How Ableism Influences the Design of Mobility Assistive Technology

A Research Paper submitted to the Department of Engineering and Society

Presented to the Faculty of the School of Engineering and Applied Science
University of Virginia • Charlottesville, Virginia

In Partial Fulfillment of the Requirements for the Degree
Bachelor of Science, School of Engineering

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Summer 2024

On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

The World Health Organization estimates that 1.3 billion people globally have a significant disability, constituting approximately 16% of the population (World Health Organization [WHO], 2023). At the national level, disabled people comprise approximately 50 million Americans, making them the nation's largest minority group (United States Department of Labor, n.d.). Ableism, defined as the prejudices and practices that devalue and discriminate against people with disabilities, is incredibly pervasive and profoundly impacts the lives of disabled individuals. By maintaining ableist attitudes and systemic barriers, society limits the opportunities and full participation of people with disabilities in various aspects of life, including education, employment, and social interaction.

Inaccessible infrastructure and public spaces perpetuate these systemic inequalities by inherently limiting access based on mobility levels. Despite the existence of accessibility features such as ramps, elevators, and curb cuts, their implementation remains inconsistent and inadequate in many areas, further marginalizing individuals with disabilities. Considering these challenges, it becomes evident that engineers have a crucial role in addressing them. Engineers have the power to create devices and design systems that meaningfully improve the daily lives of individuals with disabilities. These designs and technologies should be critically assessed to ensure they do not unintentionally reinforce existing inequalities or create new ones.

The central motivation for this research project is to examine how ableist assumptions and ideals influence the design and effectiveness of mobility assistive technology. The principles of Crip Technoscience, with an emphasis on avoiding technoableism—the harmful notion that technology should be employed to "fix" or eradicate disabilities—will serve as the framework of this research (Shew, 2020). By uncovering the ableist biases embedded in existing assistive technology designs, this research aims to promote the development of mobility-related assistive devices that are more effective in meeting the needs of disabled users.

Background Information

The realm of engineering extends its reach into nearly every facet of human existence, with engineers continually developing and innovating technologies that impact how we work, play, communicate, and move around the world. The intersection of technology and disability is a critical area of focus, as technological advancements have the potential to both address and exacerbate accessibility challenges faced by individuals with disabilities. However, nondisabled people often hold misconceptions about what disabled people need or want, leading to the development of technology that, despite any good intentions, can reinforce ableist ideals. Thus, it is essential for engineers to critically assess their motivations and designs to ensure that their innovations genuinely enhance accessibility and inclusion.

When developing technological solutions to reduce accessibility barriers, there are generally two main approaches. The first is to modify existing infrastructure and adopt universal design principles, ensuring the built environment is accessible to all. This might mean installing ramps, elevators, and wheelchair lifts to accommodate mobility impairments, or implementing tactile pavement, braille signage, and auditory signals to accommodate visual impairments. The second approach is to design assistive devices that help users adapt to their environment. Examples of assistive devices include wheelchairs, prosthetic limbs, hearing aids, and screen readers. These solutions are more individualized, which is essential to cater to people’s specific needs and assist with activities of daily living (ADLs). On the downside, this puts an added burden on the individual to acquire and pay for the technology, which contributes to increased socioeconomic disparities. Notably, the WHO and UNICEF Global Report on Assistive

Technology (2022) highlighted a significant unmet global need for assistive devices, citing high costs, inadequate products, market fragmentation, and governance and funding issues as some of the many barriers to accessing assistive technology. Ultimately, the existence of these assistive technologies alone is far from a "simple fix" to an inaccessible world; it is crucial to push for systemic solutions that address the root causes of inaccessibility.

It is important to discern that disability is not strictly defined as a health condition or physical abnormality. Rather, it results from the interaction between such conditions and environmental and social factors. Many disability rights advocates and scholars reject what has been described as the medical model of understanding disability, which defines disability primarily as a disease or defect that should be cured or treated (Siebers, 2001). This model isolates disabled individuals as what is broken and perpetuates the idea that the barriers that they face can only be removed if the individual is “fixed” or made “normal.” In contrast, many disabled people and disability scholars advocate for a social model, which views disability as socially constructed rather than solely the fault of the individual. While this model is praised for empowering individuals and promoting inclusivity, some scholars prefer a more nuanced understanding, warning against downplaying the real and sometimes severe challenges posed by physical or cognitive differences (Linker, 2013).

The implications of these models extend beyond theoretical discussions, as they directly inform the design choices made by engineers and technologists. Depending on whether one adheres to the medical or social model, the focus of technological solutions can vary greatly. One relatively new disability technology that has Some non-disabled tech enthusiasts envision a future where assistive devices could be affixed to disabled bodies which would ostensibly eradicate the effects of disability and eliminate the need to provide accommodations. However, that “solution” is far from the true preferences and needs of disabled people (Ladau, 2015). Robotic exoskeletons, for example, have been marketed as a groundbreaking technology that could enable individuals with certain mobility disabilities to "walk" without needing a wheelchair. While these wearable robotics can indeed be valuable tools for rehabilitation and promoting overall health for paralyzed individuals, there is often an underlying assumption that the next logical step in their technological development is for these exoskeletons to be used all the time. Such technologies are often presented as miraculous solutions that restore "normality," reinforcing the notions that wheelchairs are burdensome and mobility impairments are undesirable conditions that must be corrected. This approach reflects a deeper ableism, which distorts expectations of what disabled people want and need. It frames disability as a personal shortcoming, rather than recognizing it as a consequence of societal structures that fail to accommodate diverse needs. For instance, the requirement of making environments accessible (e.g. mandating the inclusion of ramps, elevators, handrails, etc.) is sometimes viewed by non-disabled individuals as a hassle that limits design possibilities and compromises aesthetics and efficiency. However, they fail to realize that increasing accessibility ultimately enhances technologies and infrastructure for everyone (Blackwell, 2016).

Crip Technoscience

To grasp the impact of ableism on the development of assistive technology, it is essential to engage with ideas from disability studies scholars. Crip Technoscience, a framework introduced by Aimi Hamraie and Kelly Fritsch in their "Crip Technoscience Manifesto" (2019), combines STS theory and disability studies through a critical analysis of the development of assistive technology to challenge the oppressive status quo. Crip Technoscience rejects the aim of normalizing disabled bodies and instead emphasizes the value of disabled people's unique ways of navigating the world. It recognizes the historical and ongoing practices of adaptation and tinkering that disabled individuals engage in to make their environments more accessible. One of the core commitments of this framework is prioritizing the lived experiences and expertise of disabled people. When assistive technologies are developed, engineers often fail to value the perspectives of the disabled users they intend to help, especially those with non-apparent, chronic, and complex disabilities, and this places inherent limitations on the effectiveness of their designs. Simply imagining the desires of disabled people rather than just asking them and including them in the design process allows for ableist ideals to go unchecked and the real struggles they face to go unnoticed.

The concept of *technoableism*, a term coined by Virginia Tech STS professor Ashley Shew, aligns closely with this framework. Technoableism describes the rhetoric of empowering disabled people through technologies, while still reinforcing harmful tropes about what is expected of a “good” or “normal” body and what abilities are needed to be worthy as a human. A key facet of avoiding technoableism is the rejection of the medical model of viewing disability, focusing instead on developments toward freedom and interdependence, not toward cures or normalization (Shew, 2020). Within the disability community, a prevalent sentiment is that the pursuit of technological “solutions" for mobility impairments neglects disabled peoples’ autonomy and may diminish the perceived need for accessible infrastructure and divert focus away from solutions to certain struggles that non-disabled people may not be aware of (Shew, 2020). Compared to able-bodied people, people with mobility disabilities do not have the same level of access to public environments they can traverse reliably, appropriate living conditions, transportation, employment, and financial stability. Due to their lived experiences navigating a world where most things are designed without considering disability as a significant factor, disabled people are experts in designing everyday life and effective agents of change in building a more socially just world (Hamraie & Fritsch, 2019). Collaboration among designers, healthcare professionals, organizations, and government services directly with the disabled community is crucial for addressing these complex problems.

By recognizing the principles of Crip Technoscience and rejecting technoableism, engineers can create technologies that support the diverse ways people experience and interact with the world, respecting their autonomy and recognizing the political and social contexts that shape their experiences. This perspective encourages a shift from viewing technology as a tool for normalization to one that facilitates broader accessibility and challenges societal norms that marginalize disabled people.

Research Question and Methods

This paper seeks to answer the question: How can ableist ideals influence the design of assistive technologies for individuals with impaired mobility of the lower extremities? The research method to answer this question is a multiple case study of notable assistive devices, specifically focusing on innovative designs to assist users with lower extremity mobility impairments. To refine the scope, the devices are chosen based on the following criteria: they were powered or motorized, designed for daily use in public settings rather than just rehabilitation environments, showcased novel features, and are commercially available in the United States. The selected devices include the iBOT Personal Mobility Device and the ReWalk Personal 6.0 Exoskeleton. The analysis focuses on the design intentions, the marketing rhetoric, and the success of the implementation. By addressing these aspects within each case study, I evaluate how ableist ideals are embedded in the underlying motivations and assumptions that guided the creation of these devices.

Results

Many people with mobility disabilities rely on assistive technologies such as wheelchairs, mobility scooters, canes, or crutches to navigate and interact with their environments. Mobility aids provide access to places and activities that would otherwise be inaccessible, opening the door to greater opportunities in education, employment, and participation in everyday activities. As technology advances, the range of available mobility aids has expanded to include highly sophisticated devices, offering users more tailored and versatile options to meet their specific needs and enhance their overall experience. However, technologies alone cannot fully address the root causes of accessibility issues and can even further perpetuate ableism (Hoffman et al., 2020).

This research analyzes two examples of ultramodern mobility aids, applying the ideas of Crip Technoscience to demonstrate how ableist ideals are reflected in their design. First, the design motivations are assessed by looking at the device's functionalities and statements given by the creators. The main functionalities of the iBOT PMD, a powered wheelchair that can traverse stairs and balance on two wheels to raise the user to eye-level height indicate a design focus on enabling the user to conform to spaces designed for non-disabled individuals. Similarly, the development of the ReWalk exoskeleton was driven by the goal of making paralyzed individuals ambulatory—to allow "wheelchair-bound" individuals to move around the world like 'normal." These features suggest that the onus is on the disabled individual to adapt to ableist environments and attitudes, showing a prioritization of conformity over true accessibility and inclusion. Next, the language used in promotional materials featured on the retailers' websites and its media portrayal was examined to understand the marketing rhetoric of each device. For both assistive devices, a recurring theme in the marketing was an emphasis on “restoring normalcy” and “overcoming disability,” suggesting a narrative that views disability as something inherently negative that needs to be fixed. Lastly, the success of the implementation of each device was measured by looking at the affordability, real-world utility, and reactions from both the disabled community and non-disabled perspectives. The inherent technical complexities of both devices necessitate millions of dollars in funding for their development and specialized maintenance requirements. Both the iBOT PMD and the ReWalk are difficult to obtain through insurance coverage and are otherwise prohibitively expensive, making them accessible only to a privileged few and perpetuating inequalities within an already disenfranchised community. This analysis can inform future developments and encourage a shift toward more inclusive, user-centered designs that respect and genuinely enhance the lives of users.

Case 1: iBOT Personal Mobility Device (iBOT PMD)

The iBOT PMD, produced by Mobius Mobility, is an innovative wheelchair featuring four powered drive wheels and two caster wheels, offering multiple specialized operating modes tailored for both indoor and outdoor terrains (Mobius Mobility, 2024b). Utilizing computerized tilt sensors and gyroscopes, it can ascend and descend stairs, elevate the user to eye-level height by balancing on two wheels (Figure 1), and reconfigure itself to transition between modes while ensuring proper weight distribution for the user's comfort and safety (Luoma, 2003).

Figure 1

Photographs of iBOT PMD configuration modes

Note. Shown from left to right: Standard, Four-Wheel, Stair, and Balance. From "iBOT Personal Mobility Device," by D. Hameline. and M. Yeigh. 2022, April, *Ability Magazine*, p. 79. Copyright 2022 by Ability Magazine.

Design.

Dean Kamen, the inventor of the iBOT, claims that he conceived the idea after witnessing a man in a wheelchair struggling to navigate a curb to access a mall and then encountering further difficulties reaching items on shelves (Kamen, 2020). He also credits an instance where he slipped in the shower and regained his balance as sparking the inspiration for the feedback control mechanism of this self-balancing wheelchair. He realized that he could employ tilt sensors and gyroscopes to emulate the function of the vestibular organs in the inner ear. Mimicking how the brain uses these signals to coordinate bodily movements, these sensors send signals to a computer, enabling near-instantaneous and precise adjustments to the wheelchair's motors, thereby maintaining its balance (Luoma, 2003).

The design motivations for the iBOT show that it was shaped by a technoableist worldview. First, in describing the scenario that sparked the idea for this technology, Kamen frames the wheelchair user as the problem and not the inaccessible built environment. The resulting approach for the technological solution was to make the user conform to these spaces, reinforcing the ableist notion that disabled people must adapt to a world that inherently excludes them. By putting the responsibility on wheelchair users to navigate stairs and curbs, the iBOT preserves the status quo of environments that are inherently exclusionary to those with mobility impairments. Furthermore, the iBOT's design exhibits a prioritization of the normalization of the user’s appearance and abilities. The feature that allows the iBOT to elevate the user to eye level perpetuates the idea that eye-level interactions are more “normal” or desirable, enforcing a standard that devalues and marginalizes wheelchair users. Using biomimetic balancing mechanisms, the iBOT seeks to “fix” the user’s lack of ability to walk on two legs and climb stairs. In a 2021 interview, Kamen himself reflected on his design motivations:

> How can it be … we can put people on the moon, we can fly across the continent, and yet a disabled person is given a wheelchair — a pathetic, inadequate substitute for what you and I take for granted? And so I said, ‘I’ve got to restore not just mobility. I’ve got to restore … independence, dignity, access. We have to give them something that closely resembles that human ability to stand up and balance and walk. (Romano et al. 2021)’

Kamen’s desire to make disabled individuals appear and function like non-disabled people reflects the ableist ideals of the medical model. He also implies that he believes wheelchair users are inherently inferior by referring to wheelchairs as “pathetic, inadequate substitutes” for walking. By emphasizing the need to "restore independence, dignity, and access" by making the user appear to stand, balance, and walk, Kamen's design motivations further show a preference for normalizing the disabled body to fit societal standards, rather than challenging those standards to be more inclusive of diverse bodies and recognizing the autonomy and worth inherent in all forms of mobility.

Marketing

Kamen, who is not disabled, would use the iBOT himself during public appearances to promote his invention and would often refuse to call it a “wheelchair” (Metcalfe, 1999). While introducing the iBOT in an appearance on Dateline NBC in 1999, Kamen insisted that “[The iBOT] is not a wheelchair. [It] is an extraordinary machine” (NBC News, 2003) Efforts to market the iBOT as superior to wheelchairs perpetuate beliefs that disabled people need fixing and saving and further marginalize wheelchair users that are not able to access this technology or have more complex needs.

Some of the rhetoric used to market the newest version of the iBOT, the iBOT PMD, similarly reinforces technoableist ideas. Upon entering the website for European customers, “MeetiBOT.com,” visitors are immediately met by the words “Simply go. Just like everybody else.” By framing this as the ultimate goal, the slogan suggests that the differences between disabled and non-disabled people are deficits that need to be minimized or erased, rather than aspects of human diversity that should be respected and accommodated. Further reinforcing this perspective, the website describes the benefits of the balance mode feature with the statement, “Look someone in the eye and make real eye contact.” This message implies that genuine human connection is only possible when a person is at eye level with others, subtly suggesting that interactions from a seated position are less meaningful or effective. This rhetoric marginalizes the natural experiences of wheelchair users and perpetuates the ableist belief that dignity and respect are tied to physical conformity with non-disabled standards.

Implementation

Originally developed by DEKA Research & Development, the iBOT was marketed as a revolutionary mobility aid, with Johnson & Johnson investing over $100 million to bring it to market (Romano et al., 2021). Despite significant media hype and its advanced features, including the ability to ascend and descend stairs and elevate users to eye level, the iBOT 4000 had limited success. With a price tag of around $25,000, it was far beyond what most users could afford, especially when Medicaid and Medicare only covered a fraction of the cost, offering a maximum reimbursement of $5,000—the standard amount for any motorized wheelchair. This significant financial barrier, coupled with the iBOT's classification as a Class III device by the FDA, which imposed strict regulations and limited insurance coverage, resulted in only 500 units being sold within seven years (Vogel, 2019). The high cost and regulatory hurdles meant that the iBOT was accessible only to a privileged few, largely those who could afford to pay out-of-pocket or had minimal need for modifications. Much to the dismay of its small but passionate user base, the iBOT 4000 was discontinued in 2009, highlighting the disconnect between the device's technological promise and its practical implementation (Sturgeon, 2020).

Dean Kamen and DEKA continued to develop the technology and were able to get the iBOT to be reclassified as a Class II device by the FDA, which was a significant step forward (Mobius Mobility, 2024a). This classification reduces regulatory constraints, enabling more modifications to accommodate a wider range of users and broader insurance coverage. In 2019, Kamen founded Mobius Mobility to produce the iBOT PMD, which has the same core operating modes as the previous versions but with improved electronics and seating options (Sturgeon, 2020). However, with a high MSRP of around $30,000, the iBOT PMD remains unaffordable for most people, even with the prospective insurance coverage of 30%-70%, is more expensive than other power chair options and makes it unaffordable to most of its target customer base. Thus, the iBOT PMD remains a niche product.

The iBOT's focus on restoring what its inventor, Dean Kamen, describes as "independence, dignity, access," through normalization of the user's abilities to fit non-disabled standards, overshadows more tenable solutions to accessibility barriers. While the iBOT represents an impressive technological achievement, its implementation reveals the challenges of creating assistive devices that are both accessible and truly responsive to the needs of the disabled community.

Case 2: ReWalk Personal 6.0 Exoskeleton (ReWalk)

The ReWalk Personal 6.0 Exoskeleton (ReWalk) is a wearable, motorized, and computerized bionic walking assistance system that interfaces the lower limbs and part of the upper body of the user. This device enables individuals with lower limb paralysis to perform ambulatory functions, including standing, walking, and ascending and descending stairs and curbs. It is intended for indoor and outdoor use to be used in home and community settings, as well as in rehabilitation institutions. The device is specifically intended for individuals with spinal cord injury (SCI) at levels T7 to L5 (lower thoracic and lumbar vertebrae injuries) who are otherwise in general good health, and it is required that the user has adequate motor control of hands and shoulders so they can support themselves with crutches or a walker while using the

ReWalk (Lifeward, 2024). The ReWalk is currently marketed by Lifeward (previously called ReWalk Robotics Ltd and Argo Medical Technologies Ltd)

Figure 2

Product photo of the ReWalk Personal 6.0 Exoskeleton

Note. From “ReWalk Personal Exoskeleton,” by Lifeward (2024), *Lifeward*. Retrieved April 13, 2024 from https://golifeward.com/products/rewalkpersonal-exoskeleton/. Copyright 2024 by Lifeward, Inc.

Design.

The concept of the ReWalk—a device to enable people with lower limb paralysis to walk again—plainly reflects ableist ideals of normalization. The design was driven by the goal of achieving ambulation rather than simply facilitating mobility, thereby reinforcing the notion that walking is the most "normal" and ideal form of movement. The first ReWalk exoskeleton was developed by Amit Goffer, who founded ReWalk Robotics in 2001 following an ATV accident that rendered him a quadriplegic. Goffer was unable to use the ReWalk himself but later invented a standing wheelchair called the UPnRIDE for his own use. In an interview, Goffer reflected on his experience of being paralyzed and the emotional and psychological benefits of such technologies, stating “The dignity, self-esteem... to feel like part of society again, the core of society, not the fringe of society - the psychological effect is dramatic” (Rabinovitch, 2016). The emphasis on standing upright and walking to reclaim dignity aligns with the ableist assumption that those who cannot walk are somehow less complete or integrated into society. The ReWalk was shaped by and perpetuates the ableist view that mobility impairments are problems to be fixed rather than differences to be accommodated.

Despite its innovative technology, the ReWalk is much slower and more cumbersome compared to using a wheelchair in many circumstances, which often makes it a less practical option for daily use. It does have the advantage of giving the user the ability to navigate stairs and curbs, but this further underscores the technoableist ideal of fixing the disabled person to fit the inaccessible environment. While it does achieve its goal of providing some users with the ability to walk, it does so in a highly controlled and limited context, further questioning its practicality as a solution to overcome accessibility barriers.

Marketing.

The marketing rhetoric surrounding the ReWalk exoskeleton reflects ableist ideals by framing walking as the ultimate achievement and presenting the device as a revolutionary solution that transcends wheelchair use. Advertisements and media portrayals often depict the ReWalk and other exoskeletons as a "miracle" technology, likening it to superhero gadgets and celebrating it as a breakthrough that allows paralyzed individuals to walk again (Peace, 2013). The ReWalk is sensationalized as the pinnacle of mobility assistance, overshadowing more practical and immediate needs, such as high-quality wheelchairs and comprehensive rehabilitation. The emphasis on walking perpetuates the ableist notion that walking is inherently superior, marginalizing those who rely on wheelchairs and overlooking the broader accessibility challenges that need to be addressed.

In contrast, the marketing rhetoric from the company itself takes a somewhat more measured approach. The product page for the ReWalk on the Lifeward website highlights the device as “life-changing” for individuals with spinal cord injuries (SCI), focusing on its potential health benefits, which include improved spasticity, trunk control, bowel/bladder function, and improved mental health. The description notes, “The only personal exoskeleton that enables access to environments with stairs and curbs, increasing opportunities to experience the benefits of walking” (Lifeward, 2024). While this language also emphasizes overcoming accessibility barriers, it avoids overtly portraying the ReWalk as a magical solution to the constraints of paralysis, perhaps offering a more realistic view of its practicalities. Despite this, the underlying message still reinforces the idea that walking, rather than wheelchair use, represents a higher standard of mobility.

Implementation.

One of the primary barriers to the widespread adoption of the ReWalk has been its cost. According to 2020 market transactions, the ReWalk was priced at $125,000, making it wildly more expensive than other mobility aids. the ReWalk exoskeleton is substantially more expensive than traditional mobility aids such as wheelchairs. However, in 2024, Centers for Medicare & Medicaid Services (CMS) started to classify exoskeletons within the brace benefit category. With a set reimbursement rate of $91,032, Medicare will now cover a substantial portion of the cost (Angelelli, 2024). This new reimbursement structure provides a clear financial pathway for both healthcare providers and patients, potentially alleviating one of the major barriers to acquiring the ReWalk.

Regarding the ReWalk's actual functionality, it has significant limitations. In its current state, it is not a complete substitution for a wheelchair for its users as it is limited to certain environments. While it allows users to stand and walk, its operational complexity requires users to have adequate upper body strength and motor control to operate crutches or a walker while using the exoskeleton. This requirement excludes individuals with varying degrees of upper body impairment or those who do not have the physical capacity to use the device effectively (Eveleth, 2015; Lifeward, 2024). The user must also have suitable blood pressure, sufficient bone density, be between 5 ft 2 in. and 6 ft 3 in. tall, and weigh under 220 lb (Healey, 2014). Additionally, it is required that it is used under the supervision of a specially certified companion, indicating that there is a greater personal safety risk using a ReWalk than using a wheelchair.

Similar to the iBOT, the ReWalk remains a niche product accessible to a small subset of the population of potential users, demonstrating the limitations of the ableist pursuit in technological solutions to "overcome" disability and the urgency to advocate for more inclusive and universally accessible design practices.

Limitations

There are several limitations to this research paper that should be acknowledged. The research method is a multiple case study of two highly specialized devices, which do not represent the broader landscape of assistive technologies. Both the iBOT and ReWalk are advanced, high-tech mobility aids that cater to very specific subsets of the disabled population centered in the global North. Although these cases were purposely chosen due to their novelty and controversy, the focus on these two specific devices may limit the generalizability of the study's conclusions. Additionally, while the case study discusses the limitations of these devices, particularly in terms of cost and practical usability, it lacks comprehensive data on user experiences. The analysis would benefit from a more in-depth exploration of how users interact with these devices in their daily lives, including testimonials and satisfaction surveys, as well as surveys of potential users of these technologies. This information would provide a more balanced view of the real-world impact of these technologies and uphold the perspectives of people with mobility disabilities.

Future Work

Since this research only explored existing information and resources and lacked perspectives directly from the intended users of these devices, future work on this topic would benefit from conducting interviews and surveys. Additionally, future work for this study could involve expanding the analysis to include a broader range of assistive technologies, beyond the high-tech examples of the iBOT and ReWalk. Collecting more data on various mobility aids, from low-tech solutions like manual wheelchairs to emerging innovations in affordable, accessible design, could contribute to a more comprehensive understanding of how different technologies impact the lives of disabled individuals.

Conclusion

Ableism shapes the design of assistive technology by influencing the assumptions and priorities that drive its development, often leading to technological solutions that attempt to “fix” disabled people to allow them to conform to an inaccessible world. The examination of assistive technologies such as the iBOT Personal Mobility Device and the ReWalk Exoskeleton through the lens of Crip Technoscience reveals the deep-rooted ableist ideals that shaped their designs and that they continue to perpetuate. By reinforcing narrow definitions of what it means to be "normal," these technologies uphold the idea that the onus is on the individual to adapt to environments and social norms established by and for non-disabled people. As a result, they not only fail to challenge existing barriers to accessibility but also contribute to the further marginalization of those who cannot access or use these technologies. While these technologies have made a positive impact on individual users, the broader disabled community continues to be largely underserved. The exorbitant costs of these devices and their narrow user requirements make them accessible only to a privileged few, further marginalizing vulnerable members of the disabled community, particularly those with complex or severe disabilities and those from lower socioeconomic backgrounds. Embracing the principles of Crip Technoscience and rejecting technoableism allows engineers to create technologies that are more equitable and centered on the real needs of users. Instead of forcing disabled people to conform to ableist norms, these technologies would support their autonomy and promote inclusion in a society that truly values diversity in all its forms.

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