Constraints Doing Assistive Technology Field Research in Underserved Areas," *Disability Studies Quarterly* 38, no. 4 (2018), <http://dsq-sds.org/article/view/5934> (accessed December 12, 2019).
- 10 Aimi Hamraie, "Universal Design and the Problem of 'Post-Disability' Ideology," *Design and Culture* 8, no. 3 (2016): 285–309.
- 11 Hamraie, "Universal Design," 296.
- 12 See Vik Finkelstein, *Attitudes and Disability: Issues for Discussions* (New York: World Rehabilitation Fund, 1980); Michael Oliver, *The Politics of Disablement* (Basingstoke: Palgrave Macmillan, 1990); Paul Longmore, *Why I Burned My Book and Other Essays on Disability* (Philadelphia: Temple University Press, 2003).

of abilities possible.<sup>6</sup> Why not, its supporters asked, plan for extremes in ability? It can only result in better, more useful design for everyone. At the same time, Universal Design seemed to be a way for designers to cope with increasing rights legislation and government oversight, guidelines, and regulations that seemed uninspired at best and onerous or counterproductive at worst.<sup>7</sup> This heritage continues today, but increased scrutiny has also led to a frank discussion of the "myth" of Universal Design.<sup>8</sup> At issue is a range of assumptions and practices. Some arguments, for instance, critique the movement's reliance on established anthropometrics and outdated ideas of standardization.<sup>9</sup> These are grounded in practice, whereas others claim that Universal Design has been effective less "as a method of social justice activism, rather than as a marketing strategy" fit within broader economic and political critiques.<sup>10</sup> Even the broadly utopian aspects of Universal Design goals, especially a vision that "imagined a world without disability and denied the existence of disability discrimination," are crucial to this rethinking.<sup>11</sup>

Is this only a feature of critical disability studies? An indication of the maturation of design? A matter of cultural inquiry? Democratic theory? Or a form of autonomous experimentation that aligns with the field of art? Even as this critique unfolds, the new approach is not a negation of what came before. Rather, it builds on it to create a more inclusive world. This approach also gives shape and meaning to an era when design is on demand and with increasing customization, the rise of participatory and co-design, and the advent of the DIY movement. In this short essay, I intend to provide an overview of some of the essential features of the new design for disability field while also arguing that although most of the defining scholarship has not been written by generalists, these developments have import for us all.

### Five Keywords for Post Universal Design

Although by no means an exhaustive survey, the following terms are offered as a partial mapping of emerging ideas around the new inclusive design.

#### Misfitting

The distinguishing trait of this new approach is the belief that the world is filled with misfit. Growing out of the disability rights movement of the 1960s and 1970s, this assertion builds on the "social model of disability." Described in different ways in the work of Vik Finkelstein, Michael Oliver, Paul Longmore, and others, it asserts that impairment may be rooted in individual bodies, but disability is a social construct.<sup>12</sup> The claim is not that

impairment or bodily states or conditions of difference are non-existent. Instead, disability is shaped by how society does—or does not—give significance to those impairments. As Rosemarie Garland-Thomson first argued in 2011, recognizing disability as a social construct shifts discussion away from the specifics of individual cases and toward widespread misfits between bodies and a world that has not been constructed with them in mind.<sup>13</sup>

For Garland-Thomson, misfit is a “feminist materialist” concept with social implications and not a design methodology. The construct grows from the social model of disability, which suggests that our focus is less on “fixing” the individual to fit the environment than the other way around. But since “misfit” mingles the political with the pragmatic, these ideas explicitly link social and political concepts with design.

Recently, this theoretical ground has been covered in several scholarly and popular publications. *Designing Disability: Symbols, Spaces and Society* deals with the history of the International Symbol of Access as a “misfit” graphic design.<sup>14</sup> Aimi Hamraie’s *Building Access* approaches the history and theory of Universal Design, especially its attempts to deal with misfit in the built environment.<sup>15</sup> More popular in tone and oriented toward those working in large organizations and in design teams, Kat Holmes’s *Mismatch: How Inclusion Shapes Design* advises allies looking for business-minded justifications for promoting inclusive design in their own organizations.<sup>16</sup> In this context, users are redefined as “customers,” and the text strategizes how design for disability helps industry grow a larger customer base and avoid high-cost errors in design planning. In some ways, this book proposes a context for the practices outlined in Microsoft Design’s *Inclusive Toolkit Manual*.<sup>17</sup> Although Holmes was not featured prominently in this earlier effort, she was an animating spirit behind it. Shaped by the argument that “disability is shaped by mismatch human interactions,” the toolkit is both a website and downloadable series of activities and guides explicitly written for practicing designers. In different ways, these publications aim to more closely link critical disability thinking with design history and practice.

### User-Initiated

If disability continues to be shaped by problems of misfit, we might ask just who is designing for whom. User-centered (or human-centered, people-centered, customer-centered) design has flourished for several decades, but it still inconsistently addresses minority needs in a majority world. By using the tools of critical

13 Rosemarie Garland-Thomson, “Misfits: A Feminist Materialist Disability Concept,” *Hypatia* 26, no. 3 (2011): 591–609.

14 Guffey, *Designing Disability*.

15 Hamraie, *Building Access*.

16 Kat Holmes, *Mismatch: How Inclusion Shapes Design* (Cambridge, MA: MIT Press, 2018).

17 Microsoft Design, *Inclusive: A Microsoft Design Toolkit* (2015), <https://www.microsoft.com/design/inclusive/> (accessed November 15, 2019).

race and gender theory, post-universal design intertwines participatory design with ideas of disability empowerment. The resulting approach ensures that disabled people are no longer dismissed as actionless stakeholders waiting to be rescued by intelligent, sovereign designers.<sup>18</sup> This method establishes the practical—and political—value of a more directly user-initiated design.

As disability design advocate Liz Jackson has demonstrated, many cases of disabled people's personal ingenuity contribute to the design canon. Citing the example of Betsey Farber, whose arthritis supposedly prompted husband Sam Farber to develop OXO's Good Grips Potato Peeler, Jackson notes how "disabled people have long been integral to design process, though . . . as 'inspiration' rather than active participants."<sup>19</sup> Betsey Farber's quick adaptation of a cheese grater and rubber band helped her develop the prototype of the OXO Good Grips Jar Opener, a kitchen tool easily used by people with arthritis; it remains the company's second top-selling product.

This approach also moves beyond participatory or co-design in its appreciation of underacknowledged areas of expertise. Disabled people, scholar Susan Wendell notes, "have accumulated a significant body of knowledge, with a different standpoint (or standpoints) from those without disabilities." Furthermore, they have "ways of knowing that are not available to the non-disabled."<sup>20</sup> Theorists like Aimi Hamraie insist that we acknowledge this as a form of "access knowledge."<sup>21</sup> By emphasizing a broader theoretical field, such critical access studies can move far beyond design; they also force consideration of how seemingly transparent processes like training and education can seem apolitical but are often affected by questions of power and knowledge.<sup>22</sup> This thinking applauds a wider range of creation beyond what is normally recorded in design textbooks; with casual authority, it extends design for disability to include inventive DIY efforts and productive hacks. Engineering at Home is a website developed by Sara Hendren and Caitrin Lynch to catalog the common user-initiated adaptations made by Cindy, a coma survivor with multiple amputations.<sup>23</sup> Cindy owns an expensive—if awkward and uncomfortable—prosthetic arm with "universal" functionality. The site introduces a group of ingeniously repurposed or reconfigured devices that Cindy uses to accomplish daily tasks. Some are fashioned from common tools like tweezers, demitasse spoons, and foam grips. Others were "quick and nimble devices she and her prosthetists could assemble," allowing her to direct special efforts, producing, for example, 3D printed fingers that enable her to carry items and reach for things. In all activity, Cindy is featured as both the initiator of and expert on the designs she uses.

18 Hamraie, *Building Access*.

19 Liz Jackson, "Opinion | We Are the Original Lifehackers," *New York Times*, May 30, 2018, <https://www.nytimes.com/2018/05/30/opinion/disability-design-lifehacks.html> (accessed October 15, 2019).

20 Susan Wendell, *The Rejected Body, Feminist Philosophical Reflections on Disability* (London: Routledge, 1996), 73.

21 Aimi Hamraie and Kelly Fritsch, "Crip Technoscience Manifesto," *Catalyst: Feminism, Theory, Technoscience* 5, no. 1 (2019): 9.

22 Hamraie and Fritsch, "Crip Technoscience Manifesto."

23 Sara Hendren and Caitrin Lynch, "Engineering at Home," *Engineering at Home* (2016), <http://engineeringathome.org> (accessed October 12, 2019).

### Mass Customization

The new terrain of design for disability not only diversifies our world by better integrating disabled people into the population, it also makes design more adaptable, matching each person regardless of ability or need. This is a shift from the 1980s, when Universal Design solutions for all seemed possible, if only designers would study and plan for the extremes of ability.<sup>24</sup> From easy-to-use corkscrews to tactile rubber flooring, Universal Design products were meant to be used by disabled consumers and to be useful for the general population. But post-universal design aims for solutions that are flexible enough to meet whatever a specific user needs at that moment.

This approach brings to light a contradiction underlying Universal Design—namely, its roots in collective and often totalizing design solutions. In the early years of the movement, for example, the needs of wheelchair users were emphasized, and designs were often created with their needs in mind. But definitions of disability continue to expand, encompassing not only a wider range of physical impairment but also forms neurodiversity and mental health conditions. The movement has lost some of its early clarity. Sometimes these stakeholders have design needs that interconnect, but they can also conflict. Curb-cuts in sidewalks allow wheelchair users to cross streets, for instance, but they are dangerous for blind and low-vision people. When dimpled paving is added to curb-cuts, their rough surfaces warn vision-impaired people of the drop off—but their textured covering can be problematic for wheelchair users and cause those using crutches and canes to lose their balance. Fundamentally, dealing with the multiplicity of disabilities means being open-ended and flexible.

Universal Design was shaped by the needs of factory production and often presented fixed solutions, but newer approaches to design for disability claim digital technologies that allow multiple ways to participate. Website design, for example, is meant to provide users with as many options as possible. For webpages, the goal is to have the user choose the font size, contrast, and other elements according to need and taste while providing an interface that works with commonly used assistive technologies, like screen readers, screen magnifiers, and speech recognition tools. In the built environment, this flexibility has meant rethinking how we accommodate multiple types of users in less fixed ways. The Ed Roberts Campus community services building in Berkeley, California (2011) stands as a landmark of this thinking. Here, elevators and doors are sensor-controlled and have buttons at hand and foot level (where they may be tapped by a wheelchair).

24 Molly Follette Story, James Mueller, and Ronald L. Mace, *The Universal Design File: Designing for People of All Ages and Abilities* (Raleigh: NC State University, Center for Universal Design, 1998).



## Disability Dongle

Post-Universal Design helps us understand how technology has been used to help but also hinder disabled people's integration into the world. Scholar Alison Kafer has already described how ableism, discrimination against disabled people, is often hidden. This viewpoint is reflected in the attitudes of nondisabled people who expect and presume that disabled people seek cures or other interventions to their condition.<sup>25</sup> Post-Universal Design pushes against these assumptions. Historian and activist Ashley Shew identifies "barrage of techno-optimistic rhetoric" about "'overcoming' the status of your body" as a form of "techno-ableism."<sup>26</sup> The disability dongle expresses this concern in design terms. Specifically, it helps us categorize the rise of benevolent, carefully planned designs that nevertheless provide disabled people with unhelpful solutions to ill-defined problems.

Some critics see the recent flowering of ideas around disability-friendly drones, robots, and smart textiles as altruist projections of good will, often developed with little or no input from disabled people themselves.<sup>27</sup> The first to widely publicize the term, activist Liz Jackson associates the disability dongle with a stair-climbing wheelchair of dubious real-world usefulness.<sup>28</sup> Other innovations recently critiqued by disabled people include special gloves meant to translate sign language, costly portable GPS units for blind or low-vision users, and rings that read non-Braille writing.<sup>29</sup>

While the disability dongle supposes a fix to nonexistent disability problems, it has a curious mirror in the assistive pretext. This pretext develops technology, sometimes designed and tested by disabled people, to provide very real assistance. Nevertheless, as communications scholar Mara Mills notes, many designs are developed, but after initial trials, the original designs are often abandoned with the most useful aspects of these innovations "transferred to more profitable realms."<sup>30</sup> Noting a series of projects began expressly for or with deaf individuals, Mills cites some of the first photographic experiments that led to the moving image and the early research that shaped the development of MP3 sound technology. Whether taking the shape of an assistive pretext or disability dongle, design has often overlooked the genuine needs of disabled users.

## Critical Speculation

Can culture be best used to leverage these issues? In design, where use often jostles productively with poetics, some researchers are stretching beyond the cycle of ideation, research, and production to

25 Alison Kafer, *Feminist Queer Crip* (Bloomington: Indiana University Press, 2013).

26 Ashley Shew, "Many Non-Disabled People Who Work in Disability Consider Themselves Experts," *Silicon Republic*, January 16, 2019, <https://www.silicon-republic.com/innovation/ashley-shew-disability-research-virginia-tech>

27 Emeline Brulé, "On Teaching Disability Design, Design Projects, and 'Disability Dongles,'" Billets (blog), *Design and Society*, April 24, 2019, <https://socio-design.hypotheses.org/274>.

28 Liz Jackson, "A Community Response to a #DisabilityDongle," *Medium*, April 22, 2019, <https://medium.com/@eejackson/a-community-response-to-a-disabilitydongle-d0a37703d7c2> (accessed August 9, 2019).

29 S. E. Smith, "Disabled People Don't Need So Many Fancy New Gadgets. We Just Need More Ramps," *Vox*, April 30, 2019, <https://www.vox.com/first-person/2019/4/30/18523006/disabled-wheelchair-access-ramps-stair-climbing> (accessed October 18, 2019).

30 Mara Mills, "Deaf Jam: From Inscription to Reproduction to Information," *Social Text* 28, no. 1 (2010): 9.

ask how disability might enrich broader discussions in the profession. This thread tracks the rise of critical design, especially echoing the conceptual work of practitioners like Anthony Dunne and Fiona Raby.<sup>31</sup> In *Design Meets Disability*, designer Graham Pullin suggests that disability offers a provocative arena full of imaginative potential.<sup>32</sup> Pullin celebrates the creativity found when seemingly disparate ideas, including long-standing tensions between medical engineering and “art school design,” come together. Pairings like “fashion” and “discretion” or “exploring” and “solving” may seem in opposition, but Pullin suggests they can produce creative access solutions like the Speaking Mobile, a digital device for vocalization that allows users to inflect speech-pitched tones at the flick of a thumbstick.

This review essay offers a preliminary mapping of an ever-evolving terrain in design for disability. Newer developments, including artificial intelligence and machine learning, as well as the implications of sustainable design for disability, present still emerging horizons. Even in the midst of this flux, exploring these avenues presents a challenge but also value, helping us ask new questions about design and its capacity for change.

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31 Anthony Dunne and Fiona Raby, *Design Noir: The Secret Life of Electronic Objects* (London: Birkhauser, 2001).

32 Pullin, *Design Meets Disability*.