

Interrogating the impact of scientific and technological development on disabled children in India and beyond

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Products of scientific and technological developments are emerging at an ever increasing speed whereby these developments impact the daily life of humans in numerous ways. We focus for this paper on two classes of emerging products; one being social robots and the other being products that are envisioned to increase the cognitive abilities of humans beyond the species-typical and their impact on aspects of childhood such as education and self-identity formation. We analyse the utility and impact of these two classes of products through the lens of the alternative report on India to the Convention on the Rights of the Child (CRC) Committee on the Rights of Children authored by the by National Disability Network of India and the lens of ability expectations. We posit that the discourses around these two classes of emerging products do not address the problems the alternative report raises, but could heighten the problems identified by the report. We believe the two classes of products highlight the need for ability expectation governance.

Keywords: ability expectation oppressed; ability expectation oppression; ability expectation governance; social robotics; neuroenhancement; cognitive enhancement; education; children; self-identity; disabled children; India; Convention on the Rights of the Child

Introduction

Childhood is the most intensely governed sector of personal existence. Words such as ‘child’, ‘children’, ‘citizen’ and ‘citizenship’ have become a part of child rights vocabulary. The ways in which children negotiate, share and create with peers as well as adults, reflect their socialization process (Corsaro, 1997). However, disabled¹ children are much less part of these negotiation processes in many countries of the Global South and Global North including India. There are approximately 30 million disabled children in the age range of 4-14 years in India (Ghai, 2006). Childhood in India is a contested terrain. Unpacking of the layers of oppression for children indicates that there is no one way of understanding the experience of

children and childhood. Taking a cue from Erica Burman (2002:10):

dominant imaginaries—the sets of cultural associations and affective relations mobilised around 'the child'—oppressively occlude the real conditions of children's lives, with the complexity and diversity of children's lives typically reduced and abstracted (especially from class, and notional identifiers [such as disability] into some notional, highly symbolised and usually singular (and often young and/or female) 'child' This means that children whose life circumstances and practices of daily living fail to confirm to those idealised norms suffer further marginalisation, or even pathologisation'.

Children are valued in India although there is a lot of unacknowledged politics around them. There are multiple ways to understand and engage with childhoods in India. Childhood provides for multiple interactions and observations of children from different margins although the construction of childhood is often problematized only through a biological/unilateral perspective. Although we can trace the suppositions about gender, caste, class, sexuality and even disability as social constructions, the social construction of childhood and 'child' is rarely acknowledged in India. When the picture is that of children trafficking, sexual abuse, lack of educational opportunities, child labour, debt-bondage and slavery-like conditions in brick kilns, stone quarries, and rice mills, the essentialism of childhood raises important questions from the perspective of ability expectations and technology use.

Life is tough for many children at the margin and that includes the disabled child, and negotiating childhood and adolescence is a very complicated task. The majority of disabled children in India are denied educational opportunities to develop the knowledge and skills required for survival in a changing world. Disabled children in India grow up with English labels such as 'impaired', 'handicapped' and the more politically correct 'differently abled' and 'special'. As to non-English language in India, the labels include bechara bechari (roughly translated 'poor thing'); langra/langri (crippled) or andha (visually impaired). Other countries have their equivalent of these. So-called impairments may be temporary or permanent, requiring temporary or long-term measures. Disabled children are seen in need to overcome limitations and hope for a complete cure. Disabled children occupy a multifarious and marginalized position in Indian society, and indeed, in most other societies across the world, based on their ability difference as well as on socio-cultural identities whereby people experience further marginalization based on caste (in South Asia and in some other countries), class, ethnicity and urban/rural divide. Not fulfilling ability expectations is a deficiency that becomes a defining characteristic of the child, often evident in deficiency and other negative language such as 'lacking abilities', 'tragic loss', 'dependency' and 'abnormality'. Children who do not fit into the hegemonic discourse of ability expectation 'normality', are excluded, separated and socially dis-empowered. A form of social and cultural apartheid is sustained by the creation of a social, cultural and physical build

environment with amenities that solely cater to the needs of people who fulfill the ability expectations. This social disregard for ability diversity coupled with experiences of social, economic and political subjugation linked to ability expectation oppression, deny disabled children a voice, a space and the power to disrupt these deeply entrenched ability normative ideals that deprive them of their social presence and any semblance of identity. We are far off thematizing ability expectation oppression in most countries in the Global South and Global North. By and large, a reductionist stance has been adopted in which ability diversity is understood as ability deviance and is treated not as a life experience that needs to be understood in the context of relationships, but rather as a purely ‘individual personal tragedy’ that the ability ‘deviant’ person needs to adjust to and come to terms with. The personal tragedy model posits a ‘better dead than ability ‘deviant’ approach and reinforces the stereotype that the ability different person cannot be happy, or enjoy an adequate quality of life.

Despite being included in international human rights instruments such as the UN Convention on the Rights of the Child (UN, 1990) as well as the United Nation’s Convention on rights of persons with disabilities (UNCRPD) (UN, 2007), there is very little hard evidence to show that disabled children in India occupy the centre stage in decisions by governments or are themselves key decision-makers. The 2013 alternative report on India to the CRC Committee on the Rights of Children with Disabilities authored by the National Network of India highlights many problems and asks questions that, if answered, might reveal many problems.

Alternative Report on India to the CRC Committee on the Rights of Children with Disabilities

The disabled people’s movement from India submitted their alternative report on India to the CRC Committee on the Rights of Children with Disabilities providing ‘supplementary information from the Indian disability movement to the third and fourth periodic reports submitted by the Indian government to the Committee on the Rights of the Child in 2011’ (National Disability Network of India, 2013: 1). In short, the alternative report highlights the following five key failures of India; a) to mainstream the rights of children with disabilities; b) lack of quality and reach of rehabilitation services; c) barriers to inclusive education; d) lack of protection for children with disabilities within the Juvenile Justice system and e) extreme vulnerability of children with disabilities in areas affected by armed conflict (National Disability Network of India, 2013). More concretely, the report notes various failures of the government related to data gathering such as to provide reliable and correct estimates of numbers of children with disabilities in general; education numbers of enrolment, retention numbers and number of cases lodged alleging disability-based discrimination and hate violence against children with disabilities and their outcomes, including sanctions, which were ordered against both public and private bodies or individuals and how armed conflict has affected children including children with disabilities in India.

Other issues mentioned are the failure to a) eradicate the continued discrimination of children with disability; b) clarify responsibility and accountability of different Ministries; c) include children with disabilities in all its programs; d) provide data on needs of children with disabilities; e) develop action plans that achieve the goals outlined in the CRC and f) consult disabled peoples' organisations and children with disabilities be consulted and actively participate in the development, implementation and monitoring of such a plan. The alternative report asked a) to ensure that mainstream schools are accessible to children with disabilities (e.g. physical environment, teacher training, curricula development, etc.), b) that inclusive education is an integral part of core teacher training curricula in universities; c) to ensure that the values and principles of inclusive education are infused at the outset of teacher training and teaching careers of all teachers; d) to ensure the accessibility of educational materials, curricula, and school environments, and e) for the law to provide enforceable remedies for children with disabilities and their families who have been refused access to inclusive education, or who have been denied the provision of reasonable accommodation with respect to education. Another set of failures noted, dealt with the lack of support for children with disabilities against experiencing abuse at home, in the community, institutions, shelter homes and living within the areas affected by armed conflict (National Disability Network of India, 2013).

Interestingly, the role of scientific and technological advancements is a topic not mentioned in the alternative report although we know that scientific and technological developments impact for example the education of disabled children (Woodward and Rieth, 1997; Iversen and Dindler, 2013; Hiranandani and Sonpal, 2010; Ghai, 2015).

Scientific and technological products, ability expectations and disabled people

The history of humans is forever linked to scientific and technological developments. One area of particular importance is that scientific and technological developments are fulfilling existing ability expectations (of often powerful social groups) and trigger new ability expectations. How the linkage between scientific and technological developments and ability expectations plays itself out, shapes societies and impacts subgroups of society such as disabled people. Ability expectations by certain groups in society impact disabled people for a long time. The concept of ableism was developed by the disabled people's rights movement to question species-typical, normative body ability expectations (Wolbring, 2012) exhibited by certain groups in society and the ability privileges (i.e. ability to work, to gain education, to be part of society, to have an acceptable identity, to be seen as citizen) (Wolbring, 2014) that come with it. Therefore how scientific and technological developments influence and are influenced by ability expectations and forms of ableism, is of particular importance for disabled people. The linkage between scientific and technological developments and ability expectations also impacts disabled children and important areas for a good childhood such as education and self-

identity development.

A key question is who shapes the discourses around the linkage between scientific and technological developments and ability expectations especially in regard to children in general and disabled children in particular in India and for that matter in any given country? Given the increasing number of technological assistive devices, the question is: what is the reality of disabled children in the Global South, especially within the education system, and what is (and could be) the influence of scientific and technological products? Do scientific and technological products change the ability expectations we have of children in general and what we expect from children in schools? Do scientific and technological products impact how we perceive disabled children and how they perceive themselves? Given that we increasingly develop scientific and technological products that change the species-typical boundary of ability expectations and that we gain increasingly abilities we normally do not have, what will the impact be of these particular products on the education system and what we expect from children in general and disabled children in particular? What does ‘impaired’ and ‘disabled’ mean when a man [sic] with no legs can run faster than most people in the world?

We focus in our paper on two emerging classes of products to be employed with children including disabled children, one being social robots and the other, products that are envisioned to increase the cognitive abilities of humans beyond the species-typical (cognitive/neuroenhancement).

Social Robots and disabled children: Questions for the Global North and Global South

Social Robotics is an emerging field with applications in many areas linked to disabled people including disabled children such as education, health service, health care and rehabilitation (Yumakulov et al. 2012; Wolbring and Yumakulov, 2014). Social robots are complex machines that are envisioned to engage in meaningful social and emotional interaction with humans and with each other (Yumakulov et al. 2012) which increase their utility such as being able to perform services. Social robots are to engage with humans including children on an emotional level through play, sometimes therapeutic play, and companionship (Shaw-Garlock, 2011). Social robots are also envisioned to interact with disabled children for therapeutic reasons (Le Tallec et al. 2011; Welch et al. 2010; Wainer et al. 2014). Education at various levels from kindergarten (Keren and Fridin, 2014) onwards is one main application for social robots. Social robots are also seen as useful for the education of disabled children (Senland, 2014). Various academic studies look at how social robots could be accepted by children (de Graaf et al. 2015) including disabled children (Welch et al. 2010) and teachers (Fridin and Belokopytov, 2014). Robots, especially social robots, are also envisioned to take over many service jobs (China Daily, 2014; Briody, 2013; Ott, 2012; Wolbring and Yumakulov, 2014; Marchant et al. 2014, Elkmann et al. 2004). Service Robots

are also designed in India such as for greeting people (Sunitha and Sal Krishna, 2014).

From a disabled people's rights perspective, the social robotics discourse raises numerous issues for both the Global South and the Global North. One issue is that social robots are promoted through a medical/negative narrative of disabled people such as people labelled as having ADHD or autism (Yumakulov et al. 2012). It clearly views the interventions of the social robot as therapeutic negating a neutral or positive language around disabled people such as people labelled as having autism and ADHD as proposed by the neurodiversity movement (Broderick and Ne'eman, 2008; Robertson and Ne'eman, 2008; Kapp, 2011; Runswick-Cole, 2014; Waltz, 2014; Baker, 2006; Griffin and Pollak, 2009; Billawala and Wolbring, 2014). It reinforces the existing negative perception of disabled children in the Global South and elsewhere. As such, social robotics narratives do not help to alleviate the stigma disabled children experience - which would be a useful outcome if people who read about social robots would be exposed to a less medical narrative about disabled people. Instead, the narrative around social robots reinforces old stereotypes about disabled people, stereotypes that are partly responsible for the problems disabled people face (Wolbring et al. 2013).

Another issue people in general and disabled people, in particular in the Global South and North, will increasingly face, is that many manual jobs that require little cognitive abilities are envisioned to be taken over by service robots which includes social robots seen to be in particular useful for jobs they require interactions with humans. China is one of the biggest markets for service robots (CCTV.com, 2014). As such, robots become a competitor for the job; for example the above mentioned greeting robot designed in India could take over jobs that some people labelled as cognitive impaired, might be otherwise given. This development raises challenges for the education system especially for how to make the education system useful for disabled children. What skills might have to be taught in schools if manual labour is increasingly taken over by service robots? What will happen to students who cannot learn the new skills? Do we see a new group of 'special education' students consisting of students that cannot learn the new skills? Will they compete for education resources with the disabled children already in existence?

Neuroenhancement and disabled children: Questions for the Global North and Global South

So far, most discussions around definitions and understandings of what is able/impaired have played themselves out globally around species-typical functioning; humans are supposed to walk but not to fly; birds are supposed to fly. A normative species-typical expectation of cognitive/neuro abilities is used for a long time to label people as cognitive and neuro impaired and treat them in problematic ways if they do not fulfill these ability expectations. Labelling one as cognitive/neuro impaired or not cognitive/neuro able enough, with the

accompanying negative social treatment, is not only used around disabled people (Carlson, 2001), but also to justify sexism and racism. In both cases, the argument is that one group (women, certain ethnic groups) do not have ‘essential’ cognitive/neuro abilities (rationality, IQ...) (Wolbring, 2008b). This dynamic exists worldwide. Recently, discourses started, looking at interventions that allow humans to achieve beyond species-typical neuro/cognitive abilities. This form of enhancement is envisioned to be achieved through drugs but also through the use of deep-brain stimulation and assistive devices such as brain-machine interfaces, the artificial hippocampus, sub-vocal speech devices and sensors whereby the use of the devices sometimes requires surgery but increasingly fit the category of wearable technologies. A body of literature with a variety of views exist around the issue of neuro-cognitive enhancement beyond the normal including literature that focuses on children (Lev, 2010; Benanti, 2010; Deline et al. 2014; Ball and Wolbring, 2014; Maslen et al. 2014; Schelle et al. 2014; Hagger and Johnson, 2011; Coveney et al. 2011).

This new development of beyond species-typical neuro-cognitive abilities raises numerous questions especially for children for both the Global South and Global North. What will happen to children that do not fulfill the new ‘enhanced’ neuro-cognitive ability expectations? Will there be a new group of the non-enhanced disabled children who simply have no means to fulfill the new ability expectations? What does that mean for the traditionally impaired labelled people, including children? Will it lead to a competition between the traditional disabled people, including children, as the ones who are seen not to make the species-typical norm vs. the new disabled people and children the ones who are species-typical but not enhanced?

In the next two sections we look at the impact of social robots and neuroenhancement through the lens of the alternative report on India to the CRC Committee on the Rights of Children with Disabilities.

Social Robotics and the alternative report

With respect to the five key failures mentioned in the alternative report, they are not thematized in the social robotics academic literature. If one searches for example for the word combination ‘mainstream’ and ‘social robotics’ in Google Scholar, no research study is found that investigated the role of social robots in increasing the mainstreaming of disabled children into the education process. Similarly, no research has been found that investigated the use of social robots in decreasing barriers to inclusive education although some studies think about special education: ‘Although several existing robots have been used with autistic children, they are still generally cost prohibitive for widespread use by special education instructors and therapists’ (Boccanfuso and O’Kane, 2011:338). The majority of the social robotics literature covers disabled people within a medical framework (Yumakulov et al. 2012) something which might hinder inclusive education and the mainstreaming into the educational system.

Given that the social robotics field is still developing, it cannot be expected that an impact upon the quality of rehabilitation services could already have been measured. Some articles mention the need for low cost social robots. Boccanfuso and O'Kane (2011:338) for example state that:

The costs associated with additional therapy, specialized and medical care for an autistic child in the United States are estimated to be approximately 8.5 to 9.5 times more than raising a typically developing child. For some families, this additional financial burden may mean having to choose between incurring debt to get the proper care for their child(ren) or limiting the amount of therapy their child receives. Although several existing robots have been used with autistic children, they are still generally cost prohibitive for widespread use by special education instructors and therapists. In response to these existing needs, the long term vision of this research is to produce a low-cost, adaptable robot which is widely accessible to a large population of autism therapists, teachers and parents for use as part of an overall early intervention strategy for autistic children.

However, Boccanfuso and O'Kane (2011) do not talk about what 'cheap' means. No paper can be found with 'social robots' and 'Global South' which would define the word 'cheap'. So far, social robots are not covered in relation to the juvenile system. Interestingly, some data exist around the concept of bullying (Wolbring and Yumakulov, 2014) which suggest that social robots might play a role within the juvenile system. Finally, some studies cover the potential harm caused by humanoid robots (Kahn Jr et al., 2012) and autonomous military robots (Lin et al., 2008; Kerr and Szilagyi, 2014; Sparrow, 2011), however the use of social robots for the humanitarian problems linked to armed conflict is not a mainstream research theme.

Beyond the fact that the discourse around social robotics does not thematize issues identified as key failures in the alternative report, many of the questions posed by the alternative report cannot be addressed through social robots. This is of course not surprising, but it is an indicator that one has to be cautious in putting too much emphasis on techno-solutions. On the other hand, some of the questions, thematizing problems, posed by the alternative report could be rephrased in case social robots become an issue of desire in India. For example:

- Will the government take steps to prevent new discriminations disabled children might face that will not permit them to be able to access a social robot?
- What steps will be taken to develop an action plan around social robotics as services to reach out to every disabled child that could benefit from it, and that would enable their full participation in society?

- How will disabled peoples' organisations and children with disabilities be consulted and actively participate in the development, implementation and monitoring of such a plan around social robots?
- Will reliable data be collected around the impact of social robots on the enrolment, retention and dropout of disabled children in the country?
- What measures will be taken to ensure that social robots used by mainstream schools increase and not decrease the accessibility by disabled children?
- What steps will be taken so that social robots will increase and/or not decrease inclusive education? Will a social robot be classified as a reasonable accommodation?
- Could social robots be used to distribute information about seeking help and making complaints against perpetrators made available to children with disabilities regarding violence, exploitation, or harmful practices both in the community and in institutions?
- Could a social robot be used to decrease the heightened risk for disabled children of becoming victims of violence, abuse, exploitation and harmful practices within the home, institutions and the community?

Social Robots used as service robots outside of education, as mentioned above, might also raise new questions that future CRC reports would have to ask such as: How does the government ensure that changing skill expectations in schools do not disadvantage further disabled children?

Neuroenhancement and the alternative report

The neuro-enhancement discourse has many of the same problems than the social robotics discourse, for example the five key failures mentioned in the alternative report are not thematized in the academic literature (as indicated by searching Google Scholar but also SCOPUS, Science Direct, Web of Science, EBSCO All and Jstor academic databases). However, we chose to cover neuroenhancement-enabling products not only to look at whether the discourse engages with issues raised in the alternative report, but because of their potential to make the situation of disabled children even worse due to their influence on ability expectations of children, adults and society at large.

A 2006 report of the American Association for the Advancement of Science, for example, states that 'polls indicate that personal interest in or aversion to using human enhancement technologies depends on one's perceived social status, and how human enhancement would affect his/her competitive advantage' (Williams, 2006: iii). The report states further that the following pressures lead to rapid development of human enhancement technologies: 1) global

competitiveness; 2) brain drain/depopulation; 3) national security concerns and 4) quality of life/consumer lifestyle demands.

What do neuro/cognitive enhancements mean for disabled children in the Global South and the Global North? It pits the rich against the poor. India also wants to compete globally. This means that some might decide that they have to adopt interventions leading to enhancements if it gets to a stage where they really lead to competitive advantages. If it comes to pass that certain neuro-enhancements really lead to a competitive edge, it will make the lives of disabled people that do not have access to the enhancement much more difficult in both the Global South and the Global North.

Many ability expectations are so far linked to the endpoint of a species-typical body. As stated before, the term ableism was coined by the disabled people's rights movement to question the obsession with species-typical abilities. Within the neuro area, there is an ongoing battle about what is neuro-typical and neuro diverse. It is worth recalling Christine Sleeter's 1987 book chapter, *Why is there learning disabilities? A critical analysis of the birth of the field in its social context* outlining her interpretation of the early history and the coming to be of the term 'learning disability' (Sleeter, 1987) (whereby the term disability really means impairment here). Sleeter classified this as a constructed category (Sleeter, 1987; Sleeter, 1986; Sleeter, 1998) generated in response to certain political and social goals such as raising standards in schools for the purpose of the USA staying competitive against the Soviet Union after the Soviet Union launch the Sputnik, a technology product (Sleeter, 1986; Sleeter, 1987). Here we see wider geopolitical concerns and agendas entering into approaches to childhood that impacted the ability expectations we have of children and who we label as impaired.

Moving beyond the species-typical allows for the appearance of an enhancement version of ableism where beyond species-typical abilities become the new norm (Wolbring, 2010; Coenen et al., 2009) leading to the medicalization (Coveney et al., 2011; Schanker, 2011; Wolbring, 2010) of the neuro-typical person in the species-typical sense. This means that the species-typical neuro-typical person will be labelled as impaired, as ability deficient as they won't have the enhancement. The distinction between 'cognitively impaired' and 'normal functioning' will shift constantly (Ball and Wolbring, 2014) according to the availability of neuroenhancement products and a change in the meaning of normal. This 'ability expectation creep' leads to the possibility of new categories of 'learning impairment' based on people not being able to deal with the enhanced neuro and cognitive abilities expected. New 'learning impaired' students might be the ones that are not able to deal with the information influx of Google Glass, or may not be able to control brain machine interfaces, or simply are not as good in mathematics as the enhanced, or need more sleep than the enhanced. This might lead to many more people being part of the special-education label which would increase the pressures on the system. The species-typical impaired (the non-enhanced) might compete for resources against the sub species-typical impaired (the people sees as not having the species-

typical abilities).

One study investigating the views of parents with children seen as ‘cognitive impaired and unimpaired’ highlighted that parents saw issues of harm, confidence, competitiveness, and acceptance from peers, parents, and self’ (Ball and Wolbring, 2014:359). At the same time, parents identified situations where they might consider the use of cognitive enhancers ‘if their child was struggling significantly with cognitive tasks, if their child felt alienated due to differences that could be mitigated by CE, if their child expressed they wanted to use CE’s (after a certain age), or if CE’s are proven to be completely safe as well as effective’ (Ball and Wolbring, 2014: 359). This study raises the question of what rich parents in a Global South country like India would do in this case. Would they also reach for the enhancement? And if they will reach for enhancements, what will this mean to the parents and disabled children in the Global South that cannot access the enhancements?

In relation to the questions posed by the alternative report, we suggest some need to be posed in modified form in case neuro/cognitive enhancements become a topic:

- Will the government take steps to prevent new discriminations children with disabilities might face that will not be able to access or do not want to use neuro/cognitive enhancements?
- How will disabled peoples’ organisations and disabled children be consulted and actively participate in the development, implementation and monitoring of discourses around neuro/cognitive enhancement?
- Will reliable data be collected around the impact of neuro/cognitive enhancement on the enrolment, retention and dropout of disabled children in the country and on the job situation of disabled children?
- What measures will be taken to ensure that neuro/cognitive enhancement used by mainstream schools increase and not decrease the accessibility to education by disabled children?
- What steps will be taken so that cognitive/neuroenhancements will not decrease inclusive education? Will cognitive/neuro enhancements be classified as a reasonable accommodation?
- Will cognitive/neuro enhancements increase the already heightened risk for disabled children of becoming victims of violence, abuse, exploitation and harmful practices in the home, institutions and the community?

As with social robots, neuro/cognitive enhancements also lead to new questions a future CRC report might have to ask such as: How is the government preventing that the use of cognitive/neuro enhancements is not disadvantaging disabled children (whether in educational or job seeking setting and their general well-being that includes developing their own identity of self) and other children that do not take the enhancements?

Conclusion

We outlined many fundamental questions social robots and neuro/cognitive enhancements pose for India's policies toward children in general and disabled children in particular, especially around education and self-identity development. We highlighted the challenges social robots and neuro/cognitive enhancements might pose for the problems identified by the alternative report on India to the Convention on the Rights of the Child (CRC) Committee on the Rights of Children authored by the National Disability Network of India. However many of the questions we posed and problems we highlighted also apply to other countries in the Global South and Global North. Many scientific and technological developments first pushed in the Global North under the narrative of therapeutics for disabled people impact disabled people in the Global North and the Global South. How the impact will manifest itself will be different from country to country. Many disabled people will never be able to afford certain therapeutics. For them a rights and integration narrative might be more suitable than a cure narrative. Many disabled people do not want to be fixed and the dominant medical narrative is seen as one barrier for disabled people to be involved in policy discourses (Lieve Sabbe UNICEF and Vladimir Cuk International Disability Alliance, 2013) analysed in (Wolbring et al. 2013). The emerging hierarchy of worthiness of assistive devices - where a tool like a wheelchair gets demonized because something 'better' is available such as bionics (Panesar and Wolbring, 2014) or exoskeletons is a problem for disabled people globally. The narrative around enhancements also poses a problem for disabled people in the Global North and in the Global South. The rich in a given Global South country might subscribe to the narratives around the enhancement technologies, and as such the divide between the poor and the rich might increase within a given Global South country. Indeed, the diffusion of technologies has to be investigated not only from a North-South angle but also from the framework of South-South collaboration (Brown et al. 2004). Increasingly countries belonging to the Global South drive technological developments and the application visions. That puts the onus on these leading South countries to involve disabled people in the governance and vision process to ensure that the vision they have is not counterproductive for disabled people in the South (Wolbring and Ball, 2012).

As enhancements will enable a new class of people who were considered before as species-typical but now become seen as impaired people, one key question is who will the disabled people rights organizations represent in the Global South and Global North? Will there be a two tiered system of the species-typical impaired represented by some groups and the sub species-typical impaired represented by other groups? Will they collaborate or fight with each other for being heard by the enhanced, the beyond species-typical? How will the Convention on the Rights of Children (CRC) be interpreted in the future in relation to enhancements? We submit that the issue of enhancement indicates that disabled people not only of the Global South and North have to work together, but especially disabled people of the Global South who live in countries who are quite diverse in their situations - including their abilities to deploy certain technology visions put forward by some Global South countries. All disabled people

are impacted by the new dynamics the enhancement technologies allow for. The very enablement of enhancements poses a moral challenge for all disabled people who push for enhancements because they might see this as a liberation from the ability expectation oppression they experience because they are labelled as impaired, given the reality that the majority of disabled people will not be able to afford them and given the consequences of the enhancement dynamics such as the ability rat race (Wolbring, 2008a).

We posit that there is an urgent need to engage with ability expectation governance (Wolbring and Diep, accepted). The disabled people's rights movement developed the concept of ableism. This, in our view, is actually the key concept one has to engage with in order to be able to deal with many challenges societies constantly face and in order to deal with emerging challenges such as technology-driven body-ability enhancements or the consequences linked to the deployment of social robots and service robots. We see the challenges posed by the technologies discussed as an opportunity for disabled people and disability theorists. In particular, disabled people have to broaden the disability theory of ableism to highlight how various social groups face ability expectation issues, such as ability expectation oppression and ability inequity and inequality. Disabled people can be leaders in the discussion around ability expectation oppression. Disabled people are uniquely positioned to lead the use of the ability expectation governance lens and to use this lens to build a broad community of practice that includes other disadvantaged groups, and which questions ability expectation oppression. As such, similar to Foucault's biopower (Foucault, 1976; Foucault et al. 1991), this is about ability power meaning a) who has the power to define ability expectations and b) the power of ability expectations to influence discourses and societal dynamics.

Ability expectation oppressions play themselves out on the level of individuals and countries (Wolbring and Diep, accepted) with often disabling consequences for the oppressed. We already highlighted ability expectation oppression on the social group level used within sexism and racism and how it's used in regard to individual disabled people. Ability expectation oppression also plays itself out on the country level. Postcolonial theories have problematized the issue of disablement in a metaphorical understanding. However, caution needs to be exercised when we use disability and postcolonial as reciprocal metaphors. We think both disability theory as well as postcolonial theory should adopt a contrapuntal reading, meaning complementary readings that can inform each other to fill gaps in one's own interpretation (such as understanding of disability) or as interpretive perspective by placing it in conjunction with another (such as postcolonial theory). We submit that powerful countries use certain ability expectations with which the colonizer ability expectation oppresses the colonized. The ranking of worthiness between countries based on certain exhibited abilities is an ongoing one and the gridlock of international agreements is often based on powerful countries pushing for certain abilities independent of the impact on the less powerful countries. As such, these drivers do impact not only the relationship between Global North and South but also South-South collaborations and how the powerful in a given country shape the societal reality in a given country.

Indeed the concept of ability expectation oppression enriches post-colonial theory. Ability expectations are a tool of power that have been used and can continually be used to colonize others. Ability expectation oppression by the colonizer often led to the internalization of the ability expectation by the colonized, who then uses/used the same ability expectation to oppress others. New technologies often enable new ability expectations which then can be used to colonize others towards the new ability expectation. To use the example of enhancement covered in this paper, the powerful can colonize discourses in a way that enhancement becomes an expected ability which then can be used by the colonizer to oppress the ones to be colonized to accept enhancement linked ability. Sometimes the colonized will accept the oppression so in this case the ones who are told that they should enhance themselves will accept to do so and even make the abilities enabled by enhancements part of their own ability expectations they expect of others. As to disabled people, studies showed that disabled people do not automatically reject to enhance themselves beyond the normal (Wolbring, 2011). With that the colonized disabled person could become the formerly impaired labelled but now enhanced colonizer pushing other impaired labelled people to enhance themselves, or even to label in general the non-enhanced now as being impaired.

This dynamic will also impact the education system and what we expect children to learn. Our hope is that both the discourses of postcolonialism and disability studies rewrite the relationship between the margin and the center deconstructing ableist hegemonies. The attempt is to make obvious how disability is influenced by ability expectations and that disability and otherness 'relate not as binarisms in postcolonial discourse but in ways in which both are complicit and resistant, victim and collaborator and oppressed and oppressor' (Ghai, 2012: 284). Hooks (1996) posits that colonialism does not require one to hold the power in the, to be colonized, country but can be accomplished by dominant normative hegemonies through social apartheid (Ghai, 2012) whereby we contend that ability expectation apartheid is one form of social apartheid.

In short, we believe one has to engage with ability expectation governance and ability expectation oppression in a systematic way and disabled people could and should play a key role in this governance discourse.

Notes

¹ If we use the term disabled whether in the construction of disabled person or disabled child/children...we mean a person that is labelled as impaired and experiences negative social treatments and social realities because of being labelled as missing an essential ability, as being labelled as impaired.

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