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Design for Disability Will Become the Norm

By Peter Monaghan

Most people will experience a physical or mental disability during their lifetimes. So why don't more designers of devices, appliances, and public spaces heed that reality? Why, for example, must so many buildings be retrofitted with ramps and stair elevators rather than being designed with disability in mind?

Advocates for greater accommodation of people with disabilities contend that good design, by definition, caters to a wide range of human capability. Yet design for disability has made only an intermittent, marginal impression on the design world.

That is changing. You can see it even in the simplest of consumer products, such as modern kitchen utensils with grips that are easy to hold and manipulate.

At industrial and academic design centers, nothing is driving development more than the rapid aging of many nations' populations. Demographers estimate that, within 20 years, the number of people older than 65 will double in the United States; within 40 years, the number of over-80's will quadruple, worldwide. Meanwhile, population densities will jump 50 percent.

"Design at all scales—urban, architectural, and product designs—will be critical in negotiating demographic and cultural shifts," says Korydon H. Smith, an associate professor of architecture at the University of Arkansas.

Increasingly, people with disabilities are demanding designs that segregate them less, and stigmatize them less. Some designers are listening.

In a new book, *Design Meets Disability* (MIT Press), Graham Pullin, a lecturer in interactive media design at the University of Dundee, asks: Must devices designed for disabilities continue to seek to hide them, the way flesh-colored prostheses do? If the most common aid for disabilities, eyeglasses, can be fashionably hip, then so can, say, hearing aids, he reasons. Conversely, he suggests, people who are not disabled can benefit from devices made for people who are. The better-designed kitchen utensils are one example of this; in another,

some architects have deployed Braille signage not only as a tactile guide, but also as an element of building design.

Pullin urges designers to consider how disabilities can provoke new design approaches. In a celebrated instance, in the 1940s Charles and Ray Eames took inspiration for their iconic furniture from the organic shape of a molded-plywood leg splint they designed for injured servicemen.

Increasingly aware that products, buildings, city spaces, and media affect human behavior and well-being, designers formed alliances with urban planners beginning in the 1990s to develop approaches that now go by similar, self-explanatory names: universal design, inclusive design, design-for-all, life-span design, transgenerational design.

The goals are broad: Edward Steinfeld, director of the Center for Inclusive Design and Environmental Access—the IDEA Center—at the State University of New York's University at Buffalo, says universal design should foster "a way of thinking that can be applied in any design activity, business practice, program, or service involving interaction of people with the physical, social, or virtual worlds."

Advocates of universal design have at times been accused of blithely advancing the interests of product manufacturers, and of toeing the line of state regulation without challenging it. Still, says Pullin, within the academic design world, those concerns have slowed progress less than most academic designers' haughty dismissal of the movement as utopian.

If progress has been halting, it has nonetheless been significant, at least from the perspective of users, says Steinfeld. Products such as Japanese robotic help for the aged, and text-to-speech technology with a realistic tone of voice, are making a clear difference in people's lives.

The last of those—Pullin's specialty—like speech synthesis and captioned text in film and television, also illustrates the way that designs intended for people with disabilities can flow to general use. Even the phonograph can be included in that category, Steinfeld notes: When Thomas Edison filed his patent in 1877, among the uses he listed for it was "phonograph books, which will speak to blind people without effort on their part."

"Inclusive design is just good design," suggests William Gaver, a professor of design at the University of London. "Creating a product that is understandable and usable by older people, or disabled people in general, means you have a product that is understandable

and usable, full stop."

Pullin agrees, with provisos: First, that design-for-all remains simple design fitted to particular purposes—design that does not produce confused, compromised products. Second, that design strikes the right tone: "The best design somehow manages to combine approachability with a real lightness of touch, so you don't get the feeling you're being patronized."

In both cases, Pullin cites the Leckey design company's furniture for schoolchildren with physical disabilities. Leckey moved from making products that tried to accommodate many kinds of users, but that were intimidating and clunky, to a production platform that could be adjusted to produce streamlined, elegant products suited to the needs of individual users.

Third, designers should remember that people with particular impairments are diverse in their attitudes toward the disability. For example, in the 1970s, Vietnam War veterans lobbied successfully for lighter, more mobile wheelchairs better suited to young, active users, believing that standard wheelchairs obscured users' individuality.

Designers for disability are taking a lead from practitioners of "critical design" by proposing ambiguous, discomforting, or humorous designs, even at the risk of appearing insensitive. "Countercultural groups within disabled populations are using dark humor to undermine unacceptable attitudes," Pullin writes in his book, where he notes such figures as the double-amputee athlete and fashion icon, Aimee Mullins. Her visually striking, curved, flexible artificial legs are of a kind that has made some amputees, Mullins included, able to outrun even accomplished athletes with their original legs.

Designers increasingly agree with colleagues who specialize in design for the disabled that ergonomics and psychology are important. Still, awareness is growing patchily, from country to country and from industry to industry, Steinfeld says. For example, computer makers have realized that different users need different tactile and auditory information to use products without frustration, such as pared-down machines, type of adjustable size, voice-triggered commands, and text-to-speech and speech-to-text functions. Similarly, transit authorities have introduced low-floor buses and devices that constantly update schedule information.

But in architecture, for example, progress has been slower. Steinfeld says the profession has embraced a "got it covered" mentality that deems it sufficient to satisfy building codes. Few American schools

of architecture teach design relating to disability or inclusiveness. His own institution, University at Buffalo, has assigned six faculty members to teach a graduate concentration in universal design, and to forge partnerships with several technology-and-design bodies. With money from the National Endowment for the Arts, it is collaborating with several historically black institutions to begin programs there. (With social equality one of its aims, universal design needs to do a better job of incorporating the perspectives of racial minorities, Steinfeld says.)

Among the numerous universities that perform design-for-disability research, several dozen have rehabilitative-engineering laboratories working in such areas as wheeled mobility, impaired vision, recreational technology, and wireless communication.

At the Massachusetts Institute of Technology's Media Lab, for example, a biomechatronics group led by Hugh Herr draws on biomechanics and the science of biological movement control to develop prostheses that mimic the body's musculoskeletal structures.

Federal money for design for disability has come most consistently from the National Endowment for the Arts, which has long advocated accessibility in the arts, and the U.S. Education Department's National Institute on Disability and Rehabilitation Research. It supports many research-and-development centers in such areas as orthotics, stroke-recovery assistance, and wheeled mobility.

Leading research centers include the Center for Universal Design at North Carolina State University, the Center for Assistive Technology and Environmental Access at the Georgia Institute of Technology, and the Royal College of Art's Helen Hamlyn Centre, in London. The most prominent American university-based center is Steinfeld's IDEA Center at Buffalo. With other groups, including the Center for Universal Design at North Carolina State University, the IDEA Center maintains the University Design Education Online advocacy Web site.

The most prominent disability-design organizations have included EIDD-Design for All Europe, a European network of 22 countries originally called European Institute for Design and Disability, and the Japan-based International Association for Universal Design.

The newly formed Global Universal Design Commission Inc., of which Korydon Smith is a founding committee member, is developing voluntary standards for universal design in commercial buildings, akin to those of the U.S. Green Building Council. So, too,

is the Barcelona-based Design for All Foundation.

Signs that governments are hearing these agencies' call are increasing. In 2000, the United Nations appointed the Indian architect Miloon Kothari as its first special rapporteur on adequate housing. He specifically noted the needs of people with disabilities in 2004 in the first U.N. resolutions to stem from his work.

In the United States, Representative Jan D. Schakowsky, an Illinois Democrat, in March 2009 introduced the Inclusive Home Design Act which would extend the requirements of current disabilities laws to require that all new single-family houses built with federal assistance meet certain requirements for accessibility.

While that legislation's passage is probably at least a few years off, Pullin says: "Things feel like they are on the cusp of real progress, although I wonder whether they felt on the cusp in the past, too."

He notes that, like fashion, design often moves ahead through the efforts of the enfants terribles who dare to reinvent their field. "My frustration," he says, "is not that there aren't some designers doing good design for disability, but that that seems like a special interest or a field within itself."

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