

Disability and Assistive Technologies for the Orthopedically Challenged: A Sociological Commentary

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Abstract

Assistive technologies (AT) are meant to represent opportunity for those with orthopaedic disabilities, but it's not quite that simple. The potential for mobility and independence that technology has the capacity to offer for persons with orthopaedic disabilities is constantly challenged by the stigmata of society, affordability of devices, the lack of service delivery, and insufficient policies. This commentary examines assistive technologies in a critical, sociological way by drawing on the contrasting concepts of the medical model of disability, social model of disability, and more recently Critical Disability Theory. This article seeks to analyse the accessibility and abandonment of ATs, along with the psychosocial adaptation and cultural ideas of disability. Assistive technologies are social artefacts just as much as they are tools, influenced by political economy, culture, and social power. The article aims to challenge approaches that are charity-based or donor driven, and questions assumptions of inclusion, transitioning to rights-based, user-centred models based on lived experience, of persons with orthopaedic disability, informed by Universal Design.

Keywords: Assistive technology, disability, medical model, social model, Critical Disability Theory

Disability, Technology, and Society

Disability is an important social issue in the modern era, perhaps even more than it is a medical issue, deeply impacting the personal lives of many. Assistive technologies (AT) attempt to give disabled persons independence, enhancing participation and minimising the marginalisation of persons with disabilities, and trying to do so globally. For persons with orthopaedic challenges, those with mobility impairments, brittle bones, spinal injuries, and amputations, assistive technologies such as crutches, callipers, wheelchairs, orthotics and prosthetic devices are key to negotiating everyday life.

Unfortunately, there are some serious complications. AT does offer the possibility of mobility, work, schooling, and participation in social life, but that same technology could result in stigmatization, fail due to poor design, or create a new type of barrier simply because it is not affordable to procure or maintain. This paradox is nowhere more pointed than in India. With approximately 70 million persons with disabilities (World Bank 2007), and many living in rural parts of India, the deployment of assistive technologies is subject to uneven development, a reliance on non- governmental organisations, and disjointed policies at the state level.

While they are often mistaken for neutral or strictly beneficial tools, many assistive technologies, and especially widely used devices, have additional meanings partially constructed by policy, belief systems, and cultural norms, for better or for worse. Drawing on the medical model, social

model, and Critical Disability Theory (Oliver 1990; Hosking 2008) for comparison, The researchers will explore ATs as both a force for empowerment and for constraint within the context of current day India.

Competing Ideological Models of Disability

The medical model of disability looks exclusively at disability as an individual diagnosis, meant to be corrected. Within this framework, AT devices exist to restore an impaired body to functional normalcy, acting as a “remedial device” (Shah 2013). Orthopaedic aids, such as prosthetics and wheelchairs, are thusly technologies for rehabilitation. The emphasis is strictly on how to treat and normalize the individual and primarily sees disabled persons as patients. There are merits to using this model from a pragmatist’s perspective, but the focus on normalcy does have some disturbing implications for those who cannot be “fixed.”

In contrast, the social model of disability looks at external factors. The problem is not necessarily the individual, but the individual’s surroundings. This model argues that disability arises organically from societal barriers and exclusionary environments (Oliver 1996). From this perspective, assistive technologies are tools to navigate hostile environments, not so much different from climbing gear or scuba gear. A wheelchair does not “fix” an impairment but addresses issues with the environment itself. This model’s detachment from the individual does make it feel incomplete, but it offers an interesting twist on how we normally view disability.

More recently, Critical Disability Theory (CDT) (Hosking 2008) has challenged both of these older models by introducing interconnectedness into the equation, examining the political and cultural dimensions. CDT looks at assistive technologies as being deeply embroiled in relationship dynamics, power structures, and preconceptions about normalcy. This theory insists that inclusion requires a combination of social change, new infrastructure policies, and user-focused devices.

Each framework has its own stakes and objectives. The medical model desires functional independence and normalcy through whatever means necessary. The social model points out that even the best devices won’t help if the environment is still hostile. CDT’s demand for political advocacy and user-centred design is perhaps the most impressive-sounding combination of improvements, but it is also the most expensive and difficult framework to pursue.

Technology as Empowerment and Constraint

Empowerment

Innovations in technology have undoubtedly made a positive impact on the lives of disabled persons, despite any imperfections in our current systems. Improvements to mobility, to independence, to social situations. Assistive technologies have been a transformative force in schools, workplaces, and commerce. Even digital spaces are not immune to this wave of momentum, as information and communication technologies (ICT) allow disabled users to better integrate themselves in cyberspace. Software like TalkBack, JAWS, and NVDA have revolutionized accessibility (Kushwaha 2017).

Back in physical space, the ability to zip around campuses and onto public transports with less impairment than ever before has led to a noticeable increase in the social participation of persons with disabilities. The importance of these ripples of empowerment cannot be ignored. These

technologies are perfect examples of what Goffman (1963) would call “normalizing” devices, expanding on the freedoms of the individual through improved functionality.

Constraint and Abandonment

Still, studies continue to show high rates of device abandonment. Up to a third of devices end up unused after being distributed (Peterson and Murray 2006). Reasons for this underuse include lack of proper training, inadequate maintenance, poorly fitted devices, and perceived feelings of stigmatization or discrimination. Wheelchairs given out by charity are often not suitable to the settings the recipients actually live in—especially in cases involving dirty or muddy roads and narrow hallways—which naturally leads to rejection (Mukherjee and Samanta 2005).

Symbolic meanings also matter, to some extent. Despite their importance, wheelchairs have become a cultural shorthand for disability, sometimes to their own detriment (Harris 2007). Users may internalize feelings of inadequacy, feeling marked by their prosthetic limbs or crutches as “different.” Atherton and Robertson (2006) note that amputees with prosthetics frequently struggle privately with the distress of being “found out” as disabled.

This paints an unflattering but culturally relevant picture of how complex these devices actually are. They are cultural artefacts as much as they are medical ones. While they have the power to reshape identity and self-image, this is both a blessing and a curse.

The Indian Context: Policy, Political Economy, and Culture **State Policies**

The legal framework for disability in India includes the Rehabilitation Council of India (RCI) Act 1992, the Persons with disabilities ACT 1995, and the National Trust ACT 1999. The Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances (ADIP) scheme is to provide assistive devices free, or subsidised, or, at least partly subsidised, often with the support of NGOs. The Mission Mode Science and Technology Project carried out in 1986 aimed to create indigenous technologies. However, policies seem to be impacted by numeric targets and monitoring; a measure of success is the number of devices distributed and do not seem to consider the usability or operability and sustainability of the device (Chaturvedi and Ramesh 2005).

NGOs and Charitable Models

A lot of AT distribution efforts in India are being run by non-profits. Many of these non-profits are faith-based or are funded by charities. The charitable model of AT distribution is based on altruism rather than rights and is largely causing mass distribution of crude devices. Pearlman et al. (2006) once noted that wheelchairs were often inappropriate, inflexible, and non-developmental in their country, and a distribution model without training and repair services will lead to abandonment.

Cultural Dimensions

India is a collectivist society, so families act as primary caregivers with obligations to lives of disabled family members (Chaudhary 2012). While this leads to some degree of implied support, it also impedes agency. The devices are selected by families or NGOs, rather than chosen by the actual end-users. Furthermore, stigma remains an issue: orthopaedic devices, especially ones

that are large and visible, such as crutches, wheelchairs, or callipers, mark users out as “abnormal.” Users hide their braces beneath their clothing and do not use wheelchairs in public, a display of internalised ableism (Polgar 2006). Therefore, assistive technologies in India are embedded in a political economy of charity and dissenting policies and culture.

Lived Experiences and User Perspectives

There remained, however, the suggestion that despite advancements in technology, user voices are often at the margins in any discourse on AT. Psychosocial factors may lead to disabled persons resisting the medical need for AT devices, often to their own apparent detriment, just to feel more “normal.”

It’s not like AT devices themselves are harmful in any way, obviously, but the confidence users gain from mobility is quickly lost due to optics; due to how they’re perceived. Lupton and Seymour (2000) note that while wheelchairs provide mobility, the users are thusly interpreted as “dependent” rather than independent, partially defeating the intended purpose of the device. Device users often find themselves grappling with feelings of both gratitude and resistance to their devices; Barker, Reid, and Cott (2004) even use the terms “reluctant acceptance” or even “grateful acceptance” to describe this only half-way acceptive state.

User perspectives also demonstrated that services are also fell short. Mortenson and Miller (2008) contend that the procurement process is highly professional, and users’ roles in the decision making of service providers’ options is often devolved to clients and have little direct voice in outcome. The lack of training, follow-up and repairs further frustrate users. User satisfaction seems to be more closely related to psychosocial adaptation than to whether or not the devices simply perform their functions (Demers et al. 2002).

There are also notions of self-image to contend with; particularly gender, class, caste, rural vs urban identity, etc. Women with orthopaedic disabilities find their marriage options limited and face compounded stigmas, greatly decreasing their interest in device uptake. Rural users often live in settings where urban-centric devices such as wheelchairs simply do not help with their daily tasks in a meaningful way.

Towards an Inclusive Future: Universal Design and Rights-Based Approaches

Assistive technologies have been acknowledged as a human right by the UN Convention on the Rights of Persons with Disabilities (CRPD 2006). Despite this, studies indicate that access to these technologies in low and middle-income countries remains low. Only 5-15% of those who could benefit from AT actually have access (Borg et al. 2010). Solutions must be built from the ground up, which requires a shift in our thinking around access to AT:

From Charity to Rights: AT are devices that must be given to users as an entitlement, rather than as an act of kindness, therefore AT must become integrated as an entitlement in purpose-built health and social policies.

From Devices to Ecologies: AT devices must exist within a wider system of training, maintenance, environmental accessibility, and universal design. For example, having a prosthetic limb is useless if you are unable to board your public bus.

From Professional Control to User Control: Users must always be at the centre of the design process, the procurement process, and the evaluation process, as used frameworks must be in line with users’ lived and daily realities.

From Quantity to Quality: The success of programs should be measured by sustainability, user satisfaction, and the perceived effects on quality of life. Programs that are exclusively measured based on how many devices they distribute are not necessarily doing everything they need to do. Universal Design, whereby environments, products and services are designed so that everyone can use them (Steinfeld & Maisel, 2012), provides a pathway to connect the divide between AT and mainstream technologies. Realistically, anyone could find themselves benefiting from ramps, accessible public buses, and ergonomic furniture at any point in their life. It's easy to forget that a sudden injury, pregnancy, or even just a specific life stage (such as infancy or old age) can come with a temporary sense of disability.

Conclusion

Assistive technologies are a bit of a paradox. We need them to unlock opportunities for independence and social participation, so there's no obvious future without them. Yet at the same time, they can enforce negative stereotypes of disability, especially when poorly implemented. Their potential to be life-changing transformative technologies is hampered by how poorly people are educated about disability, and sometimes by a lack of empathy in the designs and training programs of the devices themselves.

Technologies inevitably adopt cultural meanings. We must strive to make sure these meanings are made positive and empowering. To unlock their promise, we need to move away from the paradigmatic focus on devices toward rights-based, user-centred and universally designed models for integrating assistive technologies, within larger systems of social change. Only then will assistive technology move past their paradox, and become a means of equality and dignity, moving orthopedically challenged persons from survival to thriving in India.

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