

**Different Ways of Moving Through the World**  
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*Technology's failure to serve disabled people is ultimately a failure of imagination.*

There's a distinctive rhetoric around technology for disabled bodies, one that emphasizes the power of technology to make people whole. To become disabled is to be exposed to a barrage of techno-optimistic rhetoric about "overcoming" the state of your body. Recovery means not only reaching a certain level of "old" abilities but becoming even better than you once were by consuming the latest technologies. From TED talks to news articles to commercials that feature paralympians, the technologized disabled body is offered as a site of redemption for "broken" people.

These "techno-ableist" ideas dominate how we imagine disabled bodies—and how we design for them. Techno-ableism suggests that using technologies to restore physical abilities is the key to addressing disability—and that disabled bodies are inferior when they are not properly equipped with those technologies.

But this rhetoric reflects a severely limited imagination about disabled bodies. And the consequences of these limitations couldn't be more concrete for disabled people.

### **Context Matters**

One failure of imagination is *structural*. The technologies that are imagined for disabled people often neglect the larger structures that shape how disabled people access those technologies. These include health insurance systems, prescriptions for devices, vocational rehabilitation programs, warranties, systems of maintenance, and service contracts. All of these factors determine who gets which technologies when—and if they get them in the first place.

The iBOT power wheelchair clearly illustrates this failure of imagination. In the early 2000s, Dean Kamen, the creator of the Segway, invented the iBOT. The wheelchair user magazine *New Mobility* [praised](#) it as "a revolutionary four-wheel-drive wheelchair that can climb up and down stairs and curbs, roll across terrain, and raise a seated user to eye-level-standing height by rising up and balancing on two wheels."

Many disabled folks liked this invention. But the iBOT was expensive—it cost around \$25,000, and was never covered by insurance. The FDA classified the chair as a Class III medical device—a higher-risk category that includes pacemakers—instead of as a

Class II device, which is the rating for most power wheelchairs. The difference is significant: Medicare and Medicaid might be willing to cover the cost of the iBOT as a Class II device—and most insurance programs take the lead of Medicare and Medicaid when it comes to their coverage.

Technology has to be understood in context. And in the context of disability, problems are rarely just technological: designers also need to consider the structures in which disabled people have to operate. Otherwise they are just creating fancy one-off machines that only a few people will ever be able to try out.

Fortunately, more people may soon be able to use the iBOT. Discontinued in 2009 due to slow sales, it's now being rolled out again—this time with a Class II rating and the backing of Toyota.

## **Bodies Together**

If one failure of technological imagination ignores how disabled people actually access technology, another only sees that technology in purely personal terms. Often, we imagine technologies as individual solutions for individual disabled people. Literally, this device will help *you*—we can rebuild *you*. This is the impetus for building more impressive wheelchairs, exoskeletons, and prostheses. But the technological world doesn't just consist of *individual* tools or devices; rather, it's a *social* world shaped by common infrastructure.

Yesterday, I had to meet with another faculty member. That wouldn't usually be a problem. I have a fancy leg as an amputee, and the coffee shop where we were meeting on campus was not terribly far from parking. However, it was raining.

Here's a thing about disability parking: it fills up when it rains. Many of us don't use the disabled parking except when we need it. And, for people with mobility disabilities, we are much more likely to need it in adverse weather conditions that make traversing longer distances slippery, icy, or otherwise challenging. I was lucky to find parking, but it was further away than planned, and I had to make a dicey choice: either to take a ramp with no handrail in the pouring rain or to climb some stairs with a slippery handrail.

I took the stairs, and made it to the building. Then I walked inside, and I stood on the small, already soaked, floor mat. I was stuck. Moving off the mat would mean slipping and probably falling, which has happened too many times before for me to be bold about it. The person I was meeting for the first time recognized me from my faculty picture and came over, perhaps confused as to why I was just standing in a double-

doored hallway. I explained that I was going to have to wait until my shoes were a little drier to move.

Was I stuck standing on a mat due to my disability, or was I stuck due to a slippery surface? I was lucky that my colleague was very chill about the whole thing, so the social weirdness of the situation wasn't a concern. But I could also provide a long list of places in my community that I dare not go when it rains.

Disability inclusion and empowerment can't be achieved with individual fixes alone. Rather, it has to involve designing physical environments where disabled people are not stigmatized. Some environments literally keep people out: steps, out-of-order elevators, ill-conceived bathroom spaces, disability access around the back of buildings or in other inconvenient and hard-to-find locations, slippery or bumpy surfaces, poor acoustics, flashing lights for no good reason, lack of ramps, lack of handrails or grab bars. People are forced away, or put into discomfort, pain, or danger in order to enter or exist in a given place.

To see technology for disability as merely about solving individual problems for individual people is to fail to see that *bodies are never bodies alone*. Every body has a context in which it sits—and our technological imagination must take that context into account.

## **Room to Play**

My friend Mallory Kay Nelson has an idea that she calls “transmobility.” Transmobility says that many disabled bodies actually have *more* ways of being and moving in the world than nondisabled ones do. For instance, Nelson herself has spent time with a prosthetic leg, but now chooses between a wheelchair and a set of forearm crutches for navigating her daily life. She has at least three modes of mobility—unlike the nondisabled, most of whom have probably never been forced to think creatively about the movement of their bodies.

Transmobility insists that there aren't bad ways of moving through the world. Dominant ideas about disabled bodies point toward two-legged non-limping ambulation as the ideal. This ideal plays out in exoskeletons and prosthetic legs and orthotics, as well as in physical therapy environments and most medical contexts. We imagine solutions as correcting a person's body, or restoring them to “normal” functioning. By contrast, transmobility gives us a space to think about disabled bodies as adaptable and adapting.

To think about disabled bodies as good, whole, and valuable *as they are* is to reject many of the medicalized notions that dominate the technological design spaces that concern disabled bodies. This doesn't mean we can't also have fun with technology. Rather, it means we shouldn't have to conform or perform as normal. There should be room to play.

In fact, successful design for disability comes not from a place of stigma and loathing, but from *playing* with the material world and our contextualized embodiments within it. This takes us back to the individual, but opens up space for community as well.

The notion that technology has the power to make people whole is seductive. But it also reinforces ableist tropes that work strongly against disability inclusion and flourishing. The stakes are real: this rhetoric informs the design of the world all around us, and the self-perceptions of disabled people themselves, who live with bodies that become stigmatized through our failures of technological imagination.

Disabled bodies are often used as ammunition for techno-optimist arguments: that we should want to fix them is a goal for many technological thinkers. But this view of human progress forecloses new possibilities for all sorts of bodies. It kills creativity, caps adaptability, and prevents disabled people from being seen as already complete as they are.