

Senate Special Committee on Aging hearing:

**“Aging and Disability in the 21<sup>st</sup> Century: How Technology Can Help Maintain Health and Quality of Life”**

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This morning I want to share with you several examples of the beneficial ways design and technology are transforming the lives of people with physical, cognitive and sensory disabilities. They are from two exhibitions I organized - one in 2018 at Cooper Hewitt, Smithsonian Design Museum, the other a reduced version featured earlier this year at the World Economic Forum in Davos.

The goal of the exhibitions was to illuminate the innovative designs developed during the past decade for people with various disabilities that are improving their quality of life, expanding their options and their ability to engage more fully in life.

Design plays a powerful role in shaping our lives. When applying design sensibilities to people with physical and cognitive impairments, the shortcomings of existing products and environments, as well as societal barriers and social stigmas, are magnified. Until recently, prevailing attitudes reinforced what people cannot do, rather than what they can. And, products looked clinical, perpetuating psychological barriers and how we stigmatize the user.

By addressing the needs of individuals with extreme conditions, many others can benefit. Curb cuts in sidewalks are a prime example whose mandated purpose and function have extended well beyond the original intended users. As users, caregivers, designers, doctors, physical and occupational therapists, neuroscientists, activists and others continue to make the needs of individuals known, opportunities for design will flourish.

To illustrate, I would like to share a few examples of low and high tech solutions:

**Mobility:**

Making canes stylish and objects of pride empowers the user with confidence and dignity. Today, there is considerable redesigning of walking sticks, balance canes. They function better, they have non-slip handles, they can illuminate at night to help prevent falls, and interchangeable handles and tips and joyous colors let the user personalize them. People now have choice, options which will continue to expand as digital technologies are integrated into canes.

**Afari Mobility Aid:**

Walkers, wheelchairs, scooters for older adults often lack elegance or grace, which stigmatizes the user. They are seen as medical devices. As a result,

individuals often resist using them, and they don't venture outdoors. But as demonstrated by the Afari, an all-terrain "walker" designed by two older adults with mobility challenges, but who want to remain active and independent, these mobility aids are both useful as well as stylish. In use, it appears like walking your bicycle instead of riding it.

Connecting/communicating:

Digital technologies are undeniable game-changers for many individuals with disabilities. By augmenting the potential for people to access the world, they help fill a void that is vital to maintaining a fun, fulfilling life. Many counteract isolation, but just imagine the new-found sense of independence and possibilities for people who have dementia, difficulty moving, talking, writing, moving limbs, seeing. Digital devices are ripe for numerous innovations as we learn more about the needs of individuals.

A poignant example is Tobii Dynavox's portable, eye-gazing devices that enable people to communicate and express themselves, to give access to their thoughts and ideas in ways and at speeds previously unimaginable. In addition to the device's speech-generating capabilities, eye-tracking allows one to use their eyes as pointers to move symbols, or to type and send emails, or to edit images, films.

Daily needs: Bathing, dressing, eating:

Magnetic buttons. A man with Parkinson's disease had difficulty buttoning his shirt. His wife saw a design opportunity, not an obstacle. She was inspired by the magnetic covers of iPads and transferred that innovation to invisible magnetic buttons.

One does not need to have Parkinson's or arthritis, or a prosthetic hand to prefer magnets to buttons or snaps. This is an excellent example of inclusive design: it can easily be marketed to individuals with limited manual dexterity. It was one of the most popular products at the World Economic Forum.

FlyEase shoe:

Matthew Walzer was a college-bound teenager with cerebral palsy when he sent a letter to Nike, saying he had difficulty tying laces and putting on shoes without help. He challenged Nike to design a shoe that didn't look clunky and clinical. The result – a zip around, rear entry shoe that looks like any other athletic shoe. It is available in many colors, sizes, high-top, low-top. It's another wonderful example of inclusive design that can be worn by many people, not just someone with limited manual dexterity.

Earring aid:

I was excited to read about the recent legislation deregulating hearing aids. We all experience moments of decreased hearing, a noisy restaurant, crowds of people. Hearing loss is also one of the most common conditions impacting older adults. And, we know that people avoid getting a hearing aid for an average of seven years primarily because of the negative stigma associated with them. In

earlier generations, hiding disability was a priority. But this is changing as awareness is growing and we see people embrace their disability. They are less inclined to hide, or conceal their disability.

Even hearing aids are not exempt from personal identity and styling.

These customized, low-cost over the counter hearing aids are not dissimilar to eye glasses, which traditionally used to be called “medical appliances” until fashion designers got involved and we see what can happen! Why not glam them up? People want the same thing – to feel good, even amazing.

Prosthetic leg covers:

Particularly striking examples of this shift toward outward expression are these prosthetic leg covers. Like snap-on tattoos, they are intricately patterned, beautifully designed, and available in a variety of patterns and colors. Users can “dress” their prosthesis according to their aesthetic preference. They are also affordable and make the user feel good. So often, people with prostheses are asked about what happened so they are continually reliving their trauma. With these, the conversation turns to the appealing prosthetic. The positive reaction gives confidence to the wearer. It’s not about being super human, or a poster child, but unapologetically embracing disability as part of one’s identity.

Accessible Olli: A prototype vehicle

How do we design transportation for everyone? In the US, 30% of individuals with disabilities have difficulties accessing transportation. Cities, streets, buildings, buses, subways and other public spaces are not universally accessible. But as we plan for the future, when much of our deteriorating infrastructure will be upgraded and brought forward, we have a critical opportunity to optimize accessibility and design our built environment to address the needs of many.

Conclusion:

In short, design matters. What’s imperative, and what distinguishes many of these recent products from previous ones, is that they were designed *with* the user. By focusing on the user, and designing *with* the user not just *for* the user, we not only understand the needs better, the product better, but we humanize design. As one design professor summarized, “designing for someone with Alzheimer’s is not so much about inventing new technologies or forms, but using existing ones toward different ends. In fact, students taking his class began to see human emotion, perception and language as technologies.”

According to the Centers for Disease Control, one in five adults in the US has some disability. That alone should be a demographic and economic motivator! We also know that when people feel better about themselves, medical outcomes improve. The needs of the aging overlaps with disability. In the coming decades, the world’s disability population will grow as medical advances allow people to live longer, healthier and fuller lives. Most of us experience disability at some point, and more than half of disabilities are invisible.

What is needed is a mindset change. We talk about the aging population, or people with disabilities as having the problem, but isn't the real problem that many of our designs on all scales create barriers? By placing those who have been traditionally excluded central to the work of design, we not only value their ways of being, but we also reconstruct notions of inclusivity and exclusivity. Designing for inclusion spurs innovation and benefits everyone. We must shift from the medical model of disability to the social. As eloquently articulated by August de los Reyes, who is quadriplegic, "disability is a mismatch between my own abilities and the world around me. Disability is a design opportunity."