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Physics and ableism: One disabled physicist's perspective

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In this article, I argue that mainstream physics epistemologies and physics teaching and learning practices reify ableism, augmenting the marginalization of disabled and chronically ill people in physics. I make this claim from my standpoint as a physicist who became disabled and chronically ill when I was 2 years old.

To name some of the many ways that ableism has marked my life: ableism constructs disabled and chronically ill people as abnormal and "other," aberrations of an ideal.[1,2] Within ableism, my disabled body-self is a symbol of "imperfection [and] failure to control the body," a "constant reminde[r] of the failures of [science and medicine to control nature], and of the inability of science and medicine to protect everyone from illness, disability, and death."[3] Disability is often associated with "tragic loss, weakness, passivity, dependency, helplessness, shame, and global incompetence,"[3] a logic that has promoted eugenicist discourse in the era of COVID, reflected in the Director of the CDC's saying that she was "encouraged" by results showing that over 75% of the vaccinated people dying from COVID had comorbidities, adding that "really, these are people who were unwell to begin with."[4]

The notion that my body exists in a permanent state of imperfection and lack of control—and that this could happen to anyone at any time—is so unbearable to able-bodied culture that it subjects disabled and chronically ill people to a framing of disabilities and chronic illnesses as a choice and thus our responsibility to control.[1–3] This framing becomes a "should" that compels others to try to rid us of our disabilities and chronic illnesses (via kale and yoga, no less) and cultivates a common-sense "of course" narrative that a future with no disability (and thus no disabled people) is something to celebrate.[5] The ableist notion that it is my responsibility to seek a cure for my disabilities and chronic illnesses means that I am expected to comply with the advice of medical practitioners, even when medicine offers me treatment or advice that is counterintuitive or harmful to me, because medical knowledge is framed as superior to my lived experience.[2,3] My incapacity to cure myself or be cured by medicine—that is, to "overcome" my disability and remain "fully independent"—makes me a burden,[2,5,6] where independence is defined in terms of a norm constructed by ableism, and, importantly, by capitalism, an extractive system that values production and efficiency.[1,2,6] Capitalism has driven COVID-era rhetoric of returning to a "normal" where disabled people have such little value to public life that we "can just stay home."

Finally, ableism demands emotional labor from me, asking me to accept an onslaught of suggestions for cure with gratitude (or risk judgment that I don't want to get well), to consistently offer evidence that I am working to "overcome" my disabilities, to graciously accept pity from others, to refuse to accept the chronicity of my illness (or else be narrated as having "given up hope"), to accept my assigned role as an inspiration to nondisabled people as appropriate[2,3,6]—in short, to "embody for others an affirmative answer to the unspoken question, 'Yes, but in the end, wouldn't you rather be more like me?'"[1] Importantly, all of this—the moral imperative for cure, the disabled body as aberrant, disabled people as locations of pity and projections of existential fear—is a social construction, a "cultural arbitrary"[7] that is agreed upon by ableism but decidedly not "truth."

As important as the ways that I have been impacted by ableism are the ways in which I have been shielded from it due to my (dominant) race, class, sexuality, size, and educational privilege, and by my passing as nondisabled in some contexts. For example, I have had continuous access to medical insurance. I have not had to choose between marrying my partner and keeping disability benefits, nor been forced into poverty to keep disability benefits.[6] I have not experienced racism, queerphobia, transphobia, or fatphobia in care settings.[2] The experiences of ableism that I both have and have not had shape what I perceive and what I share here. *I do not speak for all disabled people.*

The examples I offer above reflect a definition of ableism as "the socially constructed system of norms which categorizes and values bodyminds based on concepts of ability and disability"[8] and then uses these constructions to oppress disabled and chronically ill people. Importantly, these examples highlight that ableism is structural, requiring structural (not individual) solutions.[3] This is especially true given that ableism is deeply entangled with other systems of dominance. Ableist rhetoric has been used to justify enslavement, dispossession of land, "curing" trans and queer folks, and fatphobic medical practices[1,2,5,9]; and white supremacy, transphobia and heterosexism, classism, patriarchy, and fatphobia have played a role in the "material production of disabled bodies."[5] Having offered these examples and definitions, I now offer two examples of how I see mainstream physics epistemologies and physics teaching and learning reifying ableism.

First, physics culture prides itself on discovering universal laws of nature, those small number of fundamental principles that can explain and predict how the physical world works. Claims of universality in physics rely on practices that approximate objectivity and neutrality[10]: physics laws are universal "in the sense that [they are] beyond any particular condition or existence."[11] Cartesian dualism philosophically supports the possibility that (embodied) humans can participate in the discovery of universals by posing that the mind is separate from the body and thus is "undetermined, unconditioned by the body."[11] That is, Cartesian dualism articulates a mechanism by which the mind can be neutral and objective even if the (corporeal, particular) body cannot.

In Cartesian dualism, and in those sciences such as physics that rely on it, knowledge production is thought to happen via transcending the body, particularly those experiences of the body that are perceived as particular, value laden, and culturally specific. In a discipline whose knowledge and knowledge-generating practices are historically (and thus culturally)

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white, male, able-bodied, straight, etc., such an epistemology supports a framing of "non-normative" bodies as not to be trusted, as automatically particular, value laden, and culturally specific. When the cultural specificity of physics is hidden by notions of objectivity and neutrality,[10] such "others," in bringing their situated understandings of the physical world (as all of our understandings are), can be dismissed with rhetoric such as "that's not science," a form of evasion that appears race-, gender-, class-, ability-, size-, and sexuality-neutral, reifying systems of oppression. Cartesian dualism further reifies ableism in ignoring that to "disengage oneself from the body by ignoring or discounting its needs and sensations is generally a luxury of the healthy and able-bodied,"[3] instead treating this disengagement as a valued norm. In fact, ableism *disallows for* disabled and chronically ill folks to "forget" they have a body; the construction of our bodies as abnormal and aberrant is part of what upholds able-bodied supremacy.[9] Finally, the myth of universality strengthens the illusion of control over the natural world, reifying the ableist notion that bodies can (and should) be controlled, in all of the ways I name above. This connection between Cartesian dualism and the impetus to control or conquer has been linked to colonization by Indigenous scholars.[5,12]

As an aside: Someone will inevitably ask if I think that Cartesian dualism is itself ableist or is taken up in ableist ways. What I can say is that Cartesian dualism is a philosophy that has cultivated an ideology that is used to substantively rationalize action toward ableist ends. Is Cartesian dualism then ableist? I don't know. I'd like to have that conversation.

Back to my examples: If I am right that physics epistemologies reify ableism, so too do mainstream physics teaching and learning practices, in form and substance. The perception that there exist a small number of fundamental laws that can explain and predict the behavior of systems—fundamentals that are unconditioned by time, place, or body—has promoted a culture of competitive argumentation, an emphasis on precision in language, and a belief that there exist single right answers. In many cases, this translates to curriculum development and classroom practice focused on refining students' ideas about the physical world, toward more technical, more canonical expressions.

Not only do these practices set up a hierarchy of ability, including what "counts" as physics knowledge and who, therefore, can be physics knowers, they also discipline learners' experiences of reality in ways that reflect ableism. Both medical doctors and physics instructors have "undermine[d] [my] belief in [myself] as a knower," "cast[ing] authoritative doubt on [my] most powerful, immediate experiences, unless they are confirmed by authorized medical [or physics] descriptions."[3] Just as "the cognitive authority of medicine causes [me] to censor the descriptions [I] offer to doctors, to pre-form them in what [I] hope will be scientifically acceptable definitions of definite, recognizable symptoms"[3] that will allow me to get the care I need, so too does physics instruction ask students to discipline the language they use to describe their experiences of the physical world, in many cases correcting them for being "wrong" when their language and ideas do not align with canonical ones. These parallels augment the marginalization experienced by disabled students, and students whose accounts of reality are routinely doubted due to racism, misogyny, heterosexism, transphobia, fatphobia, and all other forms of oppression.

If there is anything I hope nondisabled readers take away from this piece, it is that ableism pervades even the most basic notions of what physics is. For disabled and chronically ill readers, I hope this piece honors you. As for what to do: we have to first acknowledge that ableism, white supremacy, heterosexism and transphobia, patriarchy, fatphobia, and classism are interlocking systems of oppression whose dismantling requires an intersectional approach. Disability justice is one such approach that embodies principles of interdependence, intersectionality, leadership of those most impacted, sustainable movement building, and collective liberation.[2] Engaging disability justice in physics would involve asking questions about how these principles might reshape our epistemologies and classrooms, with disabled and chronically ill folks, particularly those who are multiply marginalized, at the center of the dreaming.

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