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DEAF GAIN

Beyond Deaf Culture

IRENE W. LEIGH, DONNA A. MORERE, AND CAROLINE KOBEK PEZZAROSSI

Normalcy has been idealized as the standard, as an aspirational goal for people, thereby implying that those individuals who do not meet that standard belong on the fringes of society. However, for decades, scholars have argued about the meaning of normalcy and the value of diversity. There are writings that zero in on whether diversity can be a valued attribute. For example, John Harris extols the importance of enhancing evolution to minimize undesirable attributes or maximize desirable attributes.[1] In contrast, others, such as Christopher Krentz and Michael Sandel, argue against the notion of genetic engineering designed to dilute the variability that is part of the human condition.[2] Lennard Davis has observed that enforcing normalcy as an inclusive standard covering human diversity in the guise of various body states has yet to happen.[3] The implication, therefore, is that in order to succeed in normalization and become as close to "normal" as possible, deaf people need to follow the "normal" parameters of society in the guise of spoken-language and hearing cultural ways of being.

But "normal" is not a comfortable cloak for many. Individual differences abound in all of humanity. To package these differences into one box is to deny what it means to be unique individuals. Deaf people have long since recognized that they are but one example of individual differences. Yet for this they have been "damned for their difference,"[4] particularly while showing "signs of resistance" against efforts to minimize that difference through the suppression of signed languages and the focus on spoken language.[5]

With the advent of ongoing changes in hearing technology, including the development and popularization of new generations of cochlear implants, it is clear that the message of normalization continues. Cochlear implants have been touted as a means of placing deaf persons "on track" to achieve immersion in their hearing societies. Numerous studies of children with cochlear implants have examined speech development, language development, auditory development, and socialization.[6] For the most part, it appears that many children with cochlear implants are

functioning essentially as hard-of-hearing children, a group that has its own set of problems in dealing with mild to moderate hearing loss.[7] Whether this represents a sort of gain depends in large part on individual experiences. Although results in academic achievement for children and youth with cochlear implants appear to exceed those of their deaf peers who do not have the implant (definitely a positive gain), they still are not equal to the norms for hearing peers, and results tend to be quite variable.[8]

Socially, with immersion in mainstream programs, there are success stories illustrating the resiliency of deaf children with cochlear implants who are able to overcome challenges such as accessing group conversations and dealing with the ambient noises of their surroundings, in large part because of their ability to identify auditory information.[9] But many have difficulties at times, suggesting that enhancing one's fullest potential may be relatively more difficult because of the lack of skills in identifying sounds and the interfering noise that accompanies group participation.

As is amply documented in this book, Deaf Gain is an effort to announce to the world at large that there are, in fact, gains to being deaf and to Deaf ways of being, primarily in "reframing representations of deafness from sensory lack to a form of sensory and cognitive diversity that offers vital contributions to human diversity."[10] As indicated by H-Dirksen Bauman and Joseph Murray, subsumed under the overall concept of Deaf Gain are the concepts of deaf benefit (gains to the individual) and deaf contribute (gains for humanity).[11] Through these concepts, Deaf Gain attempts to reframe the value of deaf lives and to counteract the notion that deaf people need to be "normalized" in the process of attempting to eradicate the disability of deafness.[12] The paramount premise of this concept appears to be that living within a visual-spatial context contributes to the richness of life and human diversity. This contravenes the historical Western reliance on the sense of hearing as the paramount conduit for the richness of life and human diversity, and in particular for hearing and receiving language.[13]

The Deaf Gain paradigm supports the premise that languages carry the weight of significant meaning when conveyed via a visual medium, as much as or even more than when conveyed through auditory means. Bauman and Murray make a strong case for the way cognitive, linguistic, and cultural diversity as exhibited by Deaf communities throughout the world can expand the notions of linguistic diversity and biodiversity. They advocate for the need to reframe hearing loss as Deaf Gain, to enhance the notion of Deaf as a unique way of life that emphasizes the advantages of being Deaf. They clarify the contributions of "a sophisticated form of visual-spatial language that provides opportunities for exploration into the human character" as an example of Deaf Gain.[14]

Although there are critical advantages to viewing Deaf Gain through the lens of visual-spatial languages, including a sense of how they enhance ways of understanding the world, we appreciate that there are more broad conceptualizations

of Deaf Gain that go beyond the paradigms of Deaf culture per se. As Joseph Michael Valente, Benjamin Bahan, and H-Dirksen Bauman suggest, insufficient attention has been paid to how the use of the eyes in different ways, whether in conjunction with or apart from any language per se, has expanded our understanding of the world.[15] For example, the burgeoning new field of DeafSpace speaks to both the notion of space and time as viewed through the lens of visual ways of seeing the world and the enhancing of one's place in space, depending on location and function.[16] The principles on which DeafSpace is predicated are based on knowledge about aesthetics in general, principles that hopefully will facilitate the future creation of spaces and buildings for all peoples. This aesthetic has been around for a long time, as witness buildings that are open and airy in space. There are many people, both deaf and hearing, outside the realm of "Deaf" who also see the world uniquely through a visual lens, the most obvious example being architects, but beyond that, artists who illustrate the gain of vision in portraying the world or in dealing with worldviews in diverse visual ways. In addition to architects and artists, there are also engineers, fashion designers, and psychotherapists, among others, whose livelihoods depend on their visual sophistication and their visual skills in analyzing their environments and the visual expressions that people exhibit, not all of whom rely on signed languages or vision alone to communicate with their worlds.

We do understand that Deaf Gain is predicated in part on the premise that visual languages significantly and uniquely contribute to the understanding of human diversity. Although this is a critical component, we also support the proposition that Deaf Gain or vision gain, in particular the unique ways in which deaf people use their visual capabilities in conjunction with, or separately from, their auditory capabilities (enhanced by technology), is just as valid a concept for critical analyses of those individuals who do not consider themselves members of a Deaf culture. More specifically, we support an additional focus on how deaf persons who are not necessarily affiliated with Deaf culture manage their environments and how they use their vision in ways that may not be similar to those of their hearing peers.

Demographics provide support for the need to consider this section of the deaf population. Specifically, the estimated number of individuals in the United States exhibiting mild to profound levels of deafness is approximately 34 million, with most of them experiencing late-onset hearing loss, starting in the mild range.[17] For those with severe to profound levels of deafness, the estimated prevalence falls roughly between 464,000 and more than one million.[18] The prevalence for those who are hard of hearing is roughly 10 million, making this group far larger than the group who are classified as deaf. Ross Mitchell and colleagues have extrapolated data from a 1974 census to suggest that individuals who rely on American Sign Language (ASL) number approximately 500,000.[19] The rest are not users of ASL.

The point of this demographic information is to emphasize the presence of a large "deaf" community in the United States, of which Deaf culture is one part, many of whose members consider themselves to be audiologically deaf and identify themselves as oral deaf persons or as individuals who happen to be deaf. This is also a community that is quite heterogeneous, a fact that is often overlooked when analyzing what Deaf culture represents, though we acknowledge that scholarly work is increasingly taking the diversity of culturally Deaf people into account.[20]

Who is the audiologically deaf person, or, more popularly, the oral deaf person? The most common description is a person who typically exhibits a preference for spoken languages and interacts primarily with hearing peers.[21] But these individuals also have feelings of affinity with deaf peers who follow similar lifestyles.[22] They typically strategize ways to improve auditory access in addition to relying on their vision to orient themselves to their environment. Worthy of note as well is the fact that gradually increasing numbers of culturally Deaf individuals are also open to diversifying their sensory experiences not only with the use of hearing aids but also with cochlear implants.[23] They value the use of their eyes but also want to expand on their sensory experience of their world, just as those deaf individuals who rely on spoken language do. Consequently, it is beneficial for us to examine how the concept of Deaf Gain benefits all within the diverse deaf population.

We would like to reemphasize the premise that Deaf Gain is not just the contribution of visual-spatial languages to our understanding of human nature and human connection but also a way of relating to the world through the eyes in addition to the other sensory experiences the human body and culture make possible. Considering the fact that deaf youngsters continue to be initially exposed to spoken language early in life, with a good number of them also being exposed to sign language in the early years with demonstrated benefit, it behooves us to learn more about how deaf individuals process information through spoken language and how they benefit from the combination of vision and sound as hearing people do or even beyond what hearing people do.[24] For example, there is a phrase, "hearing eyes," that some deaf persons use to connote the way hearing people sometimes ignore subtle visual signals indicating that they are creating environmental barriers, such as not moving to the side to allow foot traffic through because they do not easily visualize themselves in space, signals that deaf people, whatever their linguistic status, often effectively notice, as based on anecdotal information.

It is also important to recognize that hearing people are not solely auditory users in connecting with their worlds. As Johan Lundstrom noted, what was thought to be the case for each sense in isolation isn't necessarily true, considering that the brain manages information from multiple sensory sources simultaneously, for example, noticing smell with sight to create a construct that combines both.[25] He provides the example of smelling rose oil while looking at a photograph of a rose; this leads to a more intense sensory experience. In this regard, there are

implications related to the intertwining of vision and audition that can represent a gain for deaf persons.

We now turn to a review of the research evidence on the visual-spatial strengths of deaf people. This research shows that deaf individuals benefit not from the use of vision alone but from the combination of visual and auditory input, a combination that hearing people also benefit from despite their implicitly assumed reliance on audition alone.

Research on Visual and Bimodal Processing

In view of the desire for the "normalization" of deaf children, given that the vast majority of them are born to hearing parents, most deaf children are exposed to some level of spoken language from an early age regardless of the decisions made concerning the communication method to be used with them. Furthermore, because of advances in technology—both cochlear implants and digital hearing aids—increasing numbers of families are initially focusing on communication through spoken language for their deaf children. Thus, it behooves us to learn more about how deaf children process information through spoken language and how they benefit from either vision alone or the combination of vision and sound, as hearing people do when processing spoken language.[26]

Visuospatial skills involve the reception, analysis, and use of visual information and the understanding of the spatial relationships among objects (including other people) in the environment. Visuospatial analysis represents an integration of the information a person is currently seeing, the person's existing knowledge of the types of objects seen and typical relationships of those objects, and other sensory information, including audition and the body senses (such as touch, balance, and kinesthetic information). So, for example, if a person sees a glass of water in front of a television, he or she understands that the glass is closer, because it obscures part of the television, and the person's understanding of the glass's position in space relative to him or her and the awareness of the position of his or her own body allows the person to reach for the glass in space with a high level of accuracy. This process involves multiple areas of the brain working in an interactive manner.

Vision is initially processed in the occipital lobes, located in the lower portion of the back of the brain. Here, basic information about light and color is analyzed and integrated into lines, angles, and finally shapes. This information is then sent forward via multiple pathways, through one of which it is integrated with information from the other senses—particularly the body senses that provide information about where we are in space and our own body positions—and our knowledge of spatial information to tell us where the things we see are. A second pathway provides integration of the visual information with other sensory information, our knowledge of objects, and our language base to determine what the things we see are. The spatial, or "where," part of the information travels through what

is called the dorsal pathway, meaning that it travels through the upper sides of the brain to the parietal lobes (hands placed on the sides of one's head slightly above and behind the ears roughly cover the parietal lobes). The "what" part of the information travels through the ventral pathway, which runs through the lower part of the brain. This information is integrated in the lower part of the temporal lobes, roughly located beneath and behind the ears. A third pathway travels to the middle of the lateral surface of the temporal lobes and is involved in the analysis of specific types of movement. Recent research suggests that this area receives information from the other two streams as well.[27]

The upper surfaces of the temporal lobes are typically involved in the analysis of auditory information in a manner similar to the visual analysis occurring in the occipital lobes, as well as in the reception of language. Research suggests that both visual and auditory inputs are involved in the processing of receptive language in hearing as well as deaf populations.[28] The ventral visual pathway carries the visual shape information to the lower surface of the temporal lobes, where object recognition occurs. That is, this pathway allows us to identify objects that we see. The third, middle pathway travels to an area of the temporal lobes involved in the analysis of visual information to detect something called biological motion. Biological-motion perception, which has been found to be abnormal in individuals with autism-spectrum disorders, is important for social perception, or the understanding of social intentions and relationships.[29] This involves the integration of visual information such as gaze direction, head movement, mouth movement, facial movement and expression, and hand and body movement. These types of movements both distinguish living from nonliving objects and provide important cues related to social interactions and the intents of the individual being observed. Although this information relates to all animals, it has particular relevance for humans, who are highly social animals. This information typically reflects nonverbal communication in spoken interactions but may comprise part of the linguistic message in signed languages.

To date, most of the research on visuospatial functioning in deaf individuals has focused on Deaf or deaf signers and has suggested enhancement in a range of visuospatial processes.[30] Although little research has investigated the visuospatial impacts of deafness in the absence of a history of signing, Allegra Cattani, John Clibbens, and Timothy Perfect compared visual memory of deaf signers and nonsigners and found a relative increase in performance of deaf signers relative to the nonsigners (deaf and hearing) on memory for abstract shapes but not for objects.[31] This study suggests that more research needs to be done on the nonsigning deaf population as it relates to potential differential Deaf gains in visuospatial functioning separate from the outcomes obtained from signing groups.

One aspect of visual analysis that has been less studied is its involvement in the reception of spoken language. Some recent research has focused on this topic, yet much work remains to be done in this area, and minimal work has ensued related

to potential Deaf gains related to this process.[32] As we previously noted, most people use visual input, such as the information on the face and mouth, in addition to any available auditory input, during the reception of spoken language. That is, receiving spoken language reflects a combination of listening and speechreading for most people. Historically, it was believed that hearing people would be likely to be better speech-readers than those who were deaf; however, recent research has indicated that oral deaf individuals who depended on speechreading from an early age—especially those deaf from infancy—appear to have enhanced speech-reading skills relative to their hearing peers.[33] However, this does not appear to involve a general enhancement of visuospatial skills. Indeed, although Tara Mohammed and colleagues found that the deaf participants in their study were, on average, better speech-readers than the hearing participants, their performances on two measures of visual processing did not reveal any significant differences. Moreover, the hearing participants' performances on the visual tasks were not significantly related to their speech-reading scores, yet the deaf participants' speech-reading scores correlated significantly with their performance on a measure of perception of motion but not with one of perception of shape, or form. Although the stimuli used for this motion task were simply moving dots, the ability to detect when they were moving together (coherent movement) is believed to reflect perception of biological motion, or movement that appears to reflect speaking and communicating activities such as facial expressions, speaking, and walking. This type of information appears to be involved in the processing of social interactions, providing information about the intent of the individual. Thus, sensitivity to subtle aspects of biological movement—even in the absence of enhancement of skills in the detection of this motion—may contribute to enhanced speechreading in deaf individuals. Enhanced speech-reading skills enable individuals with high-level skills to understand speech in noise levels and at distances that would make auditory speech reception difficult to impossible. Such skills would enable these individuals to understand speech in situations in which those with more limited speech-reading skills would be unable to understand what was said.[34]

Significant research has suggested that both deaf and hearing individuals integrate auditory and visual information in the perception of speech, and that at least some of this integration occurs in what is typically considered to be the auditory cortex, or the area of the brain that normally analyzes sound.[35] Indeed, Riikka Möttönen, Martin Schürmann, and Mikko Sams found that during audiovisual integration tasks, the auditory cortex was activated before the area involved in analysis of biological motion.[36] Thus, this integration of vision and sound in the analysis of the speech signal to determine the literal speech signal (what he said) appears to occur automatically and to precede the additional analysis related to intent or social message of the speaker (what he really meant). Interestingly, Donna Morere's review found that a range of studies suggests that the analysis of biologi-

cal motion appears to be a key factor in speechreading.[37] Considering the dynamic nature of speechreading, and its dependence on multiple areas involved in biological motion, this makes a great deal of sense.

In hearing as well as deaf individuals, the visual signal arrives at the brain first (light travels faster than sound) and appears to prime the auditory cortex, speeding up speech analysis by limiting the potential set of phonemes from which the brain must choose.[38] That is, if the mouth is closed, the brain doesn't need to analyze the auditory signal to see whether the phoneme being received is /H/ or /G/. This increases the efficiency of the auditory analysis when the auditory signal is available. In the absence of the auditory signal, as in a profoundly deaf individual, the analysis must proceed based on the relatively limited speech-reading signal but appears to occur in this region regardless. Interestingly, Möttönen, Schürmann, and Sams found that the degree to which the auditory analysis was facilitated depended on the accuracy with which the phonemes were detected in a vision-only condition. This would suggest that individuals with enhanced speech-reading skills could best benefit from such a process.

Hearing individuals appear to use audiovisual inputs with a focus on the auditory in better auditory settings, and their dependence on the visual signal increases as the auditory signal is degraded or obscured, as in a noisy environment.[39] In contrast, deaf individuals appear to depend more on the visual aspects of the speech, but they take advantage of whatever auditory signal is available to clarify the information available through speechreading.[40] They appear to use many of the same areas of the brain for visual analysis of speech that are typically used for auditory speech analysis, regardless of the level of auditory functioning or available auditory input.[41] Furthermore, deaf children with better speech-reading skills who later receive a cochlear implant appear to develop better auditory speech perception than children with weaker speech-reading skills.[42]

Overall, deaf individuals appear to process spoken language in a manner similar to that of hearing individuals. Both use a combination of visual (speech-reading) and auditory (when available) input. The audiovisual input is integrated at a very basic and early level in the brain and is used to produce an optimal speech signal. However, whereas hearing individuals appear to use visual input to facilitate (speed up or clarify) the auditory signal, deaf individuals naturally depend more heavily on the visual signal and supplement this with any available auditory input. The research seems to suggest that deaf individuals process a higher level of visual speech in the auditory cortex and that this facilitates use of available auditory signals. Although it is unclear whether there are perceptual gains from a dependence on visual speech, research suggests that the speech-reading skills of deaf individuals far exceed those of hearing individuals. Furthermore, peripheral functions, such as visual attention, appear to be enhanced in deaf individuals regardless of whether the person uses signed or spoken language.[43] Thus, there appear to be

some areas of visual functioning that represent a generalized Deaf Gain, whereas other aspects of visual functioning may be enhanced through the language experiences of the individual, particularly during the developmental years.

Social Aspects of Deaf Gain

The old adage "Birds of a feather flock together" illustrates the basic human need of belonging to a group of individuals who have potentially similar backgrounds. But although there is a wealth of empirical information regarding forming bonds with people of similarity in the field of social psychology, there is limited research specifically geared toward the d/Deaf community and to the way individuals in that community bond. We attempt to explore this area within the paradigm of Deaf Gain, pertaining specifically to individuals who primarily use spoken languages.

Again, Deaf Gain is not only about language and visual aspects; it is also about bonding and connection, and recognizing one's unique ways of living. It is about recognizing resilience in the face of a world not always comfortable with difference. It is also about identity. Just as culturally Deaf people connect with each other, deaf people who rely on spoken languages also have their deaf ways of being, their use of the eyes in addition to whatever auditory enhancement they may experience with assistive devices, and their sense of togetherness and understanding when they get together.[44] There is a sense of recognition and commonality based on shared life experiences. Research has shown that feeling a sense of connection with another person improves physical and mental health.[45] Here, we will use general social-psychology concepts, general research findings, and anecdotal information to better understand the formation of friendships and the ways social support can enhance Deaf Gain.

Deaf people form tight bonds usually lasting through the life span. It is not only hearing status that bonds them; they are also bonded by shared experiences. Such experiences include educational background—the type of school attended, the teachers, other students, the languages used, and technology needs. Each deaf person uniquely experiences the sense of being deaf; however, it is not required that one join a Deaf cultural community in order to feel a sense of belongingness. Many do, but those who don't typically seek out other individuals who may have similar experiences in dealing with their worlds as deaf persons even as they immerse themselves in their local hearing communities.[46] The goal is to develop a healthy sense of self and to seek a sense of validation within themselves, best attained through relationships with others.

There are several organizations and groups whose mission does not include culture; the Alexander Graham Bell Association for the Deaf and Hard of Hearing is one such example. This national association hosts an annual conference where like-minded individuals within the deaf community gather to enjoy the sense of being deaf and relating uniquely with their worlds. These are not necessarily in-