

Scaffolding sensory learning: How other people shape our perceptions.

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Abstract:

All sensory perception is shaped by culture; as we grow, people direct our attention, encourage us to notice important aspects of our environment, and shape our perceptions. Drawing on examples from anthropology, this presentation shows how adults especially ‘scaffold’ or shape the development of children’s senses, including in ways that are peculiar to individual cultures, such as societies that have highly developed vocabularies for aromas. Like scaffolding, this training starts out to support an activity but then, as a child learns, is withdrawn so that he or she becomes more and more independent. The implications for working with the blind is that, in many cases, they do not share entirely the sensory environments of people around them. How can this scaffolding process take place if we do not share the same sensory capacities, or need to notice very different key details in the environment in order to navigate in daily life?

The slides to accompany this presentation are available at:

<https://prezi.com/-ufqsobspwtk/edit/>

Introduction

Really briefly, before I start, I want to explain who I am, and what I’m doing here. I am an anthropologist, specifically a neuroanthropologist. This means I research the way that cultures affect brain development, especially how learning skills affects how people’s senses work. Over my career, I’ve worked with athletes and highly skilled people as test cases, especially martial artists and dancers in Brazil, cage fighters in the US, free divers, and increasingly, with visually impaired people who echolocate. That is, I study blind people who use sound to perceive space, something virtually all of us do, whether we’re blind or not, and whether we’re conscious of it or not, but that some visually impaired people can do with *astounding* acuity. For this reason, I work with World Access for the Blind Australia.

I am not visually impaired. Nor am I the parent of a person with visual impairment, nor am I specialist in Orientation and Mobility. I don’t even do neurological testing or brain scans. Nor am I really interested in the impairment part of visual impairment; I’m

interested in their skills. I don't do brain scans because the skills we're talking about simply can't be examined that way – if you lie someone on their back in a giant magnet, you cannot understand what their senses are doing in the middle of a cage fight or 80 metres under water when their lungs are burning. Nor can you understand how a highly skilled blind person can use sound to navigate in a complex environment, like an Australian city, or ride a mountain bike.

So today, I'm going to talk a little bit about how culture affects sensory education, that is, how the sighted might learn more what it's like to perceive the world in a 'blind style'. A lot of researchers in my field draw a distinction between 'impairment' – a physiological or neurological difference, like not being able to see well or at all – and 'disability' which is all the other limitations put upon people with impairments by societies, such as making it difficult for them to catch transportation, find a job, marry, or get a place to live. In particular, I want to talk about how we raise children with visual impairments or complete blindness encourages or discourages their other sensory development, their navigational skills, and other skills that they might need to get around, and thus be a lot less 'disabled' in the social sense of that word. I want to suggest that we might *share* with the visually impaired so that we can better understand the sophisticated ways that they can perceive the environment.

Presentation:

When a child is born, he or she enters into a complex social dance of sensory perception. Bright colours, distinctive, relentlessly upbeat music (think the Wiggles), educational television (like the surreal Teletubies), cartoon images, special forms of speech – baby-talk – the infant's sensory world is rich, vivid and powerfully structured to grab an infant's attention. Adults and older children show things to the child, direct its attention both visually and aurally, give it things to grasp, hold and touch the infant, rock it, interact with its senses – making noises, hiding things, commenting on aromas – and facilitate the infant's growing sense of the environment with social interaction. As we grow, people around us direct our senses, encourage us to notice what is important in our environment, and help to shape our perceptions. Infants and young children are active and hungry for stimulation, but the people around them supply them with a diet of sensations (and shield them from certain kinds of experiences).

As an anthropologist, I know this process varies across cultures. In some societies, infants are bombarded with baby talk; in others, they are not spoken to much. In some societies, a young child is not allowed to handle dangerous objects, like a knife or tool, and never left alone; in others, a child is let to do adult activities, even if that means getting burned in a fire or cutting oneself. In one society, a child is expected to sleep alone through the night; in another, the infant sleeps alongside its mother, sharing a bed and nursing whenever hungry.

Anthropologist Lisa Law warns that ‘the senses are often assumed to be an intrinsic property of the body -- a natural and unmediated aspect of human being’ (2005: 225). Anthropological research tells us otherwise, that our perceptions of colours are shaped by our native language’s repertoire of colour terms – if our language has more, we can reliably identify a broader range of hues. In cultures with few colour terms, it may be difficult for people to discern a difference between blue and green or remember one of those colours, but in English, with one fewer colour term than Hungarian, the difference between dark and light blue is not stable. For Hungarian speakers, it is, because they are separate colours. Our pain perception varies, as my cage fighters clearly taught me, and early training in musical performance or dance can profoundly affect how we perceive sound, as studies with child musicians show. Perfect pitch, for example, is more common in societies where musical training starts young, even though some people think of it as ‘innate’. In the parts of Brazil where I work, nobody has ‘no rhythm,’ as children are expected to dance as soon as they can stand up, and likely already experienced dancing when their mothers danced when the babies were in utero.

As not just a normal anthropologist, but also a *neuro*-anthropologist, I want to talk about the biological, neurological and psychological consequences of these patterns of sensory training. That is, not just how we interpret the same sensations, but how the very sensations we might feel vary between groups, affecting how our sense organs work. Our eyes and ears become better attuned for the tasks our cultures train us to do; we know that this is the case with language. By about 6 months of age, a child is already starting to attend better to sounds that appear in their native language, until it becomes difficult to even discern the phonemes in another language if you’re not accustomed to hearing them. This is why, for example, speakers of Japanese have a hard time hearing the

difference between ‘r’ and ‘l’, and speakers of English can’t hear the difference between the first sound of the words ‘this’ and ‘that,’ even though those two sounds *are* distinguished by German speakers. There are actually more *descending* neurons going from the brain *to* the ear, than the other way around, possibly because screening out irrelevant information is as important as taking in the information one needs.

To go back to the developmental environment and borrow a concept from educational theory, we can say that adults ‘scaffold’ perception early in a child’s life to help the child perceive, and that, over time, this educational scaffolding is slowly withdrawn as the child learns how to do so independently. When an infant can barely hold his or her head up and attention is in short supply, when sensory fields are a buzzing, blooming confusion, adults help support the child to focus and perceive, and give them feedback on what they are noticing. We simplify our language, offer visual stimuli that we know are easier to detect (and harder to ignore), and shelter children from certain kinds of sensations. But we don’t have to speak babytalk with a child forever, under the majority of circumstances; their nervous systems become fine-tuned by this scaffolding so that some sensations are quite sensitive while others are blunted.

The concept of educational scaffolding was introduced in the 1970s by psychologists Wood, Bruner and Ross (1976) to highlight that much of learning was not the transmission of knowledge but support for action. That is, outside the classroom, when children are learning, they often do so by *doing* – that is, they learn by attempting the tasks that they will eventually do as adults, with some skilled person supporting them or making the task easier. In sports, we simplify a task so that a novice can develop the skill; we play three-on-three and do drills before we throw kids into a game. In carpentry, we give the novice easy tasks that they can’t stuff up too badly, or if they do, it won’t matter too much. And in sensory learning, we simplify the environment, give novices cues or guidance, and let them attempt the task in a safe environment, shielded from dire consequences.

As the novice becomes skilful, the scaffolding is withdrawn bit by bit until the individual can function without support. The model of teaching that emerges from this approach to scaffolding is not like the “information transmission” model that dominates a lot of education; instead, Wood, Bruner and Ross highlighted how learning requires a kind of

facilitated or supported exploration, in which the learner leans on the expertise of a more advanced individual while attempting to do meaningful tasks. With scaffolding, the learner is not receiving the lesson *from* the teacher, but learning alongside an advanced practitioner, depending on intermittent, tactical support or guidance.

The Belarusian educational theorist Lev Vygotsky highlighted that, for this type of situated learning to function, a novice has to be working in his or her “zone of proximal development,” that is, the frontier of capacity, the stage of proficiency just beyond where the novice is already competent and can operate alone. If scaffolding allows a learner to extend his or her capacities, it facilitates growth. The kinds of support we can provide are many, facilitate the development of a wide range of sensory skills. But scaffolding can also infantilise or stymie development, especially if it substitutes for the novice’s own capabilities or holds the individual rigidly in an immature or underdeveloped state.

The blind and visually impaired, however, offer us a strong lesson in how this scaffolding works, but also how it can break down, especially when the sensory worlds of the novice and the person supporting that individual do not completely overlap.

To put it another way: to teach, we must know what people are capable of, support them to go beyond their current limits, and be willing to withdraw support as it is no longer necessary. But the gap between the sighted and visually impaired makes this kind of assessment challenging. The sighted often do not really know what the visually impaired can do, nor do they understand their nonvisual sensory skills.

Those with visual impairments most often dwell largely among those with comparatively better sight, many of whom, we know from research, fear blindness more than virtually any other physical impairment. Sometimes surveys tell us the sighted fear blindness more than even complete paralysis. In some cases, bureaucratic rules about who can be qualified to teach the visually impaired how to use their senses — various guidelines governing the field of Orientation and Mobility — ensure that, not only the parents, siblings and other close friends of the visually impaired person, but even the *specialists* seeking to scaffold the experiential learning of the visually impaired are *not* themselves visually impaired.

I don't for one minute want to denigrate the skills of O&M specialists, the vast majority of whom are remarkably sensitive to the people they work with. In fact, in a grant application I'm putting together, I propose to work *with* O&M specialists and the visually impaired to better understand the perceptual abilities of the blind. But I'm not sure how many people would trust a music teacher who did not play an instrument or a batting coach who had never played cricket. But we do that today in teaching perceptual skills to the blind.

There is a significant gap between a sensory world built with vision and one built with reduced vision or none at all. The perceptual strategies available and the skills useful to the visually impaired are not those of the sighted (or, more accurately, 'more sighted' since a *lot* of us, arguably the majority of those in Western cultures, have visual impairments of varying degrees – says a guy wearing bifocals).

To understand that gap better, the gap that scaffolding must span for the sighted and less-sighted or non-sighted, I turn to the research of blind sociologist and disability studies scholar Siegfried Saerberg (2010) at the University of Dortmund in Germany. In an article entitled, 'Just go straight ahead,' Saerberg who is severely visually impaired discusses the problem of communicating between the sighted and the non-sighted (or less-sighted). He highlights the fact that normalcy is taken for granted so much by one side of that interaction – the sighted – that they are 'disabled' when trying to communicate with those who inhabit other sensory worlds. In a wonderful example of transforming life's small indignities into research, Saerberg asked sighted people in public places for directions.

As Saerberg describes, their first problem is pointing: 'Pointing, a mostly visual gesture, is constantly used in route descriptions by sighted people' (Saerberg 2010: 374). According to Saerberg, once they realize that pointing is not going to work, sighted people try . . . unconventional ways of pointing: trying to point with his cane, touching him, . . .

Then, sighted people run up against the problem of landmarks, and the inability to come to some shared sensory ground about landmarks. The sighted cannot figure out how to inhabit or even visit a sensory world that does not rely upon vision, so they struggle to find any landmarks that the visually impaired might also perceive.

Third, Saerberg found that sighted people thought that directions were self evident, and they would switch from the perspective of the person that they were talking to (Saerberg) to their own perspective without warning, saying things like ‘right in front of you’ and ‘go straight ahead’ without any clear communication of which point of reference they were using, which person or part of their body was serving as the point of reference for the direction. The body-to-body communication used by sighted people, the way we (here I’m talking about sighted people like me) look at each other and refer through gesture, is so ingrained that the sighted Saerberg asked to help could not figure out another way to communicate directions.

In the end, the effort, over 300 requests for assistance, was fairly unsuccessful. As Saerberg writes:

In most cases, no useful route description was given, because no methods to construct a mutual and interchangeable standpoint and no relevant sensually based knowledge of use to both sides were discovered (such as non-visual pointing, landmarks, and spatial directions). In most situations, the sighted person wound up simply escorting the blind person [...] (Saerberg 2010: 376)

Saerberg concludes, on the basis of his research, that the ‘interchangeability of standpoints,’ the really basic fact that communication assumes the people conversing can understand each other, ‘doesn’t usually hold for encounters between sighted and blind pedestrians, and that while there are strategies to repair the communication by way of negotiating a shared space, they were not very effective’ (Saerberg 2010: 375).

If this were all Saerberg had to share, the prognosis would be fairly depressing. But what he does instead is to describe concretely and very richly a “blind style of perception” that contrasts with a “sighted style of perception.” He describes how he experiences his hometown. As he walks through Cologne, he detects shops by their distinctive sounds, cross streets by the flow of air and shifts in ambient sounds, the shift from one type of pavement to another, traffic stopping at lights, the flow of foot traffic around him and even temperature changes as he moves from shade to sunlight and back. He remembers his favourite places by key sonic landmarks and experiences an entire landscape marked indelibly by distinctive sounds, smells, temperatures, air patters and textures.

He cannot see the socially *conventional* signs that other people use to get around, the changing colours of traffic lights, the directional signs or names and numbers on shop fronts, but he does have a wide range of sensory cues around himself that help him to orient as he moves along familiar streets. The world, he writes, is full of ‘orientation cues,’ but they are *personal*, not the conventional ones that sighted society agrees upon. The problem for him is that the ‘sighted style’ and ‘blind style’ of perception are so different, and the ‘sighted style’ is normalised, entrenched into the way that we design and experience space, how sighted people communicate and know the world, with little allowance made for the ‘blind style of perception.’

This normalization, Saerberg tells us, “creates difficulties for blind people” (Saerberg 2010: 377).

Its sense of normalcy depends on a knowledge base that is taken for granted. Taken for granted knowledge hinders the acquisition of typical knowledge about the blind style of perception that would inform sighted people about the relevances of blind people. [That is, the sighted never think that they should learn about how the blind perceive.] This neglect leads in turn to social oppression. In the present study, this disconnect and this problem has been illustrated through an analysis of the ways in which sighted persons assume they can describe routes to anyone, whether sighted or blind. Normalcy fails in the case of blind strangers. (Saerberg 2010: 378)

So what’s the answer? The answer is that, when sighted and non-sighted meet, it is the sighted who need scaffolding to perceive in a ‘blind style,’ not just the other way around. If we, the sighted, listen to the words of the visually impaired and walk alongside them, the visually impaired can show the sighted other ways of being that are possible with a human brain and senses (and here I’m speaking to those of us in the audience who have vision, not those who do not or have low vision). As Saerberg suggests, and I would agree as an anthropologist, the learning needs to flow to the sighted as much as the other way around.

In fact, I’d daresay that in most encounters between the sighted and the less-sighted or the non-sighted, it is the sighted, shielded by the shell of normalcy, who are much less familiar with the other’s style of perceiving. The blind understand the sighted better than

the sighted understand the blind.

I cannot tell practitioners of O&M this, nor can I tell those who work with the blind or parents of children with visual impairments, nor am I sharing anything that the visually impaired or blind among us don't already know. I can only reinforce your desire to be evangelical, to share your interest in visual impairment and what a 'blind style of perception' can teach us all about the world. And I can encourage parents and people who work with the blind to listen carefully, to feel and smell alongside our blind colleagues, to pay attention to how they perceive.

As an anthropologist, it's a familiar position to be in: to tell a dominant group – in this case, the sighted, a group to which I belong – a group that is used to shaping the world and ignoring other ways of being, that there is much to learn from those who dwell in the world in different ways, whether they are the disabled or differently abled or language minorities whose distinctive vocabularies most of us cannot understand (as I'll talk about tomorrow). Anthropologists frequently have to point out that one of the sad effects of cultural domination is that the dominant lose the capacity to imagine that other worlds are possible, other ways of doing things are an option; instead, the world is shaped to reinforce the sense that the way that the dominant do things is simply the only way. There are no alternatives. Over and over again, anthropology shows us that's not the case.

For the parent or adult working with a visually impaired child or young person as a *teacher*, that person is likely to be most effective when he or she is also open to learning, to perceiving in a 'blind style' as much as possible. The teacher or guide must simultaneously *be* a student, constantly willing to learn, to having his or her senses educated in the process of exchange. Certainly, I've learned a tremendous amount about sensing from the blind. I cannot do what they do, but I have built an entire research project on the idea that, yes, the visually impaired cannot see as well, sometimes at all, but that have other perceptual skills and techniques that we all can learn from.

The exercise isn't entirely academic. Learning from the visually impaired, taking into account a blind style of perception when we build houses, design schools, organize events, and everything else means creating a landscape that is more accessible for all of us. While there are more than a half-million visually impaired people in Australia today, that number is estimated to climb to 800,000 by 2020. We're an aging population, and

the chance of visual impairment triples each decade as we age. Paying close attention to a blind style of perception means learning from these experts how we might better adapt to that reality – as a society and as individuals.

How can we come to understand better a blind style of perception? Well, simulation has problems. Just wearing a blindfold produces a much scarier more helpless situation than the blind experience, because a sighted person with a blindfold has none of the skills which the visually impaired develop, none of the creative solutions and life hacks that allow those with low or no vision to navigate. The helplessness of the suddenly blinded, the fact that they do not have the sensory skills of those who are actually visually impaired, can *reinforce* stereotypes about blindness among the sighted, who are prone to thinking that loss of vision is a catastrophic disability. Blindfolded sighted people are more impaired than the visually impaired.

Blind sociology professor Rod Michalko similarly writes that, “Blindness is not simply the negation of sight: It is a way of sensing the world and a way of being in the world” (1999: 107). Being blindfolded cannot capture this positive way of sensing. Rather than producing greater awareness of what the visually impaired are capable of doing, the experience of simulated blindness can exacerbate the tendency toward thinking the visually impaired are tragic unfortunates, bereft of hope and utterly dependent upon charity and assistance (because that’s how most sighted people would be when first blindfolded).

On the other hand, a temporarily blindfolded individual may have a vision impairment, but he or she does not really experience the ‘disability’ of being visually disabled because none of the social stigma or other disabling barriers that society imposes on those with vision impairments are experienced by the temporarily sightless. A blindfolded person doesn’t have to worry about the staggering rate of unemployment, the likelihood of experiencing prejudice, or any other issues that those with visual disability have to face. A blindfolded person doesn’t have to deal with inadequate accessibility in online services, educational programs that have no accessible alternative formats, or the raft of other barriers to full participation.

In order to bridge the gap between styles of perception, Saerberg recommends art works as a way of communicating a blind style. In his own writing, he discusses some of the productions that he has been involved in, including experiences of dining in the dark and attending museums and galleries in the dark. These are guided experiences, and in them, the visually impaired serve as experts who help to scaffold the perception of the novice ‘blind style’ perceivers, like a parent directing the attention of a child to the most important sensory cues. The point is that just being eating in the dark doesn’t teach someone the blind style of perception; having one’s sight impaired and then being guided in how to perceive by someone who is expert in that style of perception starts to scaffold new sensory skills.

Drawing inspiration from Saerberg, Florian Grond, a researcher specialising in recording technology and music, and Piet Devos, a writer and researcher who is blind from retinoblastoma, collaborated to produce what they call ‘sonic boundary objects’ as a way of increasing understanding of a blind style of perception.

‘Boundary objects’ are tools that provide a door between expert perception and a broader public, like a map or diagram that allows a geologist to explain to a group of non-specialists a feature of the landscape or a diagram that allows a tracker to show novices what to look for when trying to follow game in the bush. The boundary object typically means more for the expert who encounters it than for the novice. The expert can read quite a bit from the boundary object. But the boundary object provides a platform to try to share highly skilled forms of perception, knowledge and awareness.

Grond and Devos advocate creating binaural sound recordings on walking tours with the blind person wearing a chest-mounted video camera. A binaural recording is created by wearing a tiny microphone on each side of the head where the ears are. Using this type of equipment, highly life-like recordings can be made that capture the three-dimensional distribution of sounds, the ambient noise that a person hears, and even the head motions of the person wearing the binaural microphones (although sometimes a mannequin head is used to mount the microphones).

Wearing headphones, a sighted person can then be shown the video with the binaural recording, which gives a vivid sense of the audio environment. The visually impaired

guide who made the recording can then listen together and explain key details, highlight what is relevant and scaffold the perception of space from sound. The key is joint listening and discussion, which is where the scaffolding can take place. The video helps (and Grond and Devos suggest that sighted people just become too disoriented without video), but the binaural recording is really what the exercise is meant to teach the sighted person to perceive, and it needs the overlay of the guide. The goal is not to simulate impairment, but to share techniques for perception through the boundary object.

I'll briefly play one of Grond and Devos's recordings of a walk in Montreal, where Devos discusses on a commentary track with Grond what he's hearing.

As Devos explains in the article that accompanies these videos:

Thanks to the very realistic reproduction of my own auditory experiences, I felt for the first time capable of giving a very accurate [first hand]... account of my blind navigation style to a sighted person...

I could for example explain and audibly demonstrate how I manage to cross a busy street where, as is unfortunately very often the case in the center of Montreal, traffic lights are not equipped with any sound signaling system. The microphones had neatly registered the fact that I not only need to wait until the cars on the street to be crossed – say Ste-Catherine – have come to a halt, but also until the traffic on the side-street – for example, Bishop – have set in motion. Similarly, when entering the food court in the underground city close to the place where I live, an untrained listener will be overwhelmed by the cacophony of music, chatter and machine noises. In the comments to the recordings I can make it clear, however that I focus on the spatial configurations of the sounds to find my way through this apparent chaos, by paying attention to the clients' and vendors' voices in the food stalls on both sides of the central corridor as well as on the loudspeakers above my head which, like lanterns in the dark, indicate the route to follow. (Grond and Devos 2016: 10)

I will play the recording of the walk through the food court even though the effect will not be as dramatic without headphones. If you're interested, go to Vimeo and look for Florian Grond's video channel or go to album number 4120513.

- Selections from the recording can be accessed online:

<https://vimeo.com/album/4120513>.

<https://vimeo.com/album/4120513/video/180759014>

(The video that I showed briefly in the talk.)

What this brings me to is my final point, which is the opposite of approaching the meeting of the two perceptual styles and trying to learn mutually.

Blindisms:

One of the ways that sighted parents and teachers can impede sensory skill development in blind individuals – the opposite of scaffolding – is that they curtail behaviour that they do not understand. In particular, I'm talking about exaggerated fear of 'blindisms,' patterns of behaviour that, according to the web page of the Texas School for the Blind and Visually Impaired, 'provide some kind of stimulation or enable them to communicate somehow.' 'Blindisms' include rocking, pressing the eyes, and flapping the hands. Some blindisms or characteristic gestures, especially repetitive ones, have been explained by researchers as responses to sensory deprivation or other mental disability.

In extreme cases with the visually impaired, especially when coupled with mental disability, blindisms can be extremely upsetting to parents and constitute a kind of self-harm. In these most severe cases, clearly, we would seek to find ways to mitigate the behaviour, especially if it is a symptom of underlying distress. Some 'experts' in the field go so far as to advocate corporal punishment and physical restraint, advice that I can only imagine is just as distressing to some parents as the behaviours themselves.

But the antipathy toward blindisms goes far beyond concern about physical harm or the underlying distress, to a worry about stigma. For this, I turn to the weblog *Gwen's Things Unseen*, written by 'Gwen B.' who describes herself as 'President, Michigan Parents of Children with Visual Impairments' and 'mom of 17-year-old son who is blind'.

About 'blindisms,' Gwen writes:

Blindisms are those characteristic movements that some blind people make that appear unusual to sighted people. These movements may be some kind of compensation for the lack of visual input, although no one really seems to know.

She cites hand flapping, rocking, jumping and eye pressing, but she goes on to highlight:

Another less frustrating blindism is not looking at a person speaking to them, preferring to have the person speak to their ear, which makes perfect sense, but doesn't work very well in a world of sighted people who expect someone to look at them if they are paying attention.

Gwen B. goes on:

Blindisms are habits, and the longer a child does them, the harder it is for them to break that habit. They may provide some kind of stimulation for a brain starved of something to do visually, but as far as I know there is no known useful purpose for them, and some, like eyepressing, can cause even more eye damage. In fact, with eyepressing done from a young age, a child's face may become deformed and the eyes appear driven backward into their head.

These behaviors may be tolerated in incredibly talented creative persons, like Ray Charles and Stevie Wonder, where odd behavior is not only permitted but sometimes expected, but not all of our kids are going to be commanding thousands of dollars at every performance or sell millions of recordings.

A blind or visually impaired person has historically had a very difficult time getting gainful, full employment. Visualize your child going to a job interview and doing whatever blindism is their particular choice. Imagine him or her, dressed in suit and tie, jumping, or rocking back and forth so hard in their chair they look like they are on an amusement park ride. Or what if your child flaps their hands constantly in front of their face, or if they drill their fingers into their eyes? What

if your darling child becomes, well, ugly to sighted people, because their eyes are sunken into their eye sockets? How would a prospective employer feel about this? Would he or she find this behavior distracting, annoying, or disgusting - even revolting? Would you hire someone like that? Be honest with yourself!

Believe me that I understand this concern. For the parent of any child, with an impairment or without, concern about their future is a nightmare. Gwen concludes her column:

As parents we need to visualize the future and act on that vision to make it happen. If we visualize a future for our child in which they stand up straight, look people in the eye, and appear to be paying close attention to what is being said to them, then we need to help them learn behaviors that will get them to that goal.

Gwen's visualisation of the future, her attempt to make sure that her child, no matter his needs, can fit in and pass in a majority culture that is hostile to any form of difference, should make us stop and pause.

In fact we know that some 'blindisms' are adaptive strategies, sensory techniques for improving perception of the environment. Moving the head, for example, sharpens a person's ability to detect the location of a sound source. Without head movement, it can be difficult to determine whether a sound source is in front of or behind us, and everyone instinctually move their heads in order to increase their ability to discriminate sound source.

In research done with *expert* echolocators, the ability to move the head even increased their ability to tell two-dimensional shapes from the echoes produced by those shapes: they could reliably tell which way a rectangle was turned and whether they were 'hearing' a triangle or a circle. The more precise a person's ability to perceive shape through echoes, the greater the drop-off in ability when researchers restricted head movement.

Head movements, in other words, are a strategy for sharpening perception, like turning on the light in a dark room or moving a book closer when a sighted person tries to read.

Although these strategies of blind auditory perception may lead to stigma in some settings, so too does putting on my glasses in some situations! To privilege the need to fit in over the need to perceive appears to me to be a classic example of a social disability, where society, through force of stigma and prejudice, prevents a person from acting in a way that makes a task easier, clearer, or more likely to succeed.

But the problem is not just that it becomes harder to hear where a sound is coming from if we force a person with a visual impairment to behave just like a sighted person – to ‘stand up straight, look people in the eye, and appear to be paying close attention’ (ironically in a posture that is actually paying less attention to the details the visually impaired person *can* perceive). The problem is also that, especially as children are developing or people are adapting to increasing visual impairment, every act of perception is also an act of learning and neurological sculpting. Listening and moving the head doesn’t just help a person in the moment; it trains and refines the perceptual system for the future. Forcing a child to stand still and pretend to look someone in the eye prevents a blind child from doing the sorts of sensory exploratory behaviours that are going to help them become better and better at getting information about the environment out of sound.

My point is not that every person with a visual impairment will become an expert echolocator, or that every behaviour should be encouraged. Rather, expert echolocators can show us what is possible and the routes to get there. Research on echolocation skills, such as the ability to discern shapes, shows us how really good listeners do what they do. Just like virtuoso athletes can teach us all a bit about getting into shape by showing us the path to the Olympics or to professional sports.

If anything, we should initially tolerate and learn from the behaviours that the visually impaired use, try them ourselves, and recognise that we should not just ask those who are different to adapt to us. We should also adapt to them, including our expectations.

Scaffolding the learner means studying them, realising what their frontier for development is, the techniques that they are using to perceive, and how they are going to get there. One of the greatest tools we have for helping other people is curiosity and support for the ways that they are trying to help themselves.

References:

Botting, Gwen. 2011. Blindisms – What they are and why we need our children not to do them! Gwen's Things Unseen weblog.

<http://gwensthingsunseen.blogspot.com.au/2011/04/blindisms-what-they-are-and-why-we-need.html> 27 April 2011.

Grond, Florian, and Piet Devos. 2016. Sonic boundary objects: negotiating disability, technology and simulation. *Digital Creativity* DOI: 10.1080/14626268.2016.1250012

Michalko, R. 1999. *The Two in One: Walking with Smokie, Walking with Blindness*. Philadelphia: Temple University Press.

Saerberg, Siegfried. 2010. Just go straight ahead. *The Senses and Society* 5(3): 364-381.