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Designing Collective Access: A Feminist Disability Theory of Universal Design

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Abstract

Universal Design (UD) is a movement to produce built environments that are accessible to a broad range of human variation. Though UD is often taken for granted as synonymous with the best, most inclusive, forms of disability access, the values, methodologies, and epistemologies that underlie UD require closer scrutiny. This paper uses feminist and disability theories of architecture and geography in order to complicate the concepts of "universal" and "design" and to develop a feminist disability theory of UD wherein design is a material-discursive phenomenon that produces both physical environments and symbolic meaning. Furthermore, the paper examines ways in which to conceive UD as a project of collective access and social sustainability, rather than as a strategy targeted toward individual consumers and marketability. A conception of UD that is informed by a politics of interdependence and collective access would address the multiple intersectional forms of exclusion that inaccessible design produces.

Introduction

In the civil rights movement era, feminist and disability approaches to architectural design emerged to address the problems of spatial segregation. Activists argued that inaccessible built environments—such as segregated lunch counters, workplaces without childcare, suburban single-family homes, and buildings with stairs and without ramps—made oppressed people less visible and, therefore, less

likely to receive legislative protections (Steinfeld and Maisel 2012, 13-15). Throughout the 1960s and 70s, disability activists physically occupied public buildings in order to demonstrate that law and society had failed to include them (Nielsen 2012, 168). The efforts of these activists resulted in the passage of federal civil rights legislation that aspired to protect the access of people with disabilities to the built environment. The term *barrier-free design* emerged to describe the architectural strategies that underlie these legislative gains.

Barrier-free design was not merely a legislative trope or expedient; rather, the theory of barrier-free design supported efforts in the architectural profession to design environments according to the spatial needs and demands of women, people of color, and people with disabilities (Matrix 1984; Steinfeld 1979; Mace 1985; Weisman 1989; Welch and Jones 2002, 193). As architect Ray Lifchez wrote (1987, 1) in his groundbreaking *Rethinking Architecture: Design Students and Physically Disabled People*:

Building forms reflect how a society feels about itself and the world it inhabits. ... Valuable resources are given over to what is cherished—education, religion, commerce, family life, recreation—and tolerable symbols mask what is intolerable—illness, deviance, poverty, disability, old age. Although architects do not create these social categories, they play a key role in providing the physical framework in which the socially acceptable is celebrated and the unacceptable is confined and contained. Thus when any group that has been physically segregated or excluded protests its second-class status, its members are in effect challenging how architects practice their profession.

A key contribution of late twentieth-century social movements to theories of architectural design is crystallized in the connections that these movements drew between physical environments and the social realities that they create. These movements and their professional counterparts showed that the design of buildings is not a value-neutral and passive act; rather, the design of the built environment actively conditions and shapes the assumptions that the designers, architects, and planners of these value-laden contexts hold with respect to who will (and should) inhabit the world. In short, built environments serve as litmus tests of broader social exclusions.

Universal Design (UD) is an approach to access to the built environment that goes beyond barrier-free design (Mace 1985). UD seeks to design built environments to be as accessible as possible from the outset, to as many people as possible. That is, UD seeks to design built environments that will not require future retrofitting or alteration. Furthermore, UD goes beyond legal accessibility requirements (for example, what is required to comply with the Americans with Disabilities Act) to integrate into disability-access strategies the specific requirements that accrue when designers take into account aging, gender, size, and health (among other variables) (Steinfeld and Maisel 2012; Welch and Jones 2002). In the critical disability studies literature of the humanities and social sciences, UD has gained theoretical attention under the banner of "universal access." As feminist

geographer Isabel Dyck notes, "conceptualizing the environment has been crucial to the politics of disability research in delineating issues of access, a crucial dimension of a *socio-spatial model* of disability" (Dyck 2010, 254; emphasis added). Feminist philosophy of disability and other disability theories cite UD to prove that disability is a product of the built and social environments, rather than a medical state that is intrinsic to the body of a given individual (Wendell 1996, 46; Silvers 1998, 74-75). In the terms of these philosophies and theories, the idea of a universally-accessible environment is synonymous with the best, most inclusive, approach to design and defines the ideal outcome of disability politics. Disabled feminist philosopher Susan Wendell inaugurates this position when she calls for a "universal recognition that all structures have to be built and all activities have to be organized for the widest practical range of human abilities" (Wendell 1996, 55).

Some feminist disability theorists have disagreed with Wendell, emphasizing that the physical environment alone is not enough to account for the exclusion of people with sensory, cognitive, or mental disabilities from social and public life (Corker 2001, 39-40). Parallel debates over the desirability and scope of UD occur within the design professions. These professional debates hinge on the very concept of a universal, one-size-fits-all approach to design (Hansson 2007, 17; Sandhu 2011; Steinfeld and Tauke 2002). The implied tensions between these divergent approaches to access indicate that additional exploration of value-based justifications for UD is needed. In this paper, therefore, I parse out the potential meanings of the component terms of UD—namely, *universal* and *design*—rather than take for granted or dismiss what UD is or to what it aspires. In order to engage in this inquiry, I perform what feminist theorist Karen Barad calls a "diffractive reading," which she describes as a method of "reading insights through one another in ways that help illuminate differences as they emerge." Such a reading illuminates "how different differences get made, what gets excluded, and how those exclusions matter" (Barad 2007, 30). This approach to UD responds to Rosemarie Garland-Thomson's call for feminist and disability studies to recognize their parallel development of theories in areas of overlapping interest (Garland-Thomson [2002] 2011a, 1). In addition, the approach responds to recent scholarly appeals for discussions of the "philosophical and theoretical basis" of UD (Imrie 2012, 876). Rather than limit my discussion to the ideological basis of UD, I explore how shifting its frame and emphasis can better address issues with respect to the body, environment, and interdependence that both feminist philosophy of disability and disability studies have articulated. In other words, I develop an idea of accessible design that construes it as a method of social justice activism, rather than as a marketing strategy. To do this, I draw upon four literatures, all of which address UD and have thus far had limited impact on UD thought: feminist philosophy of disability, feminist disability studies, feminist architectural theory, and disability geographies of access. By bringing these literatures together, I hope to introduce them to a design audience, as well as to create space for discussions about design within feminist philosophy of disability/feminist disability studies. I shall first explain what UD is, exploring its design methodology and addressing some of the problems that it raises. Then, I outline some of the issues and approaches that a

theory of accessible design that is premised on interdependence can adopt to create broad and collective access to the built environment.

Introducing Universal Design

The architect Ronald Mace coined the term *universal design* in order to describe accessibility that goes beyond the scope of barrier-free design (Mace 1985). Mace, a designer who used a wheelchair, defined UD like this:

[UD is] a way of designing a building or facility, at little or no extra cost, so it is both attractive and functional for all people, disabled or not. The idea is to remove that expensive, "special" label from products and designs for people with mobility problems, and at the same time, eliminate the institutional appearance of many current accessible designs. (Mace 1985, 1)

Mace's goal of making the environment "functional for all people" echoed activist demands for the integration of disability into broader conceptions of human community and citizenship. Mace's initial definition of UD reflected a desire to make the aesthetics and function of access more available and to focus less on disabilities as an additional, extra, and unusual consideration—that is, as a "special need." Because Mace's definition of UD did not specify methods with which to achieve these aims and goals, he and other experts recognized the need to further specify and elaborate what exactly *universal design* means and how it differs from legally-mandated accessibility under the Americans with Disabilities Act (ADA). ¹ In the mid-1990s, therefore, Mace convened access experts at North Carolina State University's Center for Universal Design to craft a new definition. These experts defined UD as "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaption or specialized design" (Center for Universal Design 1997). This definition retained Mace's initial notion of a broad user group ("everyone" or "all") and added to it the idea that buildings and products must *already* account for the diversity within this group in the way that these buildings and products are designed. The authors of this new definition also wrote the "Seven Principles of Universal Design," a document that continues to be cited as the basis of UD (ibid.). The Seven Principles that accompanied the new definition were: (1) Equitable use; (2) Flexibility in use; (3) Simple and intuitive; (4) Perceptible information; (5) Tolerance for error; (6) Low physical effort; and (7) Size and space for approach and use. Notwithstanding the appeal to equity in the first two principles, these guidelines do not appear to make an overarching ideological or value-based claim. Nor do any of the Principles mention disability, leaving unanswered the question of whom equity and flexibility are meant to benefit.

In addition to the architectural strategies that have been developed to expand the work of barrier-free design and improve rehabilitation (Steinfeld, Paquet, d'Souza, Joesph, and Maisel 2010; Sanford 2012), several approaches to UD have emerged that address the scope of inclusion and the strategies that can achieve it. Social justice approaches to UD build on disability, feminist, and environmental justice

movement work in order to educate architects and designers about human diversity (Ostroff 2001; Steinfeld and Tauke 2002; Weisman 1999). Industrial design (consumer-oriented) approaches take UD beyond architecture to the design of consumer products and fixtures (Mueller 1997). Each approach brings a different value, object, or methodology to UD. In this paper, I want to build upon social justice approaches to accessibility in order to articulate a theory that addresses some of the tensions and problems with consumer-oriented approaches to UD. In order to develop such a theory, I must first identify the key ideas that underlie the definitions and principles of UD. From these foundations of UD practice, three main ideas emerge:

1. Accessibility by design (design that prioritizes accessibility)
2. Broad accessibility (accessibility for the greatest number of people possible)
3. Added value (design that benefits disabled people also has benefits for nondisabled people)

In what follows, I show that this formulation parses out the novel methodology of "Universal Designing" (Steinfeld and Tauke 2002) from its commitments to particular framings of the "universal." Furthermore, this formulation allows me to analyze the underlying theoretical, ideological, and value-based commitments that have produced the orthodoxy according to which UD is synonymous with inclusive or "good design" (Mace 1985, 152; Welch 1995; Tauke 2010; Goldsmith 2001a, 1). [2](#)

Part I: Why design matters

"Accessibility by design" is the methodology used to design a building or product that prioritizes access, in addition to style and aesthetics. Accessibility by design contrasts with the notion of "retrofit," which can be defined as the alteration of existing designs to fit the new requirements of spatial inhabitants (Center for Universal Design 1997). For instance, a multi-level university building without an elevator or ramps will require a retrofit in order that some of its students, faculty, university staff, and members of the general public with disabilities can use all of the space. By contrast, a building equipped by design (i.e., from the outset) with ramps and elevators is already usable to people with a range of mobility needs. Accessibility by design, in others words, is a "bottom-up methodology" that pre-empts the need for legal accessibility requirements through the intentional efforts of designers (Goldsmith 2001b, 25.1).

As Lifchez argues, built environments are not merely the composite of physical structures; rather, they are also what Barad (2007) calls "material-discursive" phenomena. Barad uses the term *material-discursive* to refer to practices that both produce physical phenomena (such as buildings) and communicate meaning about what kinds of material and social relations should be possible (148). [3](#) In the context of architecture, for example, inaccessible and segregated environments endorse the participation of and distribution of resources to certain types of bodies

in public space, while marginalizing other types of bodies from which access and resources are withheld. The related concept of *parti* in architectural theory denotes the way that buildings make arguments and convey meaning (Schumacher 2012, 52). *Parti* is the "grammar" of architecture, or the material-discursive expression of layout, style, and theme as evident in the design of a building. The concepts of material-discursive and *parti* show that buildings are not simply static structures in which human interaction occurs; on the contrary, buildings actually produce lived and embodied experiences for spatial inhabitants and, at times, form physical boundaries that produce and reinforce structural inequalities.

Access is defined in terms of the expression of inclusion in design, in addition to its definition in terms of technical requirements. Although the *parti* of inaccessible environments can be intentional, such environments often have an additional unintentional *parti* that communicates the exclusion of minority embodiments. For instance, when a courthouse is designed with steps that lead to its entrance, the design of the building may make a statement about the transcendence of law above the people. Interior grand staircases that lead the public into courtrooms and judges' chambers can communicate the democratic openness of arenas of legal decision-making. Nevertheless, the very presence of stairs *argues* for a particular understanding of citizenship—one defined by the ability to climb steps—that results in an implicit and potent exclusion of people with mobility or sensory disabilities from the symbolic and physical aspects of courtroom space. Although the building may communicate democratic intentions in some ways, its *parti* can, in other ways, produce material and symbolic exclusions of bodies for whom the design of the building does not account.

Protests against *parti* have been a key part of disability rights activism. When disabled protesters left their wheelchairs to climb or crawl up the steps of courthouses or federal buildings in the famous Section 504 protests, [4](#) they performed material-symbolic gestures that used their bodies in space as arguments against the *parti* of these buildings (Fleisher and Zames 2011, 53-55). The misfit between bodies and steps symbolized the segregation of disability from public life and the need for disability civil rights. This material, spatial, and symbolic activism communicated meaning in a way that no courtroom proceedings, congressional testimony, and other discursive modes alone could do. In addition, this activism demanded that attention be paid to the underlying values and ideologies in circulation that support designs that exclude disabled people from public space. As I argue in the next section, such underlying values are epistemological and methodological, as well as political.

Theorizing Value-Explicit Design

Like the civil rights-based design practices that have preceded it, UD is a *value-explicit design theory* (D'Souza 2004, 3; Moore, Tuttle, and Howell 1985). Value-explicit design theories render overt and apparent the values, ideologies, and *partis* of physical structures, assuming that design is never ideologically neutral. Whether explicitly or implicitly, built environments always reference and imagine bodies and spatial inhabitants. Throughout its history,

architecture, like scientific epistemologies, has either claimed ignorance of the body or adopted a universal template of the ideal, geometric, and proportional body (Hosey 2006; Imrie 2002). Nevertheless, both the presumed body *and* the marginalized body are always implied in, structurally incorporated into, or actively excluded from, physical environments. As feminist philosopher Elizabeth Grosz (2001) writes,

Bodies are there in a way that architects don't want or can't afford to recognize. But the body is there in an incontrovertible way. The point is to affirm that it's there, and to find the right kind of terms and values by which to make it profitable for architecture to think its own investments in corporeality. (12-14)

Value-explicit design exposes the reliance of design on a presumed cohort of typical bodies. In keeping with Barad's notion of the material-discursive, that is, value-explicit design demonstrates that bodies and environments "are conjoined in their (mutual) production, meaning, and transformation" (Imrie 2002, 64). Design methodologies that address specific values—such as disability access, eco-sustainability, economic affordability, or gender equality—highlight the interactions between assumed bodies and design outcomes.

Value-explicit design is an epistemic practice that relies upon, produces, and utilizes situated knowledge. Like feminist standpoint theories, the crux of value-explicit design is that there is no neutral position or "view from nowhere" untouched by materiality, context, and identity (Haraway 1991). Although feminist standpoint epistemology focuses on the social location of knowers, the role of architectural space as a location for experience is largely under-theorized in this literature. Moreover, although some feminist and disability theories focus on the perspective of bodies that experience environmental exclusion (Code 2006, xiv; Garland-Thomson [2002] 2011a; Mairs 1996), the status of designers as knowers who produce environmental contexts is rarely examined in the literature on UD, with the exception of critiques of designerly authority (Imrie 2012, 878). Value-explicit design does not privilege expert knowledge, but rather provides a framework within which designers can be held accountable for the types of environments that they produce. UD is an approach to value-explicit design that critiques the false value-neutrality of inaccessible environments. Environments that are not universally usable are *not* value-neutral; on the contrary, they are value-*implicit*. For example, buildings with over-stimulating lights or confusing layouts rarely, if ever, identify themselves as positioned against people with sensory aversions or cognitive disabilities; however, they become so through their design features. Value-explicit designs, like wheelchair-accessible restrooms with transgender-inclusive signs, houses built at the scale of people of short stature, and kitchens with countertops that adjust to different heights, have the capacity and flexibility to meet the spatial requirements of specific types of embodiment in ways that also acknowledge a range of embodiments.

Feminist and disability theories of access argue that supposedly value-neutral built environments are material-discursive phenomena that mask the dominance of perceived majority identities and bodies. Leslie Kanes Weisman, a feminist architectural theorist and UD educator, exemplifies this position in her "Women's Environmental Rights: A Manifesto," declaring:

The built environment is largely the creation of white, masculine subjectivity. *It is neither value-free nor inclusively human.* Feminism implies that we fully recognize this environmental inadequacy and proceed to think and act out of that recognition. ...These are feminist concerns which have critical dimensions that are both societal and spatial. They will require feminist activism as well as architectural expertise to insure a solution. (Weisman [1981] 2000, 5, emphasis added)

In other words, the epistemic positions of designers matter for the material-discursive qualities of value-explicit design. Supposedly neutral design often privileges the most common bodies through (what I have called) the "normate template" for architectural design (Hamraie 2012). Garland-Thomson's term *normate* represents the unmarked privilege of majority embodiments—white, male, cisgender, heterosexual, able-bodied, and middle-class bodies—that appear neutral when their social location is in fact highly specific (Garland-Thomson 1996, 8-10). When the normate serves as a neutral template for design, what emerges is a built environment that is accessible only to certain bodies. The normate template produces the illusion of what disability geographer Rob Imrie characterizes as disembodied environments that "deny the presence or possibility of bodily impairment" (Imrie 2010, 40). Since marginalized and minority bodies must necessarily use space, they often experience what Garland-Thomson calls "misfit." She writes:

Like the dominant subject positions such as male, white, or heterosexual, fitting is a comfortable and unremarkable majority experience of material anonymity, an unmarked subject position that most of us occupy at some points in life and that often goes unnoticed. When we fit harmoniously and properly into the world, we forget the truth of contingency because the world sustains us. When we experience misfitting and recognize that disjuncture for its political potential, we expose the relational component and the fragility of fitting. Any of us can fit here today and misfit there tomorrow. (2011b, 11)

Fitting and misfitting are material-discursive, relational, and interdependent categories. In order to sustain itself, the normate template relies upon the impression that normates are normal, average, and majority bodies. Misfitting shatters this illusion, marking the failure of the normate template to accommodate human diversity. As disability sociologist Tanya Titchkosky explains, epistemic claims about disability as unknowable and therefore excludable sustain misfitting. Titchkosky puts it this way:

The apparent and obvious ease of a statement like "things just weren't built with people with disabilities in mind" is a way to make inaccessibility sensible under contemporary conditions. This ordinary "truth claim" is a type of say-able thing in relation to disability. ...The say-able is where cultural understandings reside. (Titchkosky 2011, 74)

In addition to revealing the cultural devaluation of misfit, keeping bodies and people "in mind" is an epistemic and material-discursive position (Imrie 2002, 55). Designers produce misfit when they make claims such as: "You can't accommodate everybody. You've got to draw the line somewhere" (Titchkosky 2011, 31). As Barad explains in her theory of "agential cuts" (Barad 2007, 176), acts of line-drawing are material-discursive practices that actually shape what kinds of bodies appear to be possible and likely to live in the world. Following Lifchez, inaccessible environments make the argument that disabled bodies are unworthy of inclusion and quite possibly do not even exist as potential spatial inhabitants. The delineation of normate bodies as likely spatial inhabitants and misfits as "justifiably excludable" is not merely an act of omission, but rather, is also a material-discursive act that solidifies normate privilege (Titchkosky 2011, 78).

Garland-Thomson's notion that environmental fit makes nondisabled people less aware of their own embodied privilege ("we forget the truth of contingency because the world sustains them") echoes moral philosopher Charles Mills's (1997, 97) argument that racism makes white people less likely to acknowledge and understand structural racism. Insofar as normate architects and lawmakers claim that there are too many disabilities to "keep in mind," or that they do not have the requisite information to design for minority embodiments, they do not merely lack available information. On the contrary, these declarations reflect what critical race and feminist epistemologists call "epistemologies of ignorance" (Mills 1997; Tuana and Sullivan 2007). According to these theorists,

ignorance is not the result of a benign gap in our knowledge, but deliberate choices to pursue certain kinds of knowledge while ignoring others. We must therefore concern ourselves with our choices of knowledge production and who we take ourselves to be accountable to through these choices. (Grasswick 2011, xvii)

In other words, epistemologies of ignorance show that misfit is an active construction of what appears to be a lack of information about the range of human diversity. Knowledge and ideologies privileging the normate are always present in built environments. The point, following Garland-Thomson, Grosz, and Lifchez, is to affirm the normate template as a produced *parti* of ignorance, rather than simply an effect of designerly business as usual.

Privileging the embodied user experience of misfit through accessibility can also assist in the conceptualization of alternatives to epistemologies of

ignorance. Value-explicit design can challenge the epistemic subject-object relationship between designers and spatial inhabitants. For instance, participatory design methodologies that feminist and disability-focused designers have developed offer a way in which to use designerly knowledge to critique the normative template's epistemology of ignorance. Lifchez famously invited people with disabilities into the design studio at the University of California-Berkeley School of Architecture in order to train students in accessible-design strategies (Lifchez 1987). In doing so, he centered disability and made design students accountable to the needs of disabled users. He also decentered the designer as the authoritative knower or expert, training students to take on partnership roles with their intended clients and to value their authority and expertise about their experiences of the built environment. The translation of experience into design is hardly straightforward; it is not surprising, therefore, that participants in the process noted the difficulties that students had with shifting expertise to clients with disabilities (Sarkissian 1987, 142). Nevertheless, Lifchez's methods privileged users, brought them into much closer proximity with designers, and made disability intelligible to design students. Other architectural educators, like Weisman, have educated new generations of design students in UD methodologies and research through work like the Universal Design Education Project (Welch 1995) and user-centered community partnerships (Weisman 2012). This work provides alternatives to value-neutral design in order to productively engage with epistemologies of ignorance.

User involvement is, nonetheless, only one piece of the UD puzzle; that is, UD requires *more than* additional knowledge about disabled people and bodies (in which case designers may come to treat misfitting bodies as *no more than* objects of knowledge for designers). UD must also address the structural conditions that prevent marginalized people from becoming professional designers or having access to decision-making in design processes. ⁵ As I explain in the next section, a UD politics of interdependence can privilege disabled people and others who experience misfitting in order to address intersectional inequalities through design.

Body-Environment Interdependence

The task of a feminist disability theory of UD is to make *parti* explicit, hold designers accountable for what appears to be disability-neutral design, and show that this neutrality is a constructed form of ignorance. Making UD's values and ideologies explicit requires consideration of excluded bodies and full acknowledgement of the range of interactions between bodies and environments. In recent years, disability geographers have argued for attention to the embodied experiences of users in consideration of questions of access, rather than an exclusive focus on physical structures (Chouinard, Hall, and Wilton, 2010; Imrie 2010; Gleeson 1999). In this work, bodies push back against inaccessible environments and "overturn some of the problems relating to poorly designed environments" (Imrie 2002, 64; Imrie 2012, 876).

Refusing to take inaccessible design for granted as deterministic of exclusion, recent qualitative research in disability geography has documented embodied experiences as evidence of spatial use and agency. Indeed, disability geographies have set an important new agenda for research on access and have provided user perspectives that should be applied as part of the knowledge base of accessible design. Philosophical and theoretical explorations of the values, ideologies, and methodologies underlying physical environments are, nevertheless, still necessary, particularly in the context of UD. Building upon the concepts of material-discursive, *parti*, and normate template laid out above, I maintain that a feminist disability theory of UD demands attention to how physical environments produce symbolic and material access or exclusion through their interactions with and knowledge about bodies. As feminist geographers and architects have pointed out, the notion that there is a physical environment that exists regardless of, or prior to, embodied knowledge and experience fails to acknowledge the implicit reliance of design processes on normate bodies (Brown 2011; Rose 1993; Weisman 1992). [6](#)

Because design is a value-laden material-discursive practice, a feminist disability theory of UD must consider how body-environment interactions can be sites of a politics of interdependence. Such a theory must begin with intersectionality, understanding environmental misfit as both an epistemic position and a material-discursive axis of oppression (Code 2006; Garland-Thomson 2011b). As feminist disability scholarship has shown, the lack of access to physical environments is often due to the stigmatization of dependencies and the interdependencies that they entail (Garland-Thomson 2005; Eiseland 1994). In a liberal democratic understanding of access, disability, aging, femininity, non-normate size, and lack of resources all characterize dependencies to overcome or eliminate. This refusal to acknowledge dependency ignores the fundamental interdependence of all bodies for sustenance, community, and care (Wendell 1996, 145-148).

Intersectionality must consider how the normate template for the built environment is a system of exclusion that segregates spaces and people along the axes of disability, race, class, and gender (among others). Recent disability justice work from activists such as Mia Mingus on the notion of "collective access" promotes the interdependence of disability, anti-racist, and gender justice (Mingus 2010b). In addition to guiding disability justice organizing, collective access can be a material-discursive design goal that emphasizes the relationality of built environments with social and structural conditions. A collective access understanding of intersectionality can produce a theory of body-environment relations focused on social justice. For instance, collective access recalls the work of feminist materialist architects who designed built environments to challenge inaccessibility through the politics of interdependence. [7](#) Dolores Hayden, famously asking, "What would a non-sexist city be like?" imagined the feminist re-appropriation of suburban homes to fit the needs of non-traditional families who would live in collective housing

(Hayden 2000). She tied this work to an anti-capitalist critique of consumer culture and the spatial divisions between "the household and the market economy" (Hayden 2000, 270). Redesigning existing spaces allowed Hayden and other feminist architects to address broader economic structures, the existence of which depended upon suburban household design and urban planning. Hayden's work shows why a theory of access must continue to think about the built environment. Her analysis of the construction of the suburbs, for example, is not about marginalized people as "passive victims of insensitive design" (Imrie 2010, 35). Rather, her analysis shows how feminists have targeted the culture of suburban home life to simultaneously address capitalism and patriarchy through attention to unpaid labor, lack of safe housing and green space, and the spatial needs of non-traditional familial arrangements. UD's approach to collective access by design can proceed with a similar orientation. That is, UD can understand design to be a value-based activity that generates material-discursive conditions of inclusion or misfit depending on what kinds of bodies are included within the scope of the "universal."

Part II: How can design be universal?

One of the tensions that underlies UD is that it appears to dismiss designs intended for certain individuals or to produce ignorance of the differences between individuals in favor of a more general understanding of user needs (Imrie 2012, 879). Although UD proponents have argued that the word *universal* should "be understood as it is used in terms like 'universal suffrage' or 'universal healthcare'" (Steinfeld and Maisel 2012, 30), within the literature of UD the word is framed in a variety of other ways. Drawing upon feminist architectural theory and disability geography, I discuss two framings of the universal in the context of spatial design: broad accessibility and added value.

A. Broad Accessibility

When feminist and disability studies scholars claim that UD is a form of inclusive design that keeps a range of human variation in mind, they invoke the notion of broad accessibility, that is, the notion of "design for all people, to the greatest extent possible" (Center for Universal Design 1997). Broad accessibility assumes that the normate template creates misfits beyond categories typically considered to be disabilities. As recent work in disability geography has shown, misfit is as much about age, size, weight, emotional, cognitive, and gender diversity as it is about physical and sensory disabilities (Chouinard, Hall, and Wilton 2010). Broad accessibility recognizes that intersectionality compounds environmental misfit and requires a more collective notion of access than barrier-free approaches and individualized accommodations can afford (Mingus 2010a). For instance, for reasons related to structure, design, heavy doors, lack of space, signage, and social policing, public restrooms are often inaccessible to people who use wheelchairs, children, elderly people, and transgender people alike. Broad accessibility

understands that all of these types of people and bodies have a stake in accessible built environments. Because design is a value-based activity, however, not all human variations straightforwardly count as part of the universal. When the content of the universal is unspecified, UD can slip into vague notions of "all" or "everyone" that assume normate users and de-center disability. For example, a common claim about curb cuts is that they are usable to a broad group of people, including users of wheelchairs, strollers, or bicycles. However, this claim indicates that there are multiple potential uses for these features of the built environment, not all of these uses were intentionally incorporated into the design. The values and knowledges through which wheelchair users, bicyclists, and people pushing strollers come to count as part of "all" and "everyone" remain unexamined. Very easily, curb-cuts or ramps can be constructed too steeply or narrowly for a manual wheelchair user, though they may be usable to a walking person who pushes a stroller. Broad accessibility serves as a more complex notion of inclusion, showing that UD must still center disability access in order to avoid lapsing into the normate template.

Further scholarly engagements between feminist architectural theory, disability geography, and UD theory can develop a more nuanced understanding of access as interdependence. Here, I will discuss four approaches to broad accessibility based on the categories of gender, aging, size, and environmental justice. This set of categories is by no means exhaustive; however, it does reflect potential areas for the exploration of the relationship of interdependence with, and its status within, UD.

Sex, Gender, And Intersectionality

A feminist disability theory of UD and broad accessibility would benefit from a more nuanced understanding of intersectionality. Historically, feminist challenges to the built environment paralleled disability access work against spatial segregation and the normate template. According to architect Lori Brown, feminist design sought to "improve and better the lives and spaces of [people], concerned with larger social justice efforts, [who] may never call themselves feminist" (Brown 2011, 367-368). Although intersectional feminist design theories often focus on the triad of gender, race, and class, they (like feminist theories and philosophies produced in other domains) usually remain disability-neutral, omit disability as a category of analysis, or only understand it as a medical (rather than social and material-discursive) category. For example, in her study of diversity among architects, Kathryn Anthony focuses on a laundry list of identities—gender (construed as women), race and ethnicity, and sexual orientation (Anthony 2001, 6). Although Anthony acknowledges that the built environment excludes people with disabilities, she characterizes disability issues as outside the proper scope of feminist concerns with inequality covered in her book. She writes, "Issues concerning *architects* with disabilities are beyond the

scope of this book. A vast literature on universal design focusing on *consumers with disabilities already exists*" (Anthony 2001, 6; emphasis added). Because she characterizes disability as distinct from feminist interests in gender, race, class, and sexual orientation, Anthony misses an opportunity to discuss the intersectionality of structural conditions—such as denial of access to work, health care, or transportation—that keep disabled people, women, and racial and sexual minorities alike out of the architecture profession. Insofar as Anthony mentions what she characterizes as a "vast literature on universal design focusing on consumers with disabilities," she implies that adequate attention has been paid to disability as a form of diversity in design studies. This "vast" literature does not, however, contend with feminist concerns with structural inequality and intersectionality. Furthermore, Anthony (mis)characterizes UD as a movement focused on individual consumer products and assistive technologies designed specifically for people with disabilities. In doing so, she demonstrates a medical model understanding of disability that construes it as an individualized condition that requires consumer-level solutions. This common mischaracterization renders UD as a depoliticized form of niche consumerism, rather than as a broad and intersectional social justice method through which designers can address more collective, overlapping, and intersectional exclusions from the built environment.

Feminist architectural theory would benefit from an understanding of "disability as a pervasive cultural system that stigmatizes certain kinds of bodily variations" and, therefore, "has the potential to incite a critical politics" like UD (Garland-Thomson 2011a, 17). If critical disability concerns are acknowledged as feminist agendas—and vice versa—integrative alliances around the concept of misfit can emerge. Although UD usually claims to hold a broad conception of access, it sometimes construes gender and intersectionality in ways that privilege ciswomanhood [8](#) or motherhood. For instance, UD proponents Polly Welch and Stanton Jones (2002) write,

If universal design recognizes that most individuals have multiple facets of identities, that is, people also characterize themselves in relation to race, class, gender, ethnicity, physical size and sexuality, then the design strategies need to reflect that greater complexity. An old person's interaction with the environment may be equally a factor of her ethnic traditions, especially family structure and gender expectations, as her diminishing energy and sensory ability. A mother who uses a wheelchair may find raising children alone to be challenging in new ways when negotiating the places that parents and children frequent. (194-195)

To be sure, Welch and Jones demonstrate a complex understanding of how individuals experience the intersection of identities and why these intersecting identities are relevant to design. Unlike Anthony, that is, they remind designers that gender and disability are not discrete categories, but rather, that the experience of the built environment occurs along multiple axes of identity. Nevertheless, Welch and Jones's examples of the relevance of UD to gender and race are limited to a narrow conception of womanhood that is steeped in family and parenting. The elderly woman to whom they refer is vaguely "ethnic," although her race and ethnicity are never named, nor are the ways that privilege circulates between race, class, gender, and access to kinship. In the second example that they use in the passage cited above, the gender of the woman who uses a wheelchair becomes relevant (only) by virtue of the fact that she may experience hardship as a parent. These examples take access to family, marriage, kinship, and home as givens, rather than as forms of spatial, social, and economic privilege. If designers account for gender only when and if it is legible within these narrow conceptions, the spatial needs of misfitting single people, non-traditional households, and gender non-conforming people shift out of intelligibility. For example, one of the lifelong projects of UD pioneer Selwyn Goldsmith was to equalize space and functionality between male and female-designated restrooms. Goldsmith believed that the distribution of stalls in public restrooms discriminates against women and results in longer lines to wait for an unoccupied stall (Goldsmith 2001b, 25.7-8). The sustained attention of a disability access expert to an issue of gender inequality shows that design can be a site for intersectional exchanges of knowledge and expertise.

Goldsmith's approach did not address the underlying issue of sex segregation that results in unequal spatial distributions. Instead, he understood the use of restrooms to be a straightforward issue of people who identify as women waiting in line to use inadequate spaces. Recent work in feminist, queer, disability, and trans studies, however, focuses on the role of the normate template in creating inaccessible toilets and restrooms (Cavanagh 2010; Gershonsen 2010; Molotch and Noren 2010; Penner 2012). Sex-segregated restrooms certainly produce spatial inequalities for cisgender women who can access them; however, they also exclude gender non-conforming and intersex people who cannot access, do not feel comfortable in, or are prohibited by signs from using, male-only and female-only intimate spaces. Furthermore, narrow bathroom stalls in sex-segregated, multi-user restrooms also prevent use of them by people who require more space for their bodies, caretakers, companions, and assistive technologies than these stalls allow. By contrast, gender-neutral restrooms are often also single-user and disability accessible, making them sites of collective access and facilitators of interdependence for trans and intersex people, as well as single people, families, and companions.

Single-user restrooms too can also be too narrow, accessible only via stairs, or otherwise poorly designed. The difference lies in how designers address multiple and intersectional use. Understanding all of these uses as within the purview of UD's "universal" invites conversations about the interdependence of feminist and disability politics, defining a common stake in bathroom access. Attention to technical aspects of design, if framed through particular values, can be a means of material-discursive activism addressing body-environment relations and reconfiguring a space's *parti*.

Aging

Aging is a fundamental concern of UD and related strategies, such as "transgenerational design" or "aging in place" (Pirkl and Babic 1988). These strategies advocate for the flexible design of buildings (such as homes) that can accommodate people from childhood through old age. The utility of accessible design for aging has become part of the argument for UD as a "rehabilitation strategy" (Sanford 2012). Both aging and disability are stigmatized identities that confront medicalization, structural inequalities, and language that defines them as problems to be "solved" (Wiles and Allen 2010, 228). However, the introduction of aging into disability access has reframed the medical model of disability by focusing on a person's learned adaptation to the environment. As social gerontologists Janine Wiles and Ruth Allen (2010, 231) write, "interactions between a person's relative 'competence,' in terms of mobility for example, and the characterizations of the built environment, for example in terms of accessibility", mark the body and the environment in a relational system.

Person-environment theory addresses both physical barriers to access and inclusion and how people develop strategies to interact with and push back against these barriers. In other words, this theory accounts for how two people with the same category of disability can have very different competencies in navigating the environment. Such a strategy calls for built environments to function as *enablers*, providing resources for misfits to navigate environments without requiring retrofits (Steinfeld 1979; Wiles and Allen 2012, 231). Person-environment theories give meaning to both the symbolic work of the built environment and the functional and embodied experiences of spatial use. As Dyck remarks, however, existing models often feature an "untheorized body and a static conceptualization of the environment" (Dyck 2010, 255). A feminist disability UD theory premised on interdependence takes person-environment theories of aging one step further. UD focused on aging and the lifespan must account for cognitive, emotional, and sensory misfitting, in addition to physical disabilities.

Aging produces multiple and often simultaneous impairments, challenging UD to address diversities within the category of disability. For example, one area of UD research is wayfinding, that is, the study of how people navigate space. Attention to wayfinding has encouraged designers to think about how people with Alzheimer's or dementia navigate their homes and how people with low vision, dyslexia, and other disabilities construct cognitive maps and navigate unfamiliar places (Arditi and Brabyn 2000; Zeisel, Silverstein, Hyde, Levkoff, Lawton, and Holmes, 2003). Design features like predictable layouts, tactile maps, and auditory signals prioritize multiple forms of wayfinding access. Understanding the interdependence of aging-related disabilities with these other examples can expand the scope of the universal to include access for a range of emotional, cognitive, and sensory capacities, in addition to physical, mobility, or strength-related access.

Size

Because UD claims to address the range of human variation, it must account for a range of bodily sizes, including embodiments that are characterized by cultural conceptions of small and large stature, thinness, fatness, and non-normate weight. Recent feminist disability studies work on short stature (Kruse 2010) and fatness (Herndon 2011; Longhurst 2010) demonstrates the relevance of critical theories of embodiment to broad accessibility. The introduction of size as a category of interdependence shows the significance of spaces that either "reinforce [or] contest dominant discourses about body shape and size" through their design (Longhurst 2010, 203).

The aspect or dimension of the category of size that receives most attention in UD is the space required for assistive technologies such as wheelchairs, power-chairs, and scooters to navigate doorways, halls, restrooms, and landings. Although studies of wheelchair space requirements have been part of rehabilitation research since the late 1950s (Nugent 1959; Steinfeld 1979), they have recently expanded with the introduction of new mobility technologies and powered chairs (Steinfeld et al. 2010). Because the normate template keeps a walking and fleshy body at the center of thinking about design, buildings often fail to consider space requirements for bodies that use technologies to navigate space. A UD theory of interdependence must recognize the relationship between users bodies and technologies, understood as assistive devices or the built environment itself.

A second aspect or dimension of bodily size is relevant to UD. Disability geographer Robert Kruse argues that misfitting for people of short stature "cause[s] people to be 'placed' due to their body type"—a process he calls the "staturization of space" (Kruse 2010, 183, 185). Noting the similarities between staturization and other spatial segregations, Kruse confirms the role of the normate template in the

active production of misfits and thus the requirement for retrofit. Like staturization, another range of size—body shape and weight—produces similar misfits. For example, when airplane designers prioritize spatial efficiency, they de-prioritize bodies that take up more space. As a result, fat, tall, or pregnant people may be required to use seatbelt extenders, purchase extra seats, or vacate airplanes entirely. The sizeism of normate space makes it more difficult for certain bodies to fit in spaces and also produces emotional and affective exclusions for people whose bodies continually misfit existing designs (Longhurst 2010, 212). The social justice understanding of a UD politics of interdependence must direct critique at the emotional and affective dimensions of misfit that normate built environments produce, in addition to the actual built environments themselves. I do not mean to suggest that the emotional lived experiences of people within these environments are uniform across aspects of bodily size, but rather that size and space requirements can be a way of addressing multiple forms of exclusion from built environments.

A third aspect of the category of size concerns the provision of adequate space for certain types of embodied social activity. Deaf Space (Bauman 2009) is an architectural strategy that focuses on creating round, wide spaces to allow for sign-language discussions in which participants can sign, gesture, and make eye contact. Deaf Space challenges typical norms of social spatial use, showing that embodied communication requires taking account of linguistic and cultural diversities. A UD politics of interdependence should consider the social aspects of spatial use beyond the requirements of physical fitting.

Although broad accessibility for size can keep all three of these categories in mind, it must, nevertheless, still contend with conflicting access demands that arise when designers must account for a range of embodiments. For instance, the construction of tall doorways for tall people does not guarantee access to doorknobs for short people. Doorways that are large enough to accommodate wheelchairs and wide bodies may need to be taller. The new spatial (round) configurations of Deaf Space may affect the wayfinding of people accustomed to linear hallways and spaces. These tensions reveal the work that collective access must do to avoid the assumption that all misfitting bodies have the same spatial needs and to avoid recourse to design solutions that invoke the notion of "resource scarcity" in order to advance arguments for continued lack of access.

Race, Disability, And Environmental Justice

To build broad accessibility, UD can consider environmental health and access as race, disability, and environmental justice questions.

According to the UD notion of "social sustainability," accessible and

healthy environments, along with resource conservation and green design, are necessary to achieve meaningful environmental justice (Fletcher 2007). Thus, the notion of social sustainability contributes a broad understanding of access that centers disability and environmental health within existing environmental justice concerns with race and class oppression analysis. Feminist worker's movements have drawn attention to issues of air quality and workplace pollution connected to the phenomenon of sick building syndrome (Murphy 2006).

Environmental anti-racism movements have protested the historical economic and legal segregation of poor people of color within spaces with disproportionate pollution, environmental allergies, and lack of access to green spaces and food (Cole and Foster 2000). The demands of these movements, though not always framed in this way, are ostensibly about *disability*, understood both in terms of material arrangements of misfit and also issues of health and illness privilege that built environments produce. Though social sustainability argues for the inclusion of disability access within environmental sustainability, it must, nevertheless, more explicitly center racial and economic justice, thinking about how access to clean air and water, food, parks, and transportation occurs according to histories of racial and economic privilege at the scale of cities and regions, in addition to the techniques of green design.

Social sustainability can bring race, class, disability, and gender justice into conversation with considerations of aging and size through value-explicit design strategies. The common denominator of all of these efforts is the role of space in the production of structural inequalities and inaccessible and harmful built environments. For Weisman (1999), social segregation and harm to the natural environment are entwined with the design of the built environment, requiring a politics of interdependence. Weisman writes,

Cities and suburbs, workplaces and dwellings, architecture and nature are juxtaposed as detached spatial realms, segregating and supporting differential status and power to women and men, rich and poor, black and white, young and old, gay and straight, able-bodied and disabled. As we approach a new century, these old dichotomous paradigms are no longer workable. The problems of global homelessness, poverty, and environmental degradation, the escalation of social chaos, violence, and disharmony worldwide, and the bleak and hostile environments of so many cities require healing and the restoration of wholeness within the art of living. Architecture, too often regarded merely as a matter of style, is now a matter of survival. After eleven thousand years of building to protect ourselves from the environment, we are discovering that what and how we

design often diminishes our health and the viability of the planet. (159)

Although other UD proponents have approached intersectionality at the level of the individual, Weisman's design philosophy of global interdependence reveals what is at stake for alliances between UD and environmental justice movements in the contestation of the normate template. If broad accessibility takes up environmental health and social sustainability, it can expand the definition of access to include issues that intersect race, class, disability, and gender, such as air quality, environmental allergies, and food access. A feminist philosophy of disability and disability politics of interdependence invites us to imagine what UD could be if it focused its social sustainability efforts on desegregating cities, planning accessible gardens, encouraging clean air, and creating safe, reliable, and accessible transportation systems.

B. Added Value

Having explored some avenues for a UD politics of interdependence, I now turn to another framing of "universal:" *added value*. According to the concept of added value, designs that produce disability access also have added value or benefit insofar as they are useful to nondisabled people. The difference between broad accessibility and added value is subtle. Both of these framings of universal emphasize the usability of designs to multiple types of bodies or people. What distinguishes broad accessibility from added value is that although the former (broad accessibility) focuses on the social justice implications of segregation and exclusion from the built environment, the latter (added value) emphasizes (often to nondisabled consumers) the market value of accessible designs (Mace 1985).

De-Stigmatizing What?

Added value is exemplified by claims that accessible designs have (usually economic) value for "other people" beyond the benefits of disability access. Considerable attention within the UD literature has been paid to demonstrating that a market demographic exists for broadly accessible designs (Hansson 2007, 23; Steinfeld and Maisel 2012, 45-48). UD proponents argue that design with broad consumer appeal has the "added value" of *destigmatizing* disability access by taking it out of the context of a "special needs accommodation" (Steinfeld and Maisel 2012, 23). This framing is in response to the preponderance of assistive technologies that are only usable by individual people with specific types of disabilities, have a medical aesthetic, and are excessively costly (Mace 1985; Mueller 1997). Accessibility requires de-stigmatizing, however, only if disability is *taken for granted* as a stigmatizing quality. Positioning UD as benefitting "other people," in addition to disabled people, contributes to the impression that valuable design requires utility for nondisabled people

in order for its creation to be justified. In turn, the concept of added value itself becomes stigmatizing toward disability as a category deemed to have not enough value. Unlike broad accessibility, which expands the category of "all" to include multiple stigmatized minority embodiments, within added value, it seems, disabled people themselves are never enough to comprise the category of "all," regardless of how demographically pervasive they may be.

The notion of added value enters UD through its alliances with industrial design and product design, which are historically linked with efficient mass production for consumers. [9](#) While broad accessibility emphasizes the benefits of collectively accessible public spaces that multiple types of people can use and inhabit, added value often promotes designs that are consumed individually or within private space. [10](#) For instance, whereas broad accessibility may explain the benefits of accessible, single-user, gender-neutral restrooms, added value may emphasize the economic benefits of making accessible single-family private homes [11](#) or individual user technologies, such as the iPhone [12](#) available for public consumption. Thus, added value does not maintain the aspects of broad accessibility that invite alliances and interdependence, such as the shared use of the same public built spaces, buildings, and cities by different people. Though added value examples of UD may not carry the supposed stigma of disability, they nevertheless present a fragmented approach to the achievement of social justice goals, an approach that relies on individual access to consumerism.

Flexibility And Neoliberalism

Often, UD advocates and practitioners invoke the notion of added value to show that UD is marketable and worth investment because of its *flexibility* to multiple embodiments and identities (Mueller 1997; Vanderheiden 1996). Recall that flexibility is one of the Seven Principles of Universal Design. Flexibility can mean adaptable designs that can be used in different ways or by different bodies. For example, adjustable office chairs can accommodate a range of body heights. Classroom and meeting spaces with chairs and tables that are not bolted to the floor can allow reconfiguration of the room layout to serve multiple purposes. Because of its perceived openness to possibility, flexibility is a value invoked by liberation movements (Titchkosky 2011, 119). For instance, feminist architect Karen Franck writes that the feminist "desire for complexity [within architecture] is allied with an attention to multiple use, and more generally with awareness of change and the need for flexibility and transformation" (Franck 2000, 300). Similarly, Weisman aligns feminist design with transgenerational design when she writes that houses must be flexible to aging (Weisman 1992, 149-150). Thus, flexibility is a potential material-discursive strategy with which to address broad accessibility. However, maintaining the minimal amount

of flexibility can become an excuse for continuing to center a normate user in design (Titchkosky 2011, 121). If added value emphasizes nondisabled consumers over the maintenance of broad accessibility, the social justice value of flexibility can slip into a more neoliberal and individualized conception of access (Imrie 2012, 876). As cultural critic Henry Giroux has argued, the association of individualism and consumerism with greater choice and freedom is an orthodoxy "fundamental to the construction of the neoliberal subject" (Giroux 2008, 591). In late capitalism, industrial design and product design have incorporated the neoliberal tendency to mass-produce individual products and technologies that are flexible and usable by a range of embodiments (Thorpe 2012, 36-38). Flexibility makes it possible for the designers, fabricators, and constructors to enjoy the economic benefits of economies of scale through single designs that can be marketed to a range of potential consumers.

Despite UD's participation in critical discourses around broad accessibility and access by design, the materialist and anti-capitalist stance of feminist architectural theory and disability geography drops out of UD when added value becomes the strategy for promoting accessibility. As UD theorists Edward Steinfeld and Beth Tauke acknowledge,

[T]he idea of universal design is highly compatible with goals of contemporary capitalism. And, in fact, product manufacturers have been quick to use it as a marketing tool to expand markets, particularly to the older population. (Steinfeld and Tauke 2002, 179)

Added value framings thus risk making UD concepts—such as social sustainability and interdependence based around aging, gender, size, and race—into marketing tools. In this framing, misfit ceases to have political potential beyond the freedom to consume and access new technologies, regardless of whether these technologies are affordable or accessible to marginalized people. Although it is true that products must be marketable in order to be produced in the first place, the necessity of these products and the politics of the achievement of flexibility must also be questioned. To avoid depoliticizing flexibility, added value should not be used as a justification for broad accessibility or a politics of interdependence. Disability access, like racial desegregation, should be understood to have intrinsic merit as a feminist and social justice goal that does not require additional consumer benefits to serve as validation. To avoid de-centering disability, a feminist disability theory of UD must follow Weisman and Mingus to adopt a disability justice notion of collective access. [13](#)

Conclusion: toward collective access

What would it mean for designers committed to universal access and social sustainability to take up interdependence and collective access? In addition to the recognition of design as a value-laden activity that produces material-discursive effects, and beyond the adoption of a goal of broad accessibility, further work on a feminist disability theory of UD must address the neutralizations, omissions, and ignorance that extant approaches to access perpetuate. In particular, this work should attend to how racism and economic injustice are structural conditions that both create a lack of access and are perpetuated by consumerist and added value positions. Who has benefitted from value-added UD products? Who has been left out? How can UD address the structural conditions that prevent disabled people, people of color, and poor people (by no means mutually-exclusive groups) from training in the design professions? How can the UD concept of social sustainability become a collective access strategy for anti-racist urban planning, rather than a buzzword for the promotion of gentrification or "smart growth?" These questions underscore the necessity of a social justice orientation that does not take UD for granted as the best, most inclusive, form of design.

The application of U.S.-based UD principles to transnational contexts is another area that could benefit from the exploration of interdependence, broad accessibility and added value framings, and the economics and politics of design. To address these issues, a feminist disability theory of UD work should build upon existing work on international UD efforts (Mullick, Agarwal, Kumar, and Swarnkar 2011; Sandhu 2011). That is, a feminist disability theory of UD should consider what collective access and interdependence mean in the context of international movements for disability justice. For instance, what is the status of designer expertise in international UD projects? What kinds of knowledge are privileged? What broader ideologies and values does the promotion of U.S. UD principles serve internationally? How has the enforcement of disability access become contingent on neoliberal economic reforms justified according to added value? How have users and designers pushed back against these values and ideologies?

A feminist disability theory of UD based on disability justice, collective access, and interdependence can understand value-explicit design as a form of activism within the design professions. UD practitioners and theorists, building upon the theory outlined here, could continue to develop strategies for participatory design, shifting from value-explicit design *for* disability to design *with* and *by* misfitting bodies more generally. These subtle differences in framing could shift both the role and work of designers, as well as render UD as a more capacious and social justice-oriented material-discursive practice.

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Notes

1. After the passage of the ADA (1990), the term *Universal Design* was often erroneously applied to designs that retrofit existing buildings, remove barriers, or make other incremental changes in the built environment. At the same time, a number of terms and concepts for inclusive design proliferated, including concepts and terms such as *Design for All*, transgenerational design, and design for the lifespan. Some of these terms and concepts refer or describe specific user populations, while others simply tried to avoid the term *universal*. See Steinfeld and Maisel 2012, 29 and Ostroff 2011, 1.5. Also, Sandhu (2001, 3.4) notes terms such as "design for the broader average" or "design for the 'non-average,'" but these are less common.

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2. "Good design" is a vague notion that does not adequately differentiate between accessible and inaccessible designs. There is nothing within this concept that requires disability or access to be priorities. See Hayward (1998) for a genealogy of the notion that "good design" is synonymous with "common sense" design.

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3. Barad refers to this as "intra-active" in order to indicate that the circulation of meaning and materiality happens within the phenomenon (Barad 2007, 33).

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4. The Section 504 protests in the late 1970s were a defining moment for the American disability rights movement. In several major cities across the United States, disabled protesters occupied federal buildings and offices to demand rights of citizenship and public access. These protests resulted in the passage of Section 504 of the Federal Rehabilitation Act, which was the first major disability rights legislation in the US requiring architectural access prior to the passage of the Americans with Disabilities Act in 1990.

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5. Increasing participation of disabled designers in UD has been part of overall UD education efforts. See Elaine Ostroff, Mark Limont, and Daniel Hunter 2002.

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6. As I have explored elsewhere, UD is one of the driving forces of the phenomenon of *evidence-based design*, through which knowledge about

bodies serves as an evidence base for inclusive design (Hamraie 2012).

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7. Feminist materialist theories of the built environment emerge from activist design collectives in the civil rights movement era that challenged the nuclear family, the aesthetics of phallogentric architecture of late capitalist corporate spaces (Rendell 2000, 103), the "masculinist rationality" of design processes dominated by white men (Boys 1996, 34), and the proliferation of consumer products for housewives (Cowan 1985). For a critical introduction to the field, see Ian Borden, Barbara Penner, and Jane Rendell 2000.

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8. *Cisgender* is the identification with gender categories assigned at birth. I use cis-womanhood here to indicate that the authors presume that cisgender women are more typical users of design and space.

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9. Industrial and product design have been part of UD from the outset. Not only is this type of design specifically mentioned in Mace's 1985 definition, but many of the authors of the Principles of Universal Design were also industrial designers. UD products developed by companies such as Cuisinart and OXO continue to serve as best practice models for UD. See Mueller 1997 for case studies of UD products.

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10. Ironically, the reduction of disability to an individual, rather than collective, issue was one of the primary ideas underlying the development of the social model of disability (Oliver 1990).

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11. There is a large literature on UD fixtures and home design that emphasizes the benefits of accessibility in private, individualized spaces. See, for example, Steven Winter and Associates 1997.

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12. The iPhone's accessibility features are one of its hallmarks and there is an argument to be made that accessibility applications democratize this technology by encouraging developers to facilitate access for multiple users. In addition to the economic access required to obtain an iPhone, my argument is that accessibility features, such as voice recognition, have social justice value even if they are unusable to non-disabled people.

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13. Disability justice activists have also fostered integrative, intersectional collaborations through projects like Creating Collective Access, a community-built access project at the Allied Media Conference. These efforts offer a model for the connections between social movement projects that a feminist disability theory of UD can draw upon to understand intersectionality as interdependence. See *Creating Collective Access* 2012.

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