Disability Justice in Human-Robot Interaction: Reflections on Paternalism, Autonomy, and Care for More Equitable Futures

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Abstract

When we design assistive robots, we are largely well-intentioned: we want to use our research and engineering skills to help others. However, to meet this end, as we move towards more disability- and social justice-oriented HRI research, it is important to critically examine the dominant social narratives of disability that shape how assistive robots for disabled people are conceptualized, designed, and deployed. In this paper, we introduce the concept of *robot-mediated paternalism* (RMP), drawing on a multidisciplinary body of literature, including critical HCI and crip technoscience. Then, we discuss how RMP may manifest when assistive robots provide unwanted assistance to disabled people and interfere with their decisions/actions based on assumptions about their autonomy and care needs. Finally, we reflect on and offer actionable suggestions for how HRI researchers might mitigate RMP by aligning their work with the principles of disability justice. Overall, our work advances disability-centered research on assistive robots and, in doing so, supports more equitable, inclusive futures for disabled communities.

CCS Concepts

• **Computer systems organization → Robotics**; • **Human-centered computing → HCI theory, concepts and models**.

Keywords

assistive robots, paternalism, disability justice

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1 Introduction

Recently, HRI has focused on justice and equity-oriented research that critically examines the social norms and values embedded in robots [70, 88, 104, 142, 144, 152]. Central to this is the understanding that robots and society mutually shape each other, and the relevance of evaluating robots' design and user interactions within their broader socio-political context [115]. In this regard, frameworks such as the Equitable Design Framework [104], Feminist HRI [144], Matrix of Domination [142], and Hou et al.'s [70] recent work have been pivotal in illustrating robots' power to mirror and amplify deeply entrenched social hierarchies and systemic biases.

Yet because power is a complex, multifaceted phenomenon, there is still a need to further deepen into how it operates in HRI. This inquiry is particularly salient for assistive robots, whose intended users are often disabled people—a group that has been historically marginalized and vulnerabilized [48, 56, 67, 89, 97, 145]. Indeed, several scholars across critical disability studies (CDS) and crip technoscience have critiqued assistive technologies, including robots, for perpetuating ableist norms [19, 22, 43, 148].

Building on this multidisciplinary scholarship, we reflect on the ways social narratives of disability can shape the design of assistive robots, and how they wield power in interactions with disabled users. We examine these dynamics through the lens of *paternalism*.

Paternalism is the interference of an individual or institution with another individual's autonomy, under the assumption that it is for their own good [45]. Crucially, it operates through power relations and social hierarchies such as ableism, which shapes how various actors intervene in disabled people's lives. Historically, disabled people have been subjected to paternalism due to ableist perceptions that they are passive recipients of care [34, 42, 62]. Hence, there is a risk of assistive robots reproducing similar paternalistic dynamics, and providing unwanted assistance to disabled users in ways that infringe on their autonomy. We describe this phenomenon as *robot-mediated paternalism* (RMP).

In this conceptual paper, we introduce RMP and describe how assistive robots may interfere with a disabled user's decisions/actions, even when intended for their benefit. We explain how this can arise from structural ableism and long-standing presumptions about disabled people's autonomy and need for care. Then, we illustrate how RMP may manifest in HRI research: (1) systemically, (2) during design, development, and deployment, and (3) during interactions between robots and disabled users.

Finally, we reflect on how HRI researchers might mitigate RMP by aligning their work with the principles of *disability justice*. Disability justice is a framework that centers disabled people's voices and lived experiences. In doing so, it simultaneously illuminates the interconnected systems of marginalization disabled people face while also emphasizing ways they can achieve collective liberation [28, 127]. As this perspective has been limited in the HRI community, we provide actionable suggestions for researchers to engage with cross-disciplinary disability scholars and develop research agendas that challenge dominant disability narratives.

By introducing the concept of RMP, outlining the ways it may manifest in HRI, and how to mitigate it by adopting a disability justice-oriented praxis, our work helps advance ongoing efforts towards more disability-centered HRI research.



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1.1 How do we conceptualize disability justice?

1.1.1 Disability Justice. Disability justice is a future-oriented framework that centers the leadership, experiences, and access needs of disabled people, particularly those most marginalized [28, 127]. It can help guide HRI in ways that actively challenge existing social hierarchies and systemic biases, while also fostering more inclusive, equitable interactions between robots and disabled users. Adopting a disability justice approach entails critically examining multiple dimensions of research practice, including: how we conduct our research, who participates and whose positionality shapes the research, how robots are designed and deployed, and the values and norms imbued within them.

There are ten key principles of disability justice: (1) intersectionality, (2) leadership of those most impacted, (3) anti-capitalism, (4) cross-movement solidarity, (5) recognizing wholeness, (6) sustainability, (7) cross-disability solidarity, (8) interdependence, (9) collective access, and (10) collective liberation. We expand on each as we conceptualize disability below.

1.1.2 Disability. Disability exists along a wide spectrum of physical, cognitive, sensory, and psychological impairments, which may be episodic (i.e., fluctuate over time) and not always visible to others. Individuals can also have multiple disabilities, each affecting their lives in different ways [69, 76, 79, 86]. Yet, regardless of the type or number of disabilities, disabled communities as a whole are often incorrectly assumed to be less competent and more in need of help [79, 98]. These assumptions are rooted in *ableism*.

Ableism is a system of oppression that involves devaluing people's bodyminds based on "*societally constructed ideas of normalcy, productivity, desirability, intelligence, excellence, and fitness*" [84]. It results in prejudice or discrimination and can be experienced during interpersonal interactions and on a structural level in the form of historical and contemporary policies that often "privilege people who are positioned as able-bodied and able-minded" [30].

Consequently, challenging ableism underlies the key disability justice principles of *anti-capitalism* and *sustainability*. These principles aim to dismantle normative expectations of capability and productivity, which often overlook differences in bodyminds and access needs [28]. In doing so, disability justice affirms the inherent worth and *wholeness* of disabled people. It also emphasizes the need to avoid oversimplifying disability by accounting for the *intersectionality* of disability. Ableism is deeply interconnected to other systems of oppression, such as racism, sexism, and classism [133, 145]. Thus, having different social identities can lead to people with the same disability experiencing it in vastly different ways.

To account for this, disability justice calls for *cross-movement solidarity* through *leadership of those most impacted*. It also calls for *cross-disability solidarity*, recognizing that true inclusion requires advocating for everyone's access needs. This ensures *collective access* and *collective liberation* of all disabled communities.

1.1.3 Models of Disability. The medical, or "normalization," model of disability often pathologizes any impairments or symptoms, framing them as a problem that needs to be fixed or cured [69, 151]. Under this model, a person's autonomy is typically defined in terms of their capacity for independence and self-sufficiency. A disabled person is therefore considered autonomous only to the extent that they can perform tasks or make decisions without assistance [42, 117].

This common, oversimplified perspective positions disabled bodyminds as "abnormal" and dependent on others for care (e.g., physicians, relatives) [42, 69, 151]. It often leads to imposed or presumptive assistance, which can be demeaning and dismissive of disabled people's autonomy. This, in turn, reinforces power imbalances and perpetuates ableism [42, 98].

Thus HCI/HRI researchers have been reorienting from a medical model of disability to the social model. It frames disability as arising from the inaccessibility of the physical, social, and economic world, rather than a person's bodymind [43, 69, 92]. In doing so, it also highlights how ableism functions as an oppressive system that elevates able- bodyminds, while simultaneously marginalizing those who do not meet these ideals [135].

The social model supports a *relational* view of autonomy, which sees dependency as a fundamental aspect of human life, and autonomy as a socially shaped capacity that can be nurtured through accessible environments and social relationships [42, 85]. This perspective aligns with the disability justice principle of *interdependence*, challenging the widespread belief that independence is the primary means through which disabled people achieve autonomy [36, 62]. Indeed, many disabled people form online and offline communities in which they support one another in daily activities through solidarity and mutual aid. Such horizontal forms of care are usually less threatening to autonomy than those interventions that seek to facilitate independence by "fixing" disability. As a result, they contribute to flattening the hierarchies characteristic of the medical model [108].

Together, these two models of disability reflect conflicting narratives about autonomy and care. These narratives directly and indirectly shape the types of assistive robots developed for disabled people, and what forms of autonomous assistance are considered appropriate, or potentially paternalistic.

1.2 How do we conceptualize paternalism?

Paternalism is an ethico-philosophical concept derived from the Latin term *pater*, reflecting patriarchal structures where the father is regarded as the authority responsible for the wellbeing of dependents [47]. In this context, paternalism describes actions by an individual/institution that interfere with another person's decisions or behaviors, justified by the belief it is in their best interests [45].

However, some of these actions are often critiqued by philosophers for infringing on the individual's autonomy [34, 38, 45, 47]. We note that HCI/HRI frequently use autonomy and agency interchangeably [27]. However, philosophical literature draws subtle distinctions [42, 50]. In this paper, we adopt the relational view of autonomy discussed above, with agency denoting a person's ability to act in the world. While fostering agency can support autonomy, the two concepts do not necessarily coincide [27, 42, 50].

Historically, disabled people have been unjustly subjected to paternalism due to presumptions about their autonomy and capacity to make decisions. Indeed, the global disability rights movement in the late twentieth century was born out of a rejection of the paternalism embedded in the medical, legal, and social systems that denied disabled people agency over their own lives [21, 92].

There are two main ways of distinguishing between forms of paternalism: (1) *Hard vs. soft paternalism*: Hard paternalism interferes with an individual's "voluntary, informed" decision, and is often criticized for infringing on personal autonomy. For example, an autonomous feeding robot that requires a disabled person to finish eating, exemplifies hard paternalism should it override a user's informed choices about how much to eat.

In contrast, soft paternalism targets decisions considered "non-voluntary or ill-informed," aiming to bring the person's choices or actions in line with their presumed "authentic will" [65, 94, 119, 130]. In the context of disability, such judgments can be complicated, relying on (potentially ableist) societal beliefs about a disabled person's capacity to act in their own best interests [24, 130].

An example from HRI might be a robot-monitoring system preventing a person with dementia from leaving their home due to judgements about their capacity to return home safely. This could be problematic, as cognitive function can vary widely across people with dementia, with many individuals, particularly in non-institutionalized settings, continuing to engage in daily activities independently [17, 126]. Furthermore, such interventions, while well-intentioned, overlook the relational view of autonomy– perhaps a person leaves their home to meet a neighbor. Such choices for relational support should be supported whenever possible, as noted by [126].

(2) *Weak vs. strong paternalism*: This is typically differentiated based on the degree and scope of the interference [54, 82]. Weak paternalism is often subtle, and leverages the individual's "*cognitive boundaries, biases, routines and habits in individual and social decision-making*" to steer them towards specific decisions [66]. This is also known as "nudging," and can be used by robots to encourage users to adopt health-related behaviors, like eating leafy vegetables or exercising [31, 128]. In contrast, strong paternalism refers to more substantial forms of coercion that may be physical. For example, a wheelchair robot may physically prevent a wheelchair basketball player from stealing the ball to avoid a collision with another player, as it is deemed too risky.

In short, paternalism is deeply entrenched with existing power structures. It represents an assertion of control that limits an individual's autonomy. This framing is particularly important given recent work on power in HRI, which defines a robot with power as having the "*capacity to influence*" or the "*relative control over another's valued outcomes*" [49, 52, 70, 142, 144]. Hou et al. [70] demonstrated ways robots can exercise various forms of power through their embodiment, design, and social interactions, sometimes with unintended or risky consequences.

This raises important questions, like: *What does it mean for an assistive robot to exert power in the form of paternalism? What are the ethical implications of imposing such a power over disabled people?*

2 Understanding Robot-Mediated Paternalism

2.1 Situating Assistive Robots in Disability Studies

2.1.1 Assistive Robots. Assistive robots are embodied technologies that provide social, physical, or sensory support to disabled people [59, 89, 97]. Socially assistive robots (SARs) are largely used to provide companionship and support, and have largely focused on: older adults with and without cognitive impairments, and Autistic people (mostly children) [1][32, 41, 59, 89, 114]. Physically assistive robots are largely used by people with upper and lower limb impairments, supporting daily living activities (e.g., mobility, eating) and rehabilitation [29, 95, 97, 136]. Finally, sensory assistive robots have been used by, for example, blind, deaf, and deafblind people to support sensory augmentation, navigation, and language learning [48, 78, 103, 118, 131].

2.1.2 Critical Disability Studies and Crip Technoscience. Several scholars in CDS and HCI have analyzed how assistive technology design can fail to respond to the needs of the intended users due to"technoableism", the harmful belief that disability is a problem to be fixed by technology [19, 69, 76, 134]. These beliefs can be attributed to a lack of deep, community-rooted knowledge about disability, resulting in what disability activist and designer Liz Jackson describes as a "disability dongle". It is a "*a well-intended, elegant, yet useless solution to a problem we never knew we had*" [74].

To design assistive technologies that can be emancipatory for and respectful of disabled people, scholars in crip technoscience emphasize the importance of centering disabled people as experts at creatively adapting and repurposing technologies to navigate ableist environments [64]. They also advocate for designing technologies that challenge dominant disability narratives. This can be achieved by, for example, supporting interdependence instead of independence [64, 93].

Recently, there have been growing calls within HRI and HCI [15, 60, 69, 76, 114] to use CDS and/or crip technoscience as lenses to examine the ways in which assistive technologies, like robots, "relate to, reify, and potentially challenge ableism" [43].

2.2 Defining Robot-Mediated Paternalism

There has been substantial discourse on "technology paternalism" [124], which refers to systems that influence or constrain user behavior in ways intended to promote their best interests (see Sec. 1.2). Due to the unique properties of their embodiment and capability to act autonomously [44, 50, 80], robots can enact this paternalism in ways that differ from other technologies [44, 70, 80].

Since a robot's characteristics and actions are often intentionally designed, guided by goals or assumptions set by researchers and developers, it is crucial to examine how they are determined and their implications for users, particularly in the context of paternalism. For example, recent HRI research shows that when assistive robots act autonomously, they can interfere with users' decisions and diminish users' sense of agency [40]. This is often unwanted by many disabled people [29, 60], likely for being paternalistic. Thus, in our work, we consider what *robot-mediated paternalism* towards disabled users may look like, and then examine how it may manifest in HRI research so as to identify ways to mitigate it.

2.2.1 Our Definition of Robot-Mediated Paternalism (RMP). RMP refers to situations where a robot autonomously intervenes in a user's decisions or actions to benefit or protect them [61]. This interference can occur regardless of whether the user is aware of, consents to, or agrees with the robot's overall objective. We call it

[1]We note that we use identity- or person-first language based on preferences noted in [120]. However, this can vary within and across disabled communities.

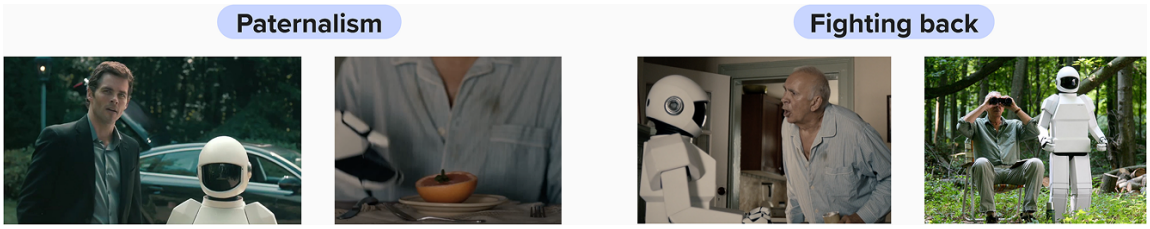


Figure 1: A fictional example of robot-mediated paternalism (RMP) from the movie *Robot&Frank* and ways to resist it. a) Frank's son delivers a health-monitoring robot and forces his father to use it. (b) The robot interferes with Frank's eating habits by discarding his sugary breakfast cereal and giving him a grapefruit, to promote healthier choices. (c) Frank rebels by swearing at the robot, tries to send it away, and finds hidden cookies for breakfast. (d) Later, the robot attempts to convince Frank to garden, but he repurposes it to instead support his preferred hobby, robbing houses.

robot-*mediated* paternalism, as a robot's paternalistic behavior must be evaluated in the context of the human-led design choices that shaped it. RMP can manifest in two distinct ways: (1) the *functional objective*, and (2) the *manner* in which it pursues this objective.

The functional objective of a robot refers to the purpose for which the robot is designed and deployed. It constitutes RMP when this purpose and context of use conflicts with its intended user's interests and wishes. This is illustrated by Jackson et al.'s [74] #DisablityDongle tweet about stair climbing robots for wheelchair users, which Emily Ladau critiqued on social media: "Wheelchair user here. I don't actually want or need this. It isn't helpful. It doesn't account for inaccessibility beyond entry points… Tech companies: stop wasting money on building robotic 'fixes.' Support elimination of structural inaccessibility."

We also see RMP in the film *Robot&Frank*, where Frank, an adult with health issues, is forced by his son to use a health-monitoring robot (see Fig. 1). Here, the very existence of the robot and its context of use in Frank's home also constitutes RMP, as it is there against his wishes.

Finally, even if an assistive robot and its context of use is in line with a disabled community's priorities, RMP can manifest in terms of *how* it pursues its objective. For example, Frank's health-monitoring robot can enact RMP towards him by physically interfering with his actions (e.g., throwing away sugary breakfast cereal and replacing it with grapefruit, without Frank's consent) or persuading him to take up a safer hobby (e.g., gardening instead of robbing houses).

3 Robot-Mediated Paternalism in HRI

Drawing on real and speculative examples from prior work on assistive robots and other AI-driven technologies, we will now outline how RMP currently manifests or may emerge across three levels: (1) systemically, (2) during the robot's design, development, and deployment, and (3) during interactions between the robot and disabled end-users. These levels are co-constitutive, as long-standing structural inequalities and societal ableism inadvertently shape research and development practices and this, in turn, may manifest as RMP during user interactions.

This section is not intended as a critique of individual researchers, nor as an exhaustive account of RMP. Instead, it seeks to prompt reflection on the complex factors shaping research agendas and the socio-ethical ramifications of this work for disabled communities.

3.1 How can RMP manifest on a systemic level?

Although RMP can occur at the individual user / robot level, it is perhaps most constructive to start by framing the systemic issues that can lead to RMP in the first place. These include the policies and funding priorities of governments and institutions that shape how assistive robots are designed, their contexts of use, and who they are marketed to.

Several scholars have critiqued that the research and development of assistive robots is shaped more by governments' political and economic agendas than by the values and priorities of disabled communities [26, 43, 87, 100, 146]. Government funding priorities stem from multiple factors, including the devaluation of care work and its commodification [87, 106, 112, 146].

This reflects the trend of reproductive labor shifting from family to migrant laborers, much to the chagrin of governments, who then attempt to compensate by suggesting robots and AI will solve these "crises" of care [112, 146]. These initiatives are put forth despite the limited uptake of care robots globally and the ambivalent perspectives from their intended users [53, 87, 146].

A related phenomenon is the conflation of aging with disability, despite them being different populations, and despite this being a harmful conflation [81]. Here, governments will often frame disabled people (and older adults) as economic burdens necessitating immediate policy responses (like technology) [26, 53, 87, 112], instead of investing in the care workforce or labor protections.

Bechtold and Capari [26] identified implicit assumptions about aging, health, and disability embedded in EU *Active and Assistive Living* projects. These include beliefs that older adults are dependent on care environments, and that older adults with disabilities want to *be independent*—but *with the help of technology*, since they supposedly *do not know what their needs are and how to deal with them*. These beliefs are technoableist, and at odds with both the social model of disability and the disability justice framework, which embrace a relational view of autonomy and, importantly, recognize disabled people as experts of their own lived experiences.

Societal pressure can further perpetuate RMP, particularly when it forces disabled individuals to use such unwanted technologies for their "own good", regardless of their own personal wishes.

To illustrate this, we refer to an examination by Neven et al. [99] of an intelligent monitoring system for older adults with dementia or Parkinson's disease.This system was designed as a supplement to home visits by care workers to support independent living at

home. Not all users were comfortable with it, but were ultimately persuaded by other actors to accept it, either for their own safety, or as the only alternative to institutional care.

Some were concerned that resisting the technology could be perceived as resistance to independent living, and result in a subsequent decline in the quality of care provided by the care workers. A recent systematic review highlighted similar concerns from older adults about their privacy, autonomy, and perceived lack of power to refuse smart monitoring systems [46].

Ultimately, RMP at a systemic level is complex and emerges from a multitude of intertwined systemic biases, including ableism and ageism. This highlights the importance of critically examining the rationale presented by different decision-making authorities and understanding how conflicting interests are negotiated in shaping research agendas and funding priorities.

3.2 How can RMP manifest during design, development, and deployment?

To further understand how RMP may manifest, it is important to examine the *manner* in which researchers pursue their objectives during the design, development, and deployment of assistive robots.

3.2.1 Design. While the increasing adoption and emphasis on participatory design (PD) within HRI has helped center and elevate the voices of disabled people, PD alone can be insufficient in avoiding RMP. This is because research and design decisions are often shaped by societal beliefs or assumptions about disabled people [69, 125], which can result in RMP manifesting in several ways.

First, RMP can emerge at the project initiation stage when there are misalignments between the project's goals and the disabled community's goals/priorities. For example, this concern has been raised by neurodiverse HRI researchers on how robots are used with people with autism [114, 140].

Hundt et al. [72] conducted an umbrella review of said robots, and found that among Autistic people's research priorities, interventions aimed at helping them conform to neurotypical social norms ranked second lowest (ranked #24/#25). However, a meta analysis by Rizvi et al. [114] showed that the #1 way robots are used in the HRI literature is, in fact, exactly this (well over 100 for treatment, and less than three promoting Autism inclusion and awareness). This suggests an inverse relationship between what the Autistic community desires in terms of research foci, and what the HRI community is focusing its efforts on. Thus, these sorts of disconnects between communities can result in assistive robots reflecting RMP, and necessitate careful reflection.

RMP can also emerge when projects operationalize their objectives based on oversimplified understandings of disabled people's lived experiences. As Maibaum et al. [87] and Van Wynsberghe [137] note, decisions about what should or should not be automated in care robots often involves breaking care down into a series of discrete, functional tasks. While this approach helps reduce the complexity of engineering care robots, it risks decontextualizing the relational experiences of care among disabled people, which are important to many communities.

This abstraction may result in the development of *disability dongles* based on idealized and simplified personas of disabled users, thereby increasing the risk of imposing forms of assistance that may not align with what users actually want.

Finally, assistive robot designs that reflect RMP may also emerge while engaging in PD, as societal ableism and varying experiences of disability can implicitly shape participants' ideas/design decisions [125]. Furthermore, given the limited resources available to recruit participants who represent the full range of perspectives of a community, some viewpoints may be missing. This may result in designs that reflect the priorities of one subgroup within the disabled community while overlooking the needs/wishes of others.

For example, when engaging in PD with both children and adults with ADHD, Gerling et al. [58] found children tended to have more negative views of their disability due to societal ableism, resulting in technoableist designs that "fix" their disability. However, these ideas were in direct contrast to the perspectives of adults with ADHD who suggested designs that leveraged their strengths instead. We use this to illustrate how prioritizing one group's perspectives when designing robots (e.g., children), may lead to unwanted robot behaviors towards others (e.g., adults), thereby enacting RMP.

Thus, to mitigate RMP during design, it is essential to evaluate the overall objectives, who is being included, and how their experiences of disability may shape design outcomes.

3.2.2 Development. Scholars across several fields have demonstrated that researchers/developers can both intentionally and unintentionally embed moral norms into technologies to achieve certain ends [90, 91]. This results in the robot potentially enacting RMP based on assumptions of the user's best interests as encoded by robot developers [90]. This is especially concerning as generative AI becomes increasingly integrated into assistive robots [88, 143].

Generative AI models are trained on data that reflects dominant cultural norms, including decisions about what language or behaviors are normal and aligned with one's "best interests". Recent work shows that LLMs often propagate subtle, yet harmful stereotypes of disability, which can impact the manner in which a language-capable robot interacts with a disabled user and potentially interferes with their autonomy without their knowledge or consent [55, 105]. This concern is further exacerbated by the growing prevalence (and inescapability) of generative AI systems, leaving disabled individuals particularly susceptible to RMP.

Indeed, AI model assumptions have been noted to lead to harmful behaviors by autonomous systems. For instance, [139] discussed the dangers of autonomous vehicles failing to recognize wheelchair users, which could result in accidents due to AI misclassifications of what a pedestrian should look like. This highlights the need to ensure that AI models and other computational frameworks embedded within assistive robots do not oversimplify disability into a discrete set of generic traits and stereotypes, as this can lead to erroneous judgments about how disabled people should behave or interact.

3.2.3 Deployment. Deployment is a phase in which the perspectives of different actors, like HRI researchers, caregivers, institutions, and marketing professionals can significantly influence decision-making. These include decisions about where a robot is deployed, which user groups it is marketed to, and how the robot is intended to interact with its users. RMP may inadvertently emerge

during deployment when these actors' perspectives conflict with the preferences or choices of disabled users.

A recent study by Wangmo et al. [138] on prevailing attitudes of Paro in care settings found that many older adult participants considered Paro's toy-like design too demeaning and infantilizing for "competent adults," and would not want it for themselves. At the same time, both older adults and formal/informal caregiver participants generally found Paro acceptable and even potentially beneficial for people with dementia, due in part to their perceptions of the community as childlike and with diminished autonomy. This illustrates how the acceptability of a robot's context of use for different actors can be shaped by its design, the assumptions it propagates about its users, and how well it aligns with their own beliefs about those users.

Another way RMP may manifest during deployment is when assumptions are made about who would benefit from a robot and how users should engage with it. During a multi-year ethnographic study of eldercare robot use in Japan, Wright detailed an example of care staff expressing concern that a resident with dementia, Ito, spent significant alone time with Paro and increasingly withdrew from social settings [146]. Hundt [71] critiqued the absence of Ito's own perspective in this account, and notes that many people in assisted living facilities live with multiple disabilities, and that Ito may, for example, have unrecognized sensory needs that Paro helps soothe. This is especially important considering that autistic people are at higher risk of developing dementia [35], and that someone living with both may use Paro for self-regulation or stimming [71].

Thus, after robot deployment, it is important to avoid pathologizing unexpected forms of robot use. Doing so could restrict a user's autonomy and deny them the freedom to interact with the robot in ways that are meaningful to them. Yet, we also acknowledge that this issue is complex, and shaped significantly by broader social and cultural perceptions of disability.

3.3 Interpersonal Interactions

Given the term "paternalism" might not always be explicitly used in the field of HRI, we now consider what RMP may look like during interactions between a robot and a disabled user. In doing so, we consider how different manifestations of RMP may be perceived as helpful assistance, or unwanted interference.

We can look towards the growing body of work on robots designed to covertly or overtly persuade users to do the "right" thing in a given situation, out of concern for a user's safety and well-being [70]. These systems use robotic nudges, which can take form via a robot's linguistic prompts, its morphology, its facial expressions, body postures, or other affective cues [37]. Examples in HRI include: increasing one's charitable acts [31], encouraging healthy eating [107], or engaging in exercise [111, 116]. These examples illustrate weak forms of RMP, and we note that they are likely to be perceived as providing helpful assistance if they align with a user's goals and intentions. For example, our recent work shows that people with chronic illnesses would find it helpful if telepresence robots nudge them to step away from an activity in order to reduce the chances of post-exertional malaise [60].

On the other hand, if a robot enacts stronger forms of RMP, it may be more likely viewed as an unwanted interference. For example, [147] found that robots that display negative social control strategies (e.g., criticisms, blame) to reduce sedentary behaviors were perceived as threatening freedom and regarded as less socially appropriate than robots that use positive social control strategies (e.g., showing care). Thus, it is clear that we must be cautious about the forms of RMP we embed within our assistive robots, even if they are designed with the user's interests in mind.

4 "Dreaming Disability Justice" in HRI

Having critically examined the ways RMP may manifest in HRI, we envision a future for the field of HRI that actively resists it (see Fig. 2). To move toward this vision, we articulate several approaches that HRI researchers can take to align their work with the principles of disability justice, such as interdependence and intersectionality. Inspired by Winkle et al., Young, Rinaldi, and others [113, 144, 149], we also include reflective questions and actionable suggestions to support researchers in developing research agendas that are more responsive to disabled people's priorities and avoid RMP. Like any social justice endeavor, achieving disability justice can be challenging, yet immensely fulfilling, and we as a community can work towards it. We hope this work supports the HRI community in orienting towards more disability-centered research.

4.1 Enculturation

As HRI researchers embark on a research project involving assistive robots, we encourage them to begin with *enculturation.* Enculturation is the process through which individuals gradually acquire "those rules, understandings, and orientations that provide, among other things, contoured maps of the landscape of community life and heuristic guides for effective participation" [109].

Like any other community, disabled people have multifaceted identities that together form a rich culture of cross-disability solidarity and resistance to ableist norms. While some HRI researchers may be able to draw on their own lived experiences to connect with specific disabled communities, we ask others to reflect on how they might go beyond their positionalities, assumptions, and disciplinary norms to engage in more culturally sensitive research practices. However, for researchers new to a disabled community, it can be challenging to navigate these intricacies. Thus, we suggest the following: (1) *engaging* in disabled-led, disability-centered scholarship and media, (2) *reflecting* on the research agenda, and (3) *collaborating* with disabled people throughout the research process.

4.1.1 Engage with Disability-Led, Disability-Centered Scholarship and Media. We encourage HRI researchers to form communities that support ongoing, reflective learning of existing disabled-led, disability-centered scholarship, media, and activist work. This helps encourage research that is more grounded in the socially and politically shaped realities of disabled communities. There are many ways to engage with the vast resources available, and so we provide some actionable suggestions below.

In our labs, we can start reading groups, attend (or organize) seminars/events at our institutions, and take courses in areas new to us, allowing us to expand our own learning. There are several related fields of research we can draw from, such as CDS, feminist crip technoscience, and science and technology studies (STS). Some excellent books which have supported our own learning, include:

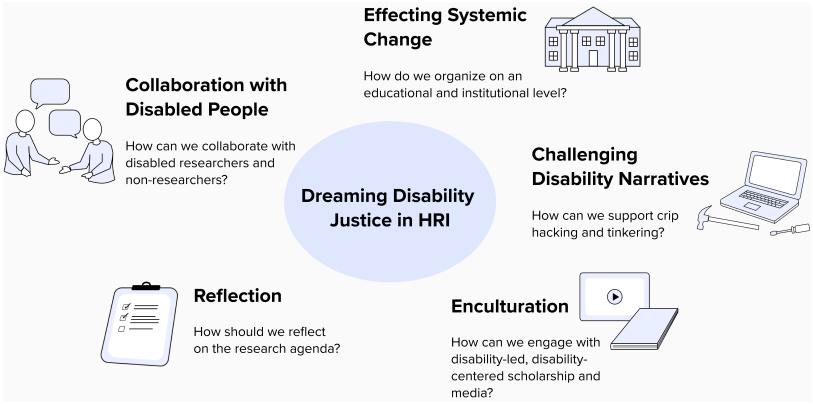


Figure 2: HRI researchers can align their work with the principles of disability justice through: (1) Enculturation, (2) Reflecting on one's Research Agendas, (3) Collaborating with Disabled People, (4) Challenging Disability Narratives, and (5) Effecting Systemic Change.

Leah Lakshmi Piepnza-Samarasinha's *Care Work: Dreaming Disability Justice* [108], Alison Kafer's *Feminist, Queer, Crip* [77], and Ashley Shew's *Against Technoableism* [121], and others [33, 150]. It is also valuable to explore the works of other non-institutionally affiliated disabled researchers/designers, like Liz Jackson [**?**], or advocacy organizations such as Sins Invalid [13] and the Disability Visibility Project [6]. As we read, we can ask questions of others and encourage them to consider alternative ways of thinking about these topics.

Alternate, and perhaps more accessible ways of engagement also include exploring posts on disabled social media communities like Imani Barbarin's Crutches and Spice [23], or hashtags like #Spoonie and #ActuallyAutistic [22]. There are also many visual arts accounts of the socio-political history of disabled people such as the film, "Crip Camp: A Disability Revolution".

4.1.2 Reflect on one's Research Agenda. While engaging with disability scholarship or media, we encourage reflexive journaling (see examples in [22, 57, 141]), as this may be valuable to future HRI researchers. This will also facilitate self-reflection on how enculturation has supported or dismantled prior assumptions. We provide some questions to support this reflection process.

First, *what priorities have the disabled community identified, and what is the nature of these priorities?* In particular, we recommend looking beyond just their medical needs/care, and instead consider how we might support disabled people in *providing* care to their communities. Community care can take different shapes, such as cultivating joy or political advocacy. It may also involve differently disabled people supporting one another in everyday life. For example, [72] provides a list of these priorities in relation to autistic people. This form of reflection will help with developing a research agenda that truly supports the community's "criptopian" imaginings of the future of disability [16].

Second, *in what ways does ableism manifest and impact the disabled community?* As we demonstrated in Sec. 3, research processes with disabled communities can be impacted by structural ableism and historical assumptions about disability. Understanding this will be a first step in uncovering ways a robot may perpetuate or mitigate issues such as RMP. Additionally, understanding how ableism impacts disabled people may help researchers build more ethically sensitive relationships with them.

4.1.3 Collaborating with Disabled Researchers and Non-Researchers. Another approach is to invite disabled people from the community to join one's research team, as HRI researchers have increasingly done in recent years, forming long-standing collaborations and co-authorships. Example from HRI include Nanavati et al. collaborating closely with Tyler Schrenk [95, 96], Ranganeni et al. working closely with Henry and Jane Evans [110], Hung et al. collaborating with Jim Mann [73], and in our own work with the Patient-Led Research Collaborative [60] and people with cancer [75].It is particularly important to include people from marginalized groups who lack institutional or class power. There are many ways to go about developing these relationships, ranging from informal collaborations with the community to connecting with advocacy organizations, to creating more formal partnerships with groups like The Disabled List [7].

However, we acknowledge that this can be challenging. It may be difficult to gain access to disabled communities for multiple reasons. This includes the inaccessibility of research practices [86], the "access labor" involved in participation [22], and broader issues of mistrust rooted in historically harmful or extractivist research practices [68, 83, 123, 129]. In these cases, it is especially important to interrogate the literature that forms the basis of the research, and to uplift marginalized voices through citational justice [39].

It is also worth including occupational therapists (OT) [101] and informal caregivers [132], not just physicians, as they can provide a more holistic, context-sensitive and relational understanding of disability.

4.2 How can we challenge disability narratives?

As we develop our research agendas, we should consider what narratives of disability it reinforces or disrupts. Whichever narrative of disability it supports, whether it is that a community needs social companionship or physical assistance with certain tasks, we should expect that some disabled people may reject these narratives.

Many disabled people have formed communities around *crip hacking* and makerspace culture where they creatively repurpose or



Figure 3: Challenging disability narratives in HRI. Top left: Simone Giertz programs assistive robots that intentionally fail, using humor to challenge disability narratives. Bottom left: Chieko Asakawa [18] designed and built *AI Suitcase*, a robot to support visually impaired people with navigation while traveling. Right: People with dementia personalizing their Stretch 3 robot base to showcase their identity [12].

build their own tools and technologies in response to access frictions as a form of political resistance [16, 63, 64]. Sometimes hacking can also be used to surface tensions between how a technology was meant to be used, and how it ultimately was used.

For instance, Garrett and Hawkins [57] described how disabled dancers engaged in improvisation with a pair of industrial Franka robots. Here, the dancers encountered "glitches", when the robot arms stopped moving due to their safety-locking mechanism. This provided the dancers an opportunity to make visible misalignments between what the HRI researchers envisioned for the project and the dancers' embodied practice, and prompt critical reflection.

Other times, disabled people may engage in hacking practices simply for the joy of invention, play, and creative expression. Inventor and performer Simone Giertz [3] is known for making "shitty robots", which completely (and hilariously) fail to do what they're supposed to (e.g., a makeup robot which gets lipstick all over her chin, or a breakfast robot that pours the cereal, milk, and spoon nowhere near the bowl, and all over the table) (see Fig. 3). Early in her career, Giertz was diagnosed with a brain tumor, and [25] discusses how her subsequent performances demonstrate crip camp and humor in robotics to disrupt ableism.

4.3 How can we show collective care and solidarity?

Beyond the practices mentioned in Sec. 4.1, realizing disability justice requires a shift in how we view the purpose of our research. For example, are we developing an assistive robot only to accommodate a disability, or can we also utilize our research as a means to challenge societal biases and bring about appreciation for more inclusive ways of relating and being?

As HRI researchers and practitioners, we are able to effect change on multiple levels. On an educational level, we can hold workshops (e.g., A3DE at HRI 2024 [15]), organize courses and/or write textbooks (e.g., Teaching Accessible Computing [102, 122]), and support disability-led hackathons (e.g., AccessHack [2]). We can also support communities furthering disabled inclusion in research and education, such as AccessComputing and DO-IT [1, 8, 9], by volunteering our time, mentoring undergraduate students, and referring disabled students and colleagues to their mentoring resources.

Finally, at the institutional level, we can support the realization of disability justice in HRI by helping set research directions with funding agencies and investors. Many countries that fund health and accessibility research have a concept of patient and public involvement and engagement (PPIE), which is "active participation of citizens, users and carers...in the development of healthcare services, and as partners in their own healthcare" [14, 20, 51].

This approach closely aligns with the disability justice principles of cross-disability, cross-movement solidarity and collective access. For example, in HRI, Hung et al. [73] embraced a PPIE approach to consider how to use telepresence robots as a participatory research tool to support deep inclusion of disabled research partners across multiple research projects, and was quite successful. Some research organizations such as the NIHR in the UK, and PCORI in the United States *require* PPIE practices, and, in industry, the Global Disability Innovation Hub furthers disability justice across 40+ countries [10]. Best practices include forming advisory boards comprised of the populations researchers/companies aim to work with, and ensuring topics are disability-led and in partnership with advocacy groups. As HRI researchers and practitioners, particularly as we become more senior and have more opportunities to set the direction of our field, we can help facilitate such practices in our own communities and beyond [4, 5, 11].

5 Conclusion

We draw from trans-disciplinary scholarship to introduce the concept of RMP, and describe how it may manifest in HRI due to structural ableism and historical assumptions about disabled people, their capabilities, and needs. We use this exploration of RMP as a basis to posit that HRI research would benefit from a more disability justice-oriented praxis. To support this endeavor, we provide several pathways for HRI researchers to engage with the principles of disability justice, including: enculturation, supporting crip hacking to challenge disability narratives, and effecting change on an organizational/educational level. To further our understanding of RMP and ways to mitigate it, we encourage others in the community to extend or refine our situated reading of the literature in future works. Ultimately, we hope that this paper supports the development of more equitable and inclusive assistive robots and fosters a deeper commitment to disability-centered research in HRI.

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