

Acoustic science between adjustment and self-determination

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Deaf and hard-of-hearing people often live in societies in which “normal,” i.e., natural, hearing is required for social participation. They can react to this norm in different ways: they can use medical assistive technology such as a hearing prosthesis, cochlear implants (CIs), or hearing aids. These do not, however, replace normal hearing, nor do they provide normal understanding of spoken language. Yet hearing people take for granted that deaf and hard-of-hearing people use medical technologies such as cochlear implant prostheses and hearing aids, even though they only offer partial support. Deaf and hard-of-hearing people also can use lipreading and sign languages. Just as with sign language, learning speech reading (i.e., lip reading) requires access to education; it is exhausting and requires constant concentration. Thanks to speech therapy, the author can perceive spoken language well enough to pass as not hard-of-hearing, even though she is almost deaf. Yet subtitles and communicating in written language are a great relief. This hard work, however, is hardly recognized, just as there is little recognition of sign languages.

Some explanations for hearing people’s expectation and bias can be found in Western military and industrial history. For instance, radio communication had become established already before World War I. Once the war had begun, military researchers tried to find out how to protect radio operators in ships or trenches from the noise of motors, bombs and generally acoustic harassing fire—ship motors, planes, bombs, and tanks were very loud in the first decades of the 20th century. Another research focus was then on wireless radio connections. In order for physicists and engineers to develop and fine-tune the optimal frequencies for understanding and hearing spoken language, they needed a better

understanding of the brain and inner ear. Scientists had considered the possibility of inner ear prostheses since Alessandro Volta had invented electric batteries in the 18th century. In Germany, this notion was not taken up again until the time of national socialism. Respective medical-technological research was carried out in military hospitals and sanatoria as well as in concentration camps and their sick bays. The research was consequently not voluntary nor based on informed consent. Almost all research was marked by a criminal neglect of the participants' rights for autonomy and physical integrity. Yet the results were important enough for their origins to be obscured. After 1945, research was continued by physicians in Western Europe and the US who were not associated with national socialism. This research contributed significantly to the development of cochlear implants (CIs). Today, CIs are standard for children who are born deaf. Thus, the technologization of humans continues, while cultural and linguistic techniques such as lipreading and the use of sign language are losing in importance. During the Covid pandemic, this resulted in the wide-spread exclusion of deaf and hard-of-hearing people. Their struggle for autonomy continues.