

embracing fashion

The evolution of glasses from medical appliance to fashion accessory challenges the notion that discretion is always the best policy. Hearing aids, prostheses, and many other products could be inspired by this example. More confident and accomplished design could support more positive images of disability.

Eyewear has come about by adopting not just the language of fashion but also its culture. If medical design wishes to emulate this success in other areas, it needs to appreciate that fashion often moves forward through extreme and even controversial work, and to welcome this influence within design for disability. We have to do more to attract fashion designers to collaborate on designs for people with a disability, and bring their perspectives to both the practice and culture of inclusive design. At times this will expose cultural differences, but these are healthy tensions, well worth embracing and harnessing.

exploring meets solving

Marcel Breuer, Shin Azumi, Tomoko Azumi, Jasper Morrison
David Constantine, Shelley Fox, Li Edelkoort, and Bodo Sperlein

*Bath chairs and Gouty chairs, chairs and wheelchairs inspired by bicycles
chairs from Milan, chairs from Japan and wheelchairs from Cambodia*

Blind design and braille for the sighted



chairs designed by a diversity of international designers for the
nextmaruni collection

solving

Disability can lead to problems in people's lives, either directly or indirectly. These problems are either viewed as being inherent in an impairment itself, or as being created by the designed environment and other people's behaviors. The respective terms people with disabilities and disabled people (people disabled by the society they live within) emphasize each of these perspectives. Either way, exclusion and discrimination remain serious problems at both an individual and a social scale.

The educational background of medical engineers attunes them to problems. A typical engineering methodology might start with *Step 1: problem definition*, followed by *Step 2: solution generation*, and so on. Some theorists even try to define design in its broadest sense as *problem solving*. Because of the nature of disability and the culture of engineering, design for disability and inclusive design are usually approached as an exercise in problem solving, as can be seen from respected books on the subject. This also has something in common with the clinical tradition of diagnosis and treatment.

But what if some of the challenges facing design for disability were not best described as *problems to be solved*? And are issues not easily defined as *problems likely to be overlooked*? Might valuable new directions emerge only by adopting quite different approaches?

exploring

Not all design is about solving problems. Designers may revisit an object, a material, or a medium that has already been successfully designed, designed with, or designed within many times before, in which case the value does not lie in solving an unsolved problem. Many art school disciplines involve exploration that can appear playful and open-ended, but its intent may be no less serious for this.



Gouty chair from around 1800, for people with gout

Design exploration may still require solving problems that arise along the way, but frequently as a means to an end rather than as an end in itself. This is a subtle yet fundamental inversion of engineering methodologies that will usually include a creative exploration of alternatives, though as a means to the end of solving the core problem.

Beyond an individual project or the work of an individual designer, designers responding to or reacting against each other's experiments advances design as a discipline and a culture. Designers learn as much by being inspired as from being informed.

tension

Designers' obsession with endlessly exploring details—details that the public may not even consciously notice—can lead to accusations of self-indulgence, of designing for themselves and not for others. In the field of disability, where so many real yet soluble problems are still unsolved, how could more open-ended exploration ever be justified within the limited resources available?

Again, our language can skew the debate. Describing design as problem solving implies a tactical activity, albeit an important one, whereas broader definitions can recognize an investment more akin to technical or clinical research. Later chapters will consider design's role in provoking discussion and changing attitudes.

Many within design for disability view their field as the antithesis of what they see as the irresponsibility of mainstream design and somehow in opposition to this. I have heard a leading figure in accessibility research and development announce that he had chosen not to involve any designers in his team because he wanted "solutions that were usable, not just pretty." This misguided statement implies that design has no role beyond beauty and that beauty has no role in design for disability.



Bath chair from around 1900

In return, many designers see design for disability as part of engineering and human factors, and perceive disability in terms of approaching legislation that threatens to compromise their creativity, rather than as a source of fresh perspectives that could catalyze new directions and enrich the whole of their work.

There is not so much a clash of design cultures as a yawning gulf between them. The result of this distance is that industrial and interaction designers, fashion designers, and furniture designers are unlikely to be part of the teams designing products, interfaces, clothing, or furniture for people with disabilities. Sometimes this is an oversight, but at other times it stems from a deep cynicism about art school design disciplines. And this situation is being perpetuated: it is still more likely that an engineering undergraduate will attempt to design a wheelchair than will a furniture design student; it is more likely that a computer science student will attempt a communication aid than that an interaction design student will do so. Design for disability would benefit from a better balance of these complementary approaches, whereas at the moment one dominates almost to the exclusion of the other.

This chapter will start by illustrating these contrasting cultures through related products that epitomize each: wheelchairs and chairs. The wheelchair has become the icon of disability, to the extent that accessibility signage uses a person in a wheelchair to represent disability in general. The chair in its many forms is a design standard, perpetually reinterpreted by successive designers. Later I will consider particular examples of open-ended exploration and their value to design for disability.

wheelchairs converge

The history of wheelchair design is revealing.¹ In the eighteenth century in the French royal court, wheelchairs or *roulettes* were considered stylish enough to be used by disabled



Wassily chair, designed by Marcel Breuer in 1925 and manufactured by Knoll

and able-bodied alike.² In nineteenth-century England, Bath chairs were a fashionable form of transportation for wealthy visitors to spas and seaside resorts.³ These wood and wicker chairs owed much to contemporary conservatory furniture, exhibiting similar styles and an equivalent degree of stylistic variation—a closeness to mainstream furniture design that is absent today.

In 1932, the company Everest & Jennings developed a tubular steel wheelchair, a breakthrough in strength and portability. At the time it also evoked modernism, sharing this new material with the Wassily chair designed by the Bauhaus tutor Marcel Breuer in 1925 and the cantilevered MR chair designed by the architect Mies van der Rohe in 1927. But later, in the 1950s, while domestic furniture moved on to the molded plywood and fiberglass forms of the Eameses and Robin Day, the wheelchair remained the same. Its utilitarian chromed construction became more reminiscent of hospitals, where tubular metal remained prevalent for hospital beds and trolleys, IV stands and crutches, and thereby reinforced the *medical model* of disability as a condition to be cured, not the *social model* that acknowledges wider social and cultural issues.⁴

In the 1970s, following the war in Vietnam, the Veterans Association in the United States successfully lobbied for investment in wheelchairs better suited to young, otherwise active war veterans, challenging a previous stereotype of wheelchair users as elderly women. There followed an impressive application of space technology and, perhaps appropriately, military-specification materials. The result was lighter, more carefully balanced wheelchairs, often less inherently stable but more maneuverable by an occupant with good upper-body strength. Another manifestation was an explosion in wheelchair sports, including basketball and marathon racing, frequently using specialist chairs with further functional refinement.

For any wheelchair these days, the functional requirements are onerous. Its weight and center of gravity are crucial



RGK Interceptor wheelchair

to maneuverability and stability, yet it may also need to be transported empty, perhaps folding up in some way. Postural support is more critical than for a normal chair because occupants are seated for longer at a time, are more immobile, and their condition may make them prone to pressure sores. A diversity of clinical needs, requiring adjustment, modularity, or customization, can complicate things still further. This complex set of requirements can understandably dominate any further design issues. A brief as technical as this is more likely to be tackled by an engineering design team than a furniture designer, and more likely by an undergraduate at a technical university than by an art school student. Wheelchairs have become finely engineered machines not just because of their function but also because of the skills and aspirations of the designers that have been attracted to designing them.

Wheelchairs have converged in their resemblance to modern bicycles, especially the mountain bike. They already share components such as spoked wheels, brakes and handlebar grips, and a construction from tubular alloy, but in the choice of finishes, colors, and graphics, further opportunities are taken to adopt the same design language. This lends the reassuring familiarity of a mainstream product, and sets up positive associations with mobility, fitness, and ability. Surely this is the ideal conclusion to the wheelchair's aesthetic evolution?

Well, perhaps this convergence is not altogether welcome. Johan Barber has noted that the current homogeneity of the appearance of wheelchairs can hide the individuality of the user.⁵ Should individuality be part of the design brief, and what would we mean by this? Should it be individuality for the sake of differentiation, or something relating to the existing identity of the person sitting and living in that chair? Despite indisputable progress, there is an extent to which we have replaced one stereotype of a wheelchair user with another—a frail older woman for an athletic younger man.



Gentleman's chair built by William Dickson in 1889, and restored by Ryan McLeod, Jamie Shek, and Ian Shiels

diverse chairs

In contrast to this convergence in wheelchair design, the evolution of the chair continues to generate increasing diversity.

The Milan furniture fair and the NeoCon world's trade fair in Chicago are among the events at which contemporary furniture is exhibited and celebrated. Each year, designers, manufacturers, retailers, journalists, and an interested public converge on Milan to see the launch of new designs for seating and lighting. While some new chairs each year depend on advances in materials and production techniques, progress is not measured in terms of technology. Many new arrivals will be variations or reflections on previous designs, involving new ideas or expressing new values.

This proliferation is reflected in books with titles like *1000 Chairs* and *1000 Lights*, but it provides much more than an overwhelming choice for the consumer.⁶ One of the ways that design progresses is through standards. Designers return to ubiquitous products like chairs and lights in much the same way that musicians revisit and reinterpret old tunes. And this is not restricted to furniture design and industrial design; my interaction design students have recently used chairs as a medium to explore new interactive exhibits in a project called *Forgotten Chairs*.⁷ Outside a design culture, this obsession can be misinterpreted: the familiar criticism, "Does the world need another chair?" is a little like asking, "Does the world need another version of 'A Night in Tunisia'?" As much as being a new product, each chair is a mechanism by which new approaches to design are explored and new design languages disseminated—approaches and languages that can then be applied to other products as well as to chairs. Many respected and famous designers have chairs to their name, whatever else may have been the focus of their careers, whether architecture or products rather than furniture. These chairs often embody a distillation of their design philosophy, and by serving as a



leather and wood chair designed by Shin Azumi and Tomoko Azumi
for the nextmaruni collection

common medium, illuminate comparisons between different designers that might not otherwise be so evident.

Japanese manufacturer Maruni launched no fewer than ten different chairs at once in its nextmaruni collection. Acknowledging the relatively recent presence of the chair in Japanese furniture, it commissioned ten leading designers to each define an archetypal Japanese chair. Each response combined elements specific to the brief—the designer's interpretation of the essence of a chair, wood as a material, and Japanese design—with elements of his own personal philosophy that he might have applied to other products. And in turn, a brief like this has the power to influence a designer's philosophy in the future.

For the London-based Japanese designers Shin Azumi and Tomoko Azumi, a Japanese aesthetic resides in the way in which "consideration and attentiveness are present to an astonishing degree while, on the surface, an expression of utter simplicity is maintained."⁸ At first sight their chair looks beautiful yet austere, offering visual minimalism but not promising comfort. On further investigation, however, its simple flat panels prove not to be made from a hard laminate as they appear but instead are yielding, upholstered leather cushions.

For English furniture designer Jasper Morrison, the nextmaruni project revealed the thought given to an object's beauty in Japan. In the West, he says, discussion about design is usually limited to "It's beautiful" or "It's very ugly." Sometimes the conversation will progress to the level of "It's beautiful, I really like the shape and the way the materials are combined," but as Morrison explains, "we might look strangely at someone who analyses an object in more depth than this."⁹

Certainly, for some in design for disability, such preoccupations would represent all that is wrong with mainstream design: a degree of obsession that could be seen as self-indulgent, self-referential, and devoid of relevance to the profound issues that design faces—one of which is exclusion on the basis of



chair designed by Jasper Morrison for the first nextmaruni collection

a disability. What is the value in pursuing diversity, seemingly for its own sake?

diverse wheelchairs

Diversity already plays an important role in some areas of design for disability, though. Motivation is a charitable organization that designs and builds wheelchairs in low-income countries.¹⁰ In each country it visits, twenty in the last twelve years, Motivation has established sustainable local manufacture, which means that any wheelchair must be appropriate to that country and community. This has resulted in a different chair design in each country, based not only on local needs, and the prevalent types of disability and terrain, but also on local manufacturing skills.¹¹

These pragmatic goals have resulted in a rich diversity of wheelchair designs. In different countries, Motivation's chairs employ different layouts, geometries, constructions, and components—for example, the different wheel sizes are dependent on the prevalent local bicycle wheels, so that spares are readily available. Its wheelchair for Bangladesh owes a lot to Western wheelchair design, with a welded metal frame, albeit with an unusual diagonal design that simplifies its construction, whereas the chair developed for Cambodia has a distinctive hardwood frame because of the local materials. Furthermore, the rough terrain in Cambodia dictates a three-wheeled layout with a central wooden spine supporting a single front wheel.

The aesthetic of each wheelchair is quite different: some allude more to a conventional wheelchair or bicycle design, and others to local domestic furniture. And as the design changes, so the spatial and visual relationship between the chair and the user's body is changed. The user's posture within the chair, actual and apparent, changes between four- and three-wheeled layouts as well as between different-size wheels.

Motivation founder David Constantine, speaking in England, brings up the social significance of seating posture in



wheelchairs. He finds his own wheelchair perfect for the office, where it puts him on a level with his colleagues around a meeting table. But at home he can feel as though he is sitting to attention, with his friends relaxing below him in armchairs and on sofas. A wheelchair that let him slouch at that level would help him to feel more comfortable.

Could and should some of this diversity be brought back to wheelchair design in Europe and North America, as a tool to break away from conventional solutions and open up new directions, or even as a goal in itself, in order to increase variety and choice? Would it be inappropriate to apply inspiration from this low-income program to a more affluent Western market? Could the concerns of the Milan furniture fair ever be relevant when pressure sores are still so prevalent, even here? But moving from a medical to a social model of disability means acknowledging the importance of both clinical and cultural issues when designing wheelchairs. Not one at the expense of the other, but both.

chairwear

If spectacles have become eyewear and hearing aids earwear or HearWear, what shift in approach might the term *chairwear* inspire? Could it inspire thinking of someone as a wheelchair's *wearer*, not just its user, rider, or passenger? A wheelchair is a frame in which you and your clothing are seen. It is the place from which you receive guests. It is what you go out on the town in. Each of these associations conjures up issues and thoughts not provoked by thinking of wheelchairs exclusively as transportation. And each suggests different types of designers with whom to explore new directions.

How different the situation would be if the wheelchair became one of the design standards that designers sought to reinvent, alongside the dining chair and the armchair. This more than anything would connect the Milan furniture fair and NeoCon to exhibitions of so-called equipment for the



Braille Dress by Shelley Fox

disabled such as Naidex in the United Kingdom or RESNA in the United States. What if leading wheelchair and furniture manufacturers such as Quickie and Herman Miller collaborated with each other and commissioned leading furniture designers? How different if one could go to Habitat or Knoll to browse the latest trends in wheelchairs, not just a specialist retailer of aids for daily living. Perhaps the most interesting wheelchair designs would occasionally be offered as variants with legs, for jealous ambulatory consumers, because approaching chair design from the direction of wheelchair design would lead to new ideas.

Similarly, other design events have a natural affinity with other products for disabled people, such as Paris fashion week with hearing aids or Ars Electronica with communication devices for people with speech impairments. The potential range of manufacturers and designers could be diverse and challenging; it is interesting to speculate how fashion designers like Issey Miyake might change forever the way fabrics are employed within medical engineering. More ideas for design collaborations are discussed later in this book.

With even more profound implications for the future, we might look forward to the best young design students being drawn in—not just those destined for mainstream commercial success but also the *enfants terribles*. We would benefit from attempts to undermine our preconceptions of what a wheelchair should be, whereas at the moment, design for disability often attracts students seemingly more motivated by user-centered design than by stirring up design itself. The irony is that design for disability needs both types of young designer.

designing braille for the sighted

This argument relates as much to the environment we all share as to products for people with disabilities and as much to inclusive design as to design for special needs. To give one example, when braille is employed in inclusive design, rather

INTERIOR VIEW 14

blind design



InteriorView 14, "Blind Design"

than in publications or products specifically for people who read braille, it inevitably becomes part of the visual and tactile experience of sighted people—a visible, if illegible, part of their environment. We need designers to explore new visual languages that might emerge when braille is combined with visual information and even decoration. Seeing this as a problem to be solved is probably not the best frame of mind with which to engage with it. Here are the beginnings of more playful approaches.

The artist and designer Shelley Fox has repeatedly explored braille and Moon writing in her work. (Moon is another form of embossed writing, derived from simplified letterforms from the Roman alphabet, and so mainly used by people who lose their sight as adults, already having learned how to read.) She was inspired by and has become slightly obsessed with both, sending out Moon invitations to her private shows for guests to decipher and abstracting braille into knitted clothing. These woolen abstractions of braille are illegible to visually impaired people, yet provoke reflection on the inevitable role of braille as visual and tactile *decoration* in the eyes of a sighted audience. Fox's work may not be directly related to accessibility but could inspire future work that is. The best inclusive design depends on addressing this secondary agenda, just as the best of any design is enhanced by necessary elements, not compromised by them.

Even more indirectly, Li Edelkoort's magazine, *InteriorView*, featured an edition called "Blind Design."¹² This was not, as its title might suggest, about design for visually impaired people but instead a more diverse collection of design inspired by visual neutrality, texture, or tactility. An exploratory concept for a telephone has raised bumps for keys, yet none of these are labeled and there is no screen. It is interesting to show the visual promise to a *sighted* audience of adopting a tactile design—a perspective that can turn design for disability into truly inclusive design. A sighted user, too, might



plates with texture by Bodo Sperlein

be intrigued and delighted by a design that does not rely on visual explanation.

Another page shows a bone china plate with a texture reminiscent of braille. The designer, Bodo Sperlein, was exploring how this texture can define the design, and what its relationship is to the overall mass and surface. But this is it not braille, and it was not even inspired by braille but rather by “the fluidity of the material.”¹³ And yet, this work has something to say about integrating braille in the design of accessible though beautiful objects and interiors—far more to say, indeed, than current lifts and elevators in which braille is so obviously applied as an afterthought and with no sense of its visual impact; as a regulatory requirement, not an opportunity for influencing the whole. The highest goal today seems to be that braille should not overly detract from the environment, rather than that it could ever enhance it. Whereas Sperlein “wanted to invite people to touch the plates, and also to intrigue them.”¹⁴

Inclusive design demands these profound new perspectives; it deserves the involvement of our leading designers. When designing braille into the visual environment, it may be more appropriate to consider it as much from a decorative as a practical point of view. We do need solutions that are pretty (among all kinds of other qualities) not just usable.

In this instance as in many others, it may actually be most appropriate to involve designers who are not experts in inclusive design at all, nor who even wish to become specialists. My recommendation is for inclusive design to become more open to attracting and absorbing diverse positive influences, to adapting and adopting more radical approaches, even those that may not at the moment be producing inclusive results. Nor is this contradictory to inclusive design’s role of exerting a strong influence on design. Quite the opposite: the more cross-fertilization there is, the more mutual influence there can be.

keeping the design in design for disability

If there is a welcome change in our approach to disability, from a medical to a social model, it follows that the role of design needs to change too, and therefore the nature of design teams must change as well. Design processes need to become more inclusive in several ways, involving not only disabled people themselves but also a greater diversity of designers.¹⁵ If we aspire to the qualities and quality of mainstream design, this will require the sensibilities as well as the skills of those who create mainstream design. Art school design disciplines are as essential to the mix as engineering and human factors.

Mediocrity must be avoided. In design for special needs, mediocrity can result in people being further stigmatized by the very products that are intended to remove barriers for them, thereby undermining the highest goal of social inclusion. In inclusive design, any inclusive but otherwise mediocre design might only prove attractive to users who are currently excluded. If so, it would become design for special needs by default.

If design for disability positions itself as something quite distinct, even somehow in opposition to mainstream design, it will inevitably be less influential. An implicit message that designers have no part to play in design for disability will become a self-fulfilling prophesy. If design for disability seeks to marginalize design in general, it will marginalize itself instead. If many designers are not engaging with disability, seeing only an encroaching legal obligation that will stifle their creativity, the way to change these attitudes is by more collaboration, not less.

It is important that we keep the design in design for disability. This might prove as challenging within design for disability as disability can be within a wider design community, but it is a challenge that both cultures need to rise to.

simple meets universal