

Consuming Disability: A New Dutch System for Hearing Aid Distribution  
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**Abstract:** In the context of a Dutch market-oriented health care reform, this article investigates the role of two powerful, yet little examined actors in the field of hearing disability: multinational corporations and technology. Based on a notion of “co-production,” the article develops an explanation of the new Dutch system for hearing aid distribution resulting from the interplay between new hearing technologies and an emerging corporate discourse on disability. The results point to technology as a potentially important site for democratic intervention.

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**Key Words:** hard of hearing, corporate discourse, co-production

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Introduction: European Health Care and a Dutch Market-Oriented Health Care Reform

Affluent European countries organize, manage, and finance health care in different ways. But the systems share some common principles: universal access to care and insurance, solidarity in the distribution of costs, and a good standard of care. As outlined in a background paper for the Dutch EU Presidency (Ministry of Health, Welfare, & Sport, 2004), a series of changes related to service provision have emerged within European welfare states. Governments are concerned about the financial and social sustainability of their welfare systems, as well as the efficiency of their health care systems. The well-known rationalization is that public health systems are increasingly coming under strain due to the rising costs of health care. Behind the concern is the proportional increase of the aging population, the emergence of new and expensive medical innovations, and citizens’ growing expectations regarding the quality and availability of demand-driven healthcare provisions. Consequently, European governments are seeking ways to make the system more efficient so as to reduce pressure on public budgets. As a result of globalization, nation states must make adjustments in order to match the global economy. For example, to make an adjustment in order to move in a market-oriented or neo-liberal direction due to globalization. A common approach is to economize by introducing competition elements into the system for instance through privatization. Coupled with the commercialization process is the changing role of the recipients of government programs from *users* to *consumers*:

“The customer has to become a critical care consumer, and should be encouraged to make responsible choices. Insurers should compete in price, service and quality, and health care providers should be stimulated to provide efficient and effective health care. Governments will have an important role in guaranteeing quality, accessibility and affordability of health care. However, the foundations of the current Dutch health care system have to be renewed, taking into account the current political insights, by putting responsibilities with the persons and institutions that are involved” (Ministry of Health, Welfare, & Sport, 2005a p. 9).

In January, 2006, the Dutch government introduced a new health care system.<sup>1</sup> The reform seeks to combine the introduction of competition elements with the realization of a right to health.<sup>2</sup> A review of policy statements, such as the above, reveals four underlying assumptions that largely cohere with a neoclassical model of the market (e.g., Christensen & Lægheid, 2001):

- Deregulation and competition will increase consumer choice and quality of service.
- The informed and critical consumer acts as an autonomous agent making the “right” or “rational” choice.
- Introducing the principle of cost sharing will work as an incentive for consumers to act as responsible and quality oriented agents in the market.
- Proximity in the market will stimulate a more user-driven development.

With the new health care policy, the government remains responsible for the accessibility, affordability, and quality of health care, but gives the parties in the market greater freedom and greater responsibility to compete for the business of the insured. Citizens get more financial responsibilities, but also have more influence and choices in terms of health care insurance. The insurers negotiate with care providers on the price, content, and organization of the care. Under pressure from their insured parties, insurers are then expected to push for higher standards in their contracts with care providers, in terms of both quality and cost. The assumption is that care providers will have to work in a more performance-oriented manner, while having more opportunities to distinguish themselves in relation to one another and customize the services they provide. The question arises, can governments, by partly privatizing their health care systems, succeed in guaranteeing the availability, accessibility, and quality of health care service, and if so how?

In the Netherlands, hearing disability is considered a health issue and regulated by the Ministry of Health Welfare and Sports. The shift in health care policy thus, has consequences for hard of hearing people. Following the reform, the Dutch system for hearing aid distribution has been deregulated. In the emerging system, hard of hearing people shift from patients to consumers, as the distribution of hearing aids is moved out of audiological clinics and into hearing aid shops. In addition to the policy reform, there has been another salient shift in the hearing aid field. Following the digitization of hearing aids, the number of technological innovations has increased considerably. New products and techniques bring novel possibilities for audiological rehabilitation practices. But the effect of these new technologies cannot be seen in isolation from their social context of use. Thus, taking a non-deterministic approach to technology, this article investigates how specific information technologies combined with national policy regimes are transforming the geography of expertise and responsibility in the Dutch audiological field. More than merely improving fitting procedures, or increasing service efficiency, new technologies are involved in shaping the very meaning of hearing disability in intricate ways. To untangle some of this complexity, I mobilize a theoretical framework that combines a sensibility for discursive ordering attempts with a concern for the material dimensions of disability.

Before proceeding, a qualification is needed. At this stage it is difficult to assess how effective the new system will be and what implications will be for hearing disabled people.<sup>3</sup> It is possible that the larger role of the insurance companies will result in a more cost efficient

system. This system, in turn, may enhance the availability and affordability of products and services. However, from the perspective of people with disabilities, such a system also contains its risks, some which I will discuss in this paper. The purpose of this exercise is not to denigrate the new health care system, nor to suggest that all existing problems in the new system could be solved through this or another reorganization. The privatization of health care services is not prohibiting to the welfare of disabled people *per se*. The needs and demands of hard of hearing people may be satisfied through whatever mixes of public and private services are appropriate in the national context. As such, this is not an exhaustive description or analysis of the Dutch health care system. Rather it is an attempt to investigate the transition from policy to practice. In this case, the everyday practice of hearing aid distribution.

## Theoretical Framework

### Hearing Disability as a Sociotechnical Matter

Whether in the home, at work or leisure, technology plays an important role in the lives of people with disabilities, and also in the way disability is conceived, experienced, and framed in society (Goggin & Newell, 2005b). Today, hearing loss affect approximately 10% of a country's population. The majority of this group is hard of hearing.<sup>4</sup> A hearing loss can affect individuals of all ages and may occur at any time from infancy through old age. The ability to communicate successfully with other people is often considerably reduced when a person cannot hear everything that is being said. Many people with hearing loss experience emotional or social difficulties and isolation due to miscommunication and misunderstandings. Devices and systems based on information and communication technologies are widely implemented as assistive tools for hard of hearing people, among which the hearing aid is the most common. A hearing aid is an electronic device that amplifies and changes sound to allow for improved communication. To obtain a hearing aid, one consults an audiologist or a dispenser<sup>5</sup> to have the hearing loss measured and depicted as an audiogram before selecting a hearing aid.

With the digitization of hearing aids, there has been an expansive growth in the market for hearing technologies. Digitization indicates that the sounds coming into the hearing aid are converted into "bits" of data - numbers that can be manipulated by the microprocessor inside the hearing aid. This manipulation makes it possible to tailor and process sounds more precisely, compared to analog (non-digital) technology. Digital hearing aids thus, offer more flexibility for the fitting procedure. The dispenser can tailor the hearing aid allowing for several listening modes, automatic volume control, and automatic noise reduction. The hearing aids can also be programmed to make automatic adjustments according to soundscape.<sup>6</sup> But while digitization has increased flexibility, the complexity of the fitting procedures has increased. In response, hearing aid producers invest a great deal in developing user-friendly fitting instruments for dispensers. These interfaces are also designed to facilitate a holistic consultation between the dispenser and their clients and may increase the quality of service provision. However, I argue that technological innovations cannot be seen in isolation from the sociopolitical system in which they are used. We need a theoretical framework that can capture the interplay between technology and society.

The field of Disability Studies has given us important new perspectives on disability, particularly by drawing attention to previously unwritten histories of disability, the social construction of disability (and normality), and the experiences of people with disabilities as a minority group. Despite the wide variety of approaches and topics, surprisingly few studies have developed a critical analysis of technology. This is unexpected given that technology is widely implemented in rehabilitation programs and often plays an integrative part in many disabled peoples' lives. When technology is actually addressed, often it is treated as a "black box," (i.e., as an independent variable that explains social developments in a unilinear fashion). The content of technology is not seen as problematic or in itself in need of any further analysis. The lack of critical engagement perpetuates a potent myth about technology: that technologies are liberating for their projected users, while paradoxically being held to be value-free (Goggin & Newell, 2003). Technological solutions are held out for this potential to abolish or ameliorate the disability that is seen to lie within the individual. In its reliance on technology as a fix to more complex social problems, the reductionist gaffe of the medical model on disability is reproduced. This approach is inadequate if we aim for a more complex understanding of disability, including its material dimension. Therefore, I suggest taking Disability Studies in a new direction by combining it with perspectives from the field of Science and Technology Studies (STS), a field that seeks to open the "black box" and illuminate the interplay between technology and society.

Through studies of emerging knowledge, research practices, and the study of political institutions, the STS field has demonstrated how the idiom of "co-production" importantly extends the vocabulary of traditional social sciences, offering fresh analytic perspectives on the nexus of technoscience, power, and culture (Jasanoff, 2004). The concept seeks to provide a theoretical perspective on how systems emerge as a result of the interaction between the level of social organization and the level of technological production. Technology is not an external determinant of social order, but neither is the opposite the case, that social structures alone can explain technological developments. Neither science and technology, nor society, are transparent entities with a monopoly on explanatory force. On the contrary, they are mutually constituted in the same historical process. The concept of co-production illuminates how technoscientific knowledge both embeds and is embedded in social identities, institutions, representations, and discourses (Harbers, 2005). Accordingly, it is argued that ways of knowing the world are inseparably linked to the ways in which people seek to organize and control it. Moser (2003, p. 27) has noted that we should "treat material environments and objects not only as resources or props, which can be mobilized by humans partaking in interaction, but as constitutive of and participating in the structuring of action, as part of the conditions of possibility of action as well as of actors." The notion of co-production thus allows us to intervene in the field of hearing disability as a sociotechnical domain. Alleged essences of science and technology, such as objectivity, neutrality, and efficiency are replaced by detailed empirical accounts of the relationship between technoscience and social order.

"Technology" is of course, in itself, a slippery term and difficult to define. For the intervention in the Dutch distributive system, I use Bijker's (2006) broad definition: At the most basic level technology refers to sets of physical objects or *artifacts* such as a hearing aid. At the next level, it also includes human *activities*, such as in the technology of doing a hearing test," where it also refers to the designing, making, and handling of such tests. Finally, and closest to its Greek origin, technology refers to *knowledge*: it is about what people know, their expertise, as

well as about what they do with devices. Technology, therefore, is not only machines or procedures to perform a special task, but also the social and cultural context within which techniques and artifacts are being developed and applied. A context which, in the Dutch case, can be understood as an emergent corporate discourse on disability.

### An Emerging Corporate Discourse on Disability

In a market, economic scarcities and externalities have to be managed. Traditionally, regulation refers to the direct intervention of the State, as a last resort authority, that defines how economic agents are allowed to use the resources in a common economic space. Typically, the regulation of public utilities sets the content of the services provided to a client and fixes the frame of the relationship among service providers. Under the current Neoliberal rule, interventionist government policies are attacked for their cost in personal freedoms and economic efficiency. Instead, a new model of a regulatory regime based on decentralized and State-free regulation is proposed. It is now a desideratum that corporations, professionals, and consumers will regulate themselves and manage a wide variety of policy matters formerly left to the state, including the “problem” of disability. The idea being that stakeholders dissatisfied by the parties they are interacting with can set-up new networks or relationships, wherein standards and control mechanisms can be negotiated. The vestigial role of the government bureaucracy or regulatory agency is only to set minimal rules of conduct that enable the market to perform. But the European governments’ newfound trust in the market and its claim for individual freedom and power has not gone by undisputed, and an extensive counter debate has erupted. Authors are concerned about the lack of democratic control in markets dominated by multinational corporations.

Goggin & Newell (2003; 2005b) have identified what they see as an emerging corporate discourse on disability.<sup>7</sup> They are concerned with how multinational corporations increasingly are designated control over developments and regulation of the technological markets that affect the daily lives of disabled people. This shift in power occurs in conjunction with the transnational commerce often referred to as globalization. Following the success of the corporate model at a national level, many corporations have become transnational or multinational corporations, growing beyond national boundaries to attain sometimes remarkable positions of power and influence in the process of globalization. Such multinational corporations are the predominant form of business in the European market for hearing technology. Growth by expansion, acquisition, or merger has resulted in a plethora of groupings scattered around the globe.<sup>8</sup> While dispensers operate on national and local level, the hearing products they purvey, and the technologies that they work with are the result of centralized research and development. In the spread of corporations across multiple continents, the importance of corporate culture has grown as a unifying factor and a counterweight to local national sensibilities and cultural awareness. In addition, the complexity of ownership and distributional chains, which transcend national borders and regulations, makes it challenging to regulate the behavior of these powerful actors within national legislative frameworks. The concern here is that by deregulating disability markets, politicians relinquish the opportunity for democratic control on issues that influence the lives of disabled people in critical ways.

Related to this concern, Rose (1999) has coupled the increasing control of corporations with a new form of political power. To understand this shift, he mobilizes Foucault's concept of "governmentality." The argument is twofold and relates to distribution of power in advanced liberal government and the constitution of citizenship in this context. First, governmentality designates a society in which power is not centred simply in a state or in transnational corporations. Rather, power is dispersed across a network of loosely connected sites. With the commercialization of disability markets, the "freedom" and "power" of disabled people are increasingly articulated through the market, as the freedom to choose and the power to purchase. In this situation, the "consumer-citizen" emerges and is required to play a role in constructing and policing these zones of limited autonomy and freedom. As consumers, disabled people are free to choose a service provider and negotiate an individual service package with insurers and dispensers. But, with the freedom to choose follows new responsibilities. Rose underlines the way in which advanced liberal forms of government rest upon the activation of the powers of the citizen. As governments retract their regulatory power in the market, the hard of hearing are supposed to act as self-activating citizens and do the work of making choice, competition, and new technologies possible. The critical question is how liberating the freedom and the power of the market really is for disabled people, since there is considerable work involved in being free to choose. It demands a highly sophisticated and active subject to stay informed about product developments and service standards. What is more, the power to purchase is unevenly distributed. The market tends to produce difference.

Through privatization of service provision, disability is turned into an individual matter that can be managed and dealt with in the market place. The challenge is how to ensure the consumers, as a collective, good quality products and high standards services. The Dutch government has renounced state intervention for self- or co-regulation. The government encourages the actors to establish standard committees, quality assessment boards, and consumer platforms to regulate the hearing aid market. Hearing aid users' participation in such regulatory initiatives may bring the market closer to the consumer and stimulate a more user-driven development of technology. However, participation requires substantial resources. Given that many user organizations struggle financially and have problems recruiting volunteers, the opportunity to act as a strong player in this deregulated market may, in reality, be scarce.

In order to further understand the contemporary shaping of disability in the corporate field, we need to recognize and chart the ways that new institutions are purveying power and look at how such self-regulation within specific markets actually occurs. With the commercialization of hearing aid market, follows a social construction of disability as a consumer issue, and the disabled subject as a consumer citizen. The pertinent question is what normativities underlie this construction and what interests it serves. With the notion of a corporate discourse on disability I want to open up the sites of active citizenship and consumerism for an exploration of the cultural practices accompanying new hearing technologies. There are, however, limitations to the discourse theory literature. Authors tend to focus their critique on the level of policy making and regulatory regime. This offers an interesting and important framework for the analysis of the way technology is used to manage disability. But my interest is not restricted to exploring this new corporate notion of disability as free-floating discourse. In line with the concept of co-production, I am interested in how the corporate discourse emerges through the interrelatedness of disability, technology, and

government. Thus, I propose to extend the analytical framework and look at what happens to policy in practice as the Dutch system for hearing aid distribution is deregulated.

## Methodology

To explore the new Dutch system for hearing aid distribution, I take a two-fold approach. First, I map the issue of hearing disability as I have encountered it in my studies of public policy. Then, I move from public policy to everyday practice, from formalized deliberation to actual implementation, as I study what happens when the development of policies on disability are to be transformed into dynamic relationships between policy makers, practitioners, technologies, and the hard of hearing. In the analysis, I juxtapose policy and practice to explore the interferences between different modes of ordering hearing disability as they occur in practice. The contribution of this kind of multivariate research methodology is to bring both discursive and material dimensions into the same frame of study, and to posit their relationships on the basis of first-hand empirical research.

The data for the study was collected during fieldwork in 2005 and 2006.<sup>9</sup> The material stems from three sources: written material, in-depth interviews, and participatory observations. To map the underlying principles, key objectives, and means of implementation for the health care reform, I have reviewed policy documents issued by the Dutch Government, in particular the Ministry for Health, Welfare and Sports.

The description of the new system for hearing aid distribution is based on reviews of governmental action plans on disability policy, a report issued by an evaluation and implementation project funded by the government (Aangepast Zorgmodel Slechthorenden - AZOS), and a protocol released by the national committee for audiological assistive technologies (Nationaal Overleg Audiologische Hulpmiddelen - NOAH). The review of these documents helped me identify key actors and their roles in the new distributive system. Paradoxically, while the documents explicitly deal with hearing aid distribution, the texts make no attempt to problematize the role of technology. Rather, the underlying assumption seems to be that technology has a neutral and/or predictable positive effect. The underlying assumption seems to be that as long as access and availability to more and “better” technology is ensured, the lives of hard of hearing will improve.

I conducted 13 in-depth interviews with actors who were involved in shaping the new Dutch health care policy. The informants were representatives of dispensers and producers (4), audiological professionals (3), user organizations (3), and professionals from the support network (3). All the informants were in some way working with hearing technology had a stake in the reform process. The interviews lasted between one to three hours and were carried out in the offices of the informants. All conversations were recorded with a MP3 player and transcribed. The transcriptions were then sent to the informants for corrections and further comments.

With my exploratory approach, I did not have a predefined hypothesis or theory to test. Instead, it was important that the analysis was grounded in the experiences of the actors. Therefore, I used a semi-structured interview guide, a topical list with open-ended questions

where I asked the informants to articulate their situated viewpoints on the reform. The themes for the interview guides were developed iteratively, based on the policy review, issues that had come up in previous interviews and more specific information on the informants gathered from public documents, websites, and research reports. In the interviews, I asked the informants to identify what they considered to be the main drivers in the emergent system: who they saw as the key actors and their role in practice; what role they assigned to technology when it came to enactment of disabled identities and their view on involvement of end users in sociotechnical policy and practice. In addition, I actively encouraged the informants to raise other issues that were important to them. The interviews allowed me to probe theories, analysis, arguments and concepts, by entering into a dialogue with the informants, inviting them to take part in the analytical process and verify my data. Structure and meaning is then constructed in common by the researcher and the informant. In addition to creating room for articulation of what the interview subject has already digested and thought through, the aim was also to facilitate new reflections and open up fresh insight.

In order to trace the enactment of the new policy in practice and learn about how practitioners used hearing technologies, I set up two weeklong visits at an audiological clinic and a hearing aid dispenser. During these visits, I participated in consultations between the professionals and hearing aid users to observe the interactions between humans and technology in an organizational setting. In the time between appointments and during lunch breaks, I asked questions about the distribution process and the professionals explained and demonstrated how they use and their level of experience technological tools. During these visits, I took notes that were later transcribed. During these interviews, emerging tensions in the field were explained as a result of sociopolitical factors. When I started participating in work practices I became aware of the active role of technology. The observations made at the dispenser and clinic gave me empirical examples of the tensions that were brought up during interviews. I use these examples to ground the analysis in practice.

Since the study was undertaken when the health care reform was still in process, there are limitations to the results. The empirical examples that are given are taken from some practices in some locations at a specific time period. I use the empirical examples in order to begin more general discussions on the use of hearing aids as a rehabilitative intervention. Without a doubt, there are several more voices and concerns that should be taken into account in the discussion. For instance, while I have chosen to use examples from one hearing aid dispenser, I could, and perhaps should have used several. However, I do not intend to depict the field as united in definition and practice. Instead, I wanted to explore the complex interplay between social factors and technology in the field of hearing disability. The aim of this qualitative approach is to bring forward and discuss policy related issues as they play out in practice. Differing from (more commonly found) quantitative methodologies in the health care policy field, I wanted to add to the plurality of accounts on hearing disability. As such, the article can be read as a contribution to the bottom-up assessment of the Dutch health care reform.

## Results and Discussion

### Technological Management of Disability



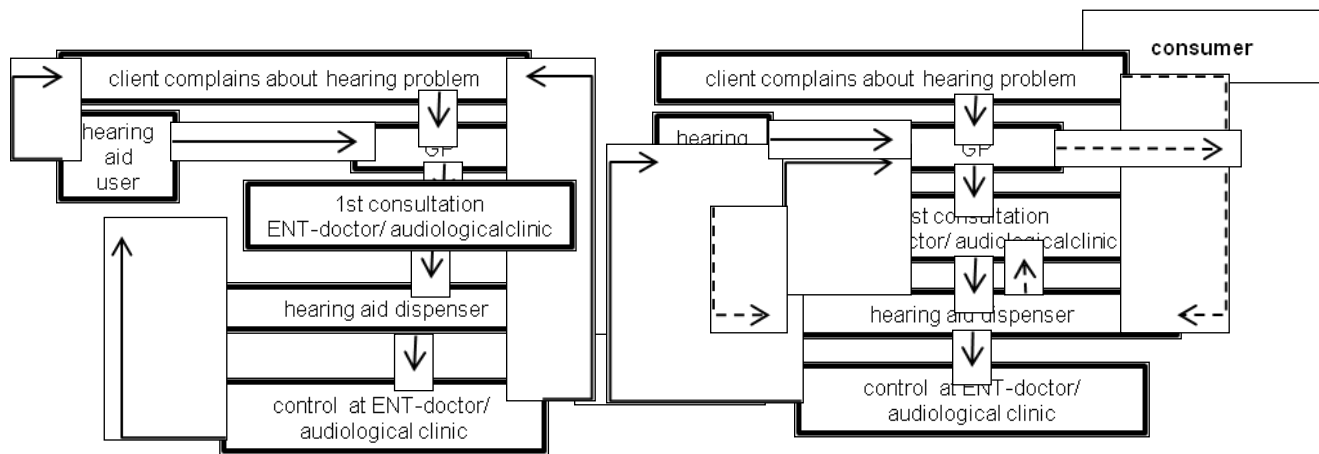
“The policy on aids is aimed at making necessary care facilities available and accessible so that disabled people can function and participate in society as normally as possible. Fewer rules and a decentralized approach bring the responsibility for providing aids much closer to the parties directly involved. This offers more opportunities for demand-driven care and coordination of the different provisions” (Ministry of Health, Welfare, & Sport, 2005b, p. 10).

One of the ways in which disability is “managed” in our modern, high-tech societies is through the distribution of assistive technologies, as a rehabilitative tool, or, as in the above statement, a “normalizing tool.” Following contemporary Dutch health care policy, a demand-driven hearing aid distribution is sought by deregulation of the current distributive system and decentralization of responsibility from the State to the market, assuming that the market is more receptive to the demands of the user. Thus, a new model for hearing aid distribution for adult hard of hearing people with moderate and uncomplicated hearing loss is now being planned and tested. The system is based on a protocol developed by NOAH and the implementation and evaluation project AZOS (AZOS, 2006). Both projects deal with system innovation and quality control in the hearing aid prescription process. Throughout the process three aims were identified:

- Reduce pressure on the specialist service and reduce waiting lists for patients.
- Control cost while maintaining the same qualitative level of service.
- Increase transparency and accessibility for user group.

### Model 1

### Model 2



**Figure 1:** Schematic overview of previous care model (1) and new care model (2). The dotted line in the right hand side figure illustrates the new commercial route. In the new model a specialist instance is only involved when the dispenser detects indications of complications (AZOS, 2006).

Before the deregulation, the trajectory a hearing disabled patient had to follow was clearly regulated (see [model 1](#)). In order to receive reimbursement for a hearing aid, the patient

had to visit an ENT doctor or an audiological center to get a diagnosis and a prescription for hearing aids. With that prescription, the client went to a hearing aid dispenser who selected and fitted a hearing aid based on the prescription from the audiological specialist. Then, the insurance companies required that the client go back to the specialist to have the fitting approved. Only then would the insurance companies reimburse the clients costs.

Following deregulation, a new routing system emerged (see model 2). The goal is to develop a system where the hearing aid dispensers are able to perform rehabilitation with hearing aids without any intervention from a specialist. In the screening process, it is the responsibility of the dispensers to assess whether the clients need treatment from a medical doctor or audiological specialist, or whether they can follow a commercial route. In the new system, the three central entities that are given responsibility for hearing aid fitting are still the ENT doctor, the audiological clinics, and the hearing aid dispensers.<sup>10</sup> The change is that the hearing aid dispensers are now delegated 1<sup>st</sup> line responsibilities and the required specialist control on hearing aid fitting is lifted.

As a result of the deregulation, NOAH identified a need for a protocol to manage the screening of clients and redirection to the proper service provider. The objective was to develop guidelines for hearing aid fitting that ensures the quality of service without compromising the principles of deregulation. As a co-regulative initiative, the protocol was written by stakeholders from the medical profession, industry, user organizations, and policy advocates. The protocol takes as its starting point the deregulation and a shift of patient streams, and then describes a model including each trajectory for hearing aid fitting in detail and lists the criteria for further routing in the system, when needed. While in the earlier system the routing was regulated, the new protocol is only meant to work as a guide for professionals and has no decisive power. To develop a system that could implement the NOAH protocol on a wide scale basis, the AZOS project was initiated in the beginning of 2005. The project was also set up to evaluate the performance of the new system.

The NOAH protocol emphasizes customer choice. As costs are now increasingly covered by the customer, they should also have a choice of caregiver, hearing aid dispenser, and hearing aid. As regulations are lifted, it is anticipated that competition will rise among hearing aid dispensers. Competition shall in turn, lead to lower prices and increase the quality of service provision. Following deregulation, the commercial routing has become the standard route for the majority of hearing aid users. With the deregulation and the introduction of the NOAH protocol, patients are transformed into consumers and patient organizations to consumer organizations. Sociopolitically speaking, with the reform towards a more demand oriented care system, the consumer becomes more central in the care process. Increasingly, consumer organizations will become important collaborative partners for providers of care, insurance companies, and the government.

#### Politicians Abdicating?

A central issue following deregulation is who should control access to hearing aids. While insurance companies have attained an increasing role within the new health care system, it has become clear that more freedom and power will be given to dispensers as designated gatekeepers

to ownership of hearing aids. A pivotal question surfaces, “Within the new Dutch system, is there an adequate system in force to supervise the functioning and behavior of these powerful actors?” What we observe is that if the State commercializes service provisions, there is a shift from the State actually “fulfilling” a right to the State obligation to offer “protection” against possible abuses by the private actor who becomes the provider of the service. It is unclear what should be the roles of different actors. What is clear is that the State leaves much up to self-regulation by private firms in the hearing aid market and the active citizenship of hearing disabled people. Robison (2006) has argued that inherent to neo-liberalism is a distrust of politics. In the argument for deregulation of the hearing aid system, it is possible to trace an underlying lack of trust in politicians and their ability to manage complex professional practices. In an interview, one of the NOAH committee members explained the rationale behind the deregulation as follows:

“In parliament a lot of the voting is done on matters that each politician does not know comprehensively. But that is the system, right. The policy-makers do not have the knowledge to oversee all the consequences of their reforms. For the government it is just a financial problem, they want to cut the overall costs of health care, they are less concerned about the practical details on the local level. Maybe it is not all bad that the government is for liberalization of the market. Because I think that the consumers will start to claim better quality and make up a counterforce to get it right in the end. But nowadays it is very much left up to the insurance companies and the professionals to set minimum standards for quality” (I. Olausson personal communication, January 20, 2006).

The complexity of the issues at stake is used to justify exclusion of the State as a regulator, while distributing new roles and responsibilities to others. In line with current neoliberal creed, the management of hearing disability through hearing aid dispensing is depoliticized; removed from political influence or control because it is not seen as something that politicians can have sufficiently detailed knowledge about. Regulation of practice should be left to corporations, professionals and consumers in the market, so the argument goes. As patients transform into consumers, new roles and responsibilities are given to hard of hearing people. While the politicians are seen as unfit to regulate detailed processes, consumers are expected to act as organized, unified and (pro)-active contributors to the regulatory process.

According to background documents for the health care reform (Ministry of Health, Welfare, & Sport, 2004), it is problematic that citizens hardly pay a direct contribution to the cost of health care and therefore often are unaware of its costs and quality. As a result, it is assumed that the citizen has no direct interest in choosing the most efficient or effective treatment. By introducing the principle of cost-sharing, this is expected to change. In line with this assumption, in his analysis, the NOAH representative narrates the management of hearing disability in terms of exchanges occurring in a market. The hearing aid consumers are assigned the role of regulators, as they are expected to act in accordance with this notion of “reciprocity” and “vote with their feet” (Homans, 1961). The consumers will seek to fulfill their self-interests in the hearing aid market by selecting providers who offer the best balance between service and price and thereby, play their part to make it right in the end.” Thus, in the process of shifting from patients to consumers, hard of hearing people become instruments for a market-oriented

policy. Rose (1999) notes that it involves considerable work to be free to choose and participate in the re-working of governance under the rubric of industry self-regulation. In the Dutch case, we find evidence of Rose's perspective on the new ways in which “advanced liberal forms of government” rest upon the activation of the powers of the citizen:

“Citizenship is no longer primarily realized in relation with the state, or in a single public sphere, but in a variety of private, corporate and quasi public practices from working to shopping. The citizen as consumer is to become an active agent in the regulation of professional expertise ... Even in politics ... the citizen is to enable his or her democratic obligations as a form of consumption” (Rose 1999, p. 166).

Thus far, I have noted that in the emerging corporate discourse on disability, deregulation takes the responsibility and control from the State and places them on professionals, corporations, and consumers to self-, or co-regulate.

### Shifts in Expertise - The Dispenser as Regulator

As a result of a new stream of hearing aid consumers and increased competition, the number of hearing aid dispensers has grown significantly over the last few years. Today there are around 300 stores nationwide. In this highly competitive market, dispensers seek to sharpen their brand image, the corporate identities that make them stand out in the market. “Beter Horen”<sup>11</sup>, the largest Dutch dispenser, has gone for a high quality product range and extensive service for a higher price. But there are also new players entering the field, the discount dispensers. “Hans Anders,”<sup>12</sup> originally a Dutch optician chain, is now also competing in the market for hearing aids. The strategy of this firm is to offer low price hearing aids that are fully reimbursed by insurance. Such competition and market segmentation based on price is in line with the governmental policy of generating more choice for the consumer. Especially now, as the consumer is made to cover larger parts of the costs themselves, it is considered important that there are affordable generic alternatives on the market. But, this policy is not undisputed. As the hearing aid dispensers become the 1<sup>st</sup> line of service, the initial meeting a hard of hearing person has with the hearing field is with an actor who primarily seeks profit. There are concerns among the actors in the field that the focus on price and profit may overrule the requirement for quality and competence. Also, for the government it is considered important that the quality of the hearing aid fitting should not decrease as a consequence of the reform. As to quality, there is a risk that health insurance companies, in their search for the cheapest option, will not always contract health care services and products that are the best for their customers.

Another concern among key actors has been how to safeguard and supervise quality within the new system. A particular problem has been how to maintain the quality of dispensing personnel. There are institutions offering audiological education both at a vocational and higher level in the Netherlands, but formal training is not a requirement for the practice of hearing aid fitting at a dispenser. Without standard educational requirements, there are different practices for hiring and training of personnel among the firms. Most dispensers offer some sort of internal training with recruitment, but the length and content of these courses varies considerably. At a professional level, there are concerns that professionalism may decrease as a result of the commercialization of the sector, as explained by a senior audiologist:

“I am afraid that if you compare the hearing aid fitting these days with the way that it was done say ten years ago, the people involved right now are much more commercial people, and also not what you would call craftsmen. The number of potential clients is increasing along with the demographic trends. As a result, the shops are looking for personnel that have to be very good at dealing with people. But, what do they have to know about hearing aids, only that which is of absolutely necessity. So some shops only have a minimal interest in having highly educated personnel, it will only mean higher costs having them educated, trained and hired, it just is not in their commercial interest” I. Olausen (personal communication, January 20, 2006)

Also among the hearing aid dispensers a shift in priorities is noticeable. A manager at a “Beter Horen” dispenser points out that the commercialization rearranges forms of expertise. Sales and marketing skills become more important drivers in a terrain earlier dominated by audiological and medical competence:

“I would describe our organization as a pyramid, on top is sales, we are a sales organization, and marketing is also important. Then at the lower levels are the staff with technical competence, we try to have this expertise represented also on the upper level of the organization, but sales are dominating” (I. Olausen personal communication January 11, 2005)

In contrast to the rational assumption in policy, there are actual concerns among the actors in the field about how to safeguard quality when competition among dispensers increases. The actors worry that as specialist control is lifted in the new model, an important quality control will disappear. The challenge is noted in the evaluation report from the AZOS group (AZOS, 2006). Despite offering additional training for the dispensers participating in the trial development project, they could not deliver the quality of service that was required by the NOAH protocol. As a response the “StAr” (De Stichting Audicienregister) initiative<sup>13</sup> was organized. “StAr” constitutes a quality assessment and approval foundation whose purpose is to safeguard the objectivity, quality, and professionalism among the dispensers in the field. An instrument for assessment and approval of quality has been developed. A so-called “stamp of approval” to be assigned to the dispensers that manage to maintain the agreed upon quality standards. The quality control involves the technical aspects of the hearing aid fitting, as well as financial aspects of the prescription and customer satisfaction.

Nederlandse Vereniging Voor Slechthorenden (NVVS)<sup>14</sup>, the Dutch organization for hard of hearing people, has been involved in the planning for this “stamp of approval” but its director is concerned with the criteria for such a self-regulative instrument:

“They seek to establish some procedures and criteria that will give the shops a ‘stamp of approval,’ a sticker that they can put on their window to demonstrate that they operate in a professional manner. We of course welcome this initiative, but we are also critical. Maybe it will only be a self-confirming process where the criteria are based on what already exists” (I. Olausen (personal communication December 14, 2006).

The comment made by the NVVS director echoes a consistent problem with neoclassical theory (Hecter, 1987) - and the policy reforms they foster - of how to motivate

people for collective actions. Can the appeal to interest alone motivate people to adopt great reforms, whether this appeal is embodied in the legal codes, in the freedom of the market, or in schemes for new rules of the social game? It is the old question, “Who guards the guardians?” With the retraction of the State as an objective third party and the lifting of professional control, what prevails seems to be lack of control leading to a lack of trust among the actors in the field of hearing disability.

Along with the call for cost efficiency, rapid technological development is an important justification for the liberalization of the market and the new delegations of roles and responsibilities in the emerging system. The aim is to reduce pressure on specialist services. At the same time, General Practitioners are no longer seen as able to give expert advice on hearing aids because of the complexity of the technology involved. Therefore, a lot more of the consultation and detailed assessment with regard to finding hearing aids for the customer is now assigned to the dispensers. They have the time to do it, and they claim the competence. The insurance companies seem to be for it because they see that a consultation for a hearing aid fitting takes time, an hour in general. The doctors are already pressed for time and, in addition, their time is more expensive than the dispensers. There has been a shift in expertise. But, what type of expertise does the new 1<sup>st</sup> line service offer? What implications arise for service provision when rapid technological development and increased corporate control are becoming the main drivers of the field? And, how does this emerging corporate order interrelate with the technologies at work in this new system for hearing aid distribution? According to policy, it is proverbial that businesses are closer to the customer, and in a better position to know their desires.

### Organizing Skills

For “Beter Horen,” a focus on sale is coupled with a focus on service, and what the manager calls the human factor. In the recruitment and training of personnel, they are emphasizing the social evaluation as the most important part of their consultation. In the course of training, they are not primarily occupied with the technical side of the job, but the human side. This example discusses how to deal with the clients:

“Many people come here and they are in tears, it is hard for them to accept that they need hearing aids, they feel ashamed. When we recruit people we look for people with people-skills. For us being in the hearing aid business is about a lot more than technical products” (I. Olaussen personal communication, January 11, 2005)

This focus on social interaction does not mean that there is no technology at work. On the contrary, the entire process of getting an appointment, the hearing test, fitting a hearing aid, and administration is all conducted by means of technologies.

In fact, also the social evaluation is technology driven. At “Beter Horen” they have their own protocol which uses an interactive computer based tool, the “Amplifit.”<sup>15</sup> The dispenser sits down with the clients and guides them through the assessment of their social needs. As needs are identified they are registered in the program. The result is an auditory profile and a suggestion for a hearing aid. When asked whether this tool risks dislocating the decision making process,

the store manager explains that the technology today is so complex that they have no chance in tackling what goes on behind the interface. It would take too much time. Instead, they follow a standardized assessment scheme that makes the customer aware of their needs. They do not sit down and talk to them about technical details. It used to be like that, that the dispenser was all about technical things. Today, it is the opposite. Now they start out asking the client whether they watch television, whether they are active socially and so on, what they want to use their hearing aids for. Then, they select the right device. But, it is the software that makes the technical assessment. It is the machine that suggests the most adequate hearing aid.

Within the health profession, there have been some vocal efforts at curbing excessive scientific and technological zeal and “treating the patient as a person.” Katz (1984) argued that the practice of patient-doctor communication has been given short shrift in this age of science, in the expectations that treatment only requires silent scalpels, wordless monitors, and mute pharmaceutical agents. Often, hard of hearing people feel they lack a language to communicate their experiences of disability, the technical terminology of medicine seems unfit for social talk and their hearing aids, they are often told by advertisement is something to hide away. What may ensue is a cultural void of gestures and words that communicate experiences of disability in everyday settings, thus, lack of public awareness and social understanding necessary for the sociocultural accommodation of disability may prevail. The incommunicability of disability may work to isolate hard of hearing persons and strip them of cultural resources, especially the resource of language. It is therefore, worth noting that according to research and studies on service provisions among dispensers user satisfaction is quite high.<sup>16</sup> The dispensers believe that the satisfaction is due to their focus on the human factor: the time and space they offer for a holistic assessment of needs and aspirations. It seems that the language and interaction oriented toward the client as a social person is hitting the target with consumers.

Dispensers inform us that hearing aid fitting is increasingly about the ability to assess the social needs of the clients, engage with their life situation. In fact, the rapid developments and constant renewal of programs and artifacts makes it hard for the dispenser to follow the technicalities of the procedures and products, it is preferable to use an interface, considered more accurate, safe, and efficient. Following the increased complexity of the fitting procedure, dispensers have made it a strategic choice to rely on the producers and their software when handling the technical aspect of the hearing aid fitting. The producers follow up by designing assessment programs that give dispensers a user-friendly tool that allows for rapid adaptation by personnel and an efficient answer to the administration of a growing client base. At the same time, the technical skills are downplayed. The packaged assessment software reduces the complexity of the fitting procedure, but it also limits the number of factors it assesses, (e.g., focusing on volume, but ignoring speech discrimination). According to dispensers, the rapid technological development is a challenge for formal education within the field. Formal training programs do not manage to keep up with the specialized developments as new models are introduced on an annual, sometimes biannual basis. In my interviews with dispensers in the field, I have asked how they acquire the competence needed for their practice. Most favor the in-house training and the training offered by producers. The following response is typical:

“Everything I have learnt I have learnt here at my work. Then we learn a lot from the producers of course. They travel around and demonstrate new devices and train staff, so

that is the most important source of new knowledge” (I. Olausson personal communication, January 11, 2005)

Paradoxically, the same argument about the rapid and complex technological development that was earlier used to legitimize the pivotal role of the hearing aid dispensers in the new system is now justifying the dislocation of technical competence and decision-making from the same practice. The audiologist does not see technical or audiological knowledge as their foremost competence; it is their social skills that are essential for their work. Apparently, a consequence of the rapid technological development is that producers become the beholders of knowledge that is considered relevant and desirable among the practitioners in the field. It is their knowledge that is transformed into assessment schemes, fitting procedures, and products and services for hearing aid users. What then is the link between the way corporations organize research and design (R&D), specifically, the choice of multinational companies to operate centralized R&D structures and the type of innovations they produce? A critical question is whether the centralization of R&D will let their commercial interests and the dispensers interrelated needs for efficient service delivery overrun the sensibility towards clients needs and aspirations at the local level. There is a risk involved in using standard assessment software. It may lead to reduced sensibility for the ongoing social interaction if the personnel start taking their eyes off the client and leave the assessment and decision-making to programmers situated at international R&D units.

Given the centralization of R&D processes, I argue that the market is not, as assumed by policy, necessarily closer to the hearing aid users than the State, and thereby, not automatically in a better position to pick up on their demands for service provisions. Rather, following the multinational character of the hearing aid producers, the local practices and R&D are in fact being separated, and so are users and producers. Such separation can be problematic since there is not necessarily a unilinear correlation between the social assessment of needs and aspirations at the local level and the materialization of knowledge through technology at the central level. The interactive consultation of social needs may work well, but this is not necessarily securing the technical solution. And vice versa, a sophisticated technological product may be developed, but there might not necessarily be an actual social need for it.

### Technology at Work

Commercialization and shifts in expertise seem to create tension at the organizational level of the dispensers. Following the increased competition, sales, and marketing skills now gain importance, sometimes at the cost of audiological competence. This shift in priorities is also reflected at the level of the technology at work in these organizations. When the producers launch a new model of hearing aid, fitting software follows. This interface often comes with different layers in which the dispenser can choose to operate. The layers have varying degrees of complexity with regard to what kind of adjustment that can be done on the hearing aid. In the simpler version of the program, you upload the client's audiogram and adjust volume according to it. The procedure is fast and simple. But, as already mentioned, there are also limits to such fittings, something that specialists have become increasingly aware of, as explained by a senior audiologist at an audiological clinic:



“The most common problem we have with the fitting done by the dispenser is that they adjust the volume, but do not adjust the discomfort level on the hearing aids accordingly. This happens if the dispensers base their fitting only on the client’s audiogram. Many clients complain about the volume, they cannot hear, “could you please turn up the volume a little bit”, they ask. But with a high frequency loss, you cannot hear vocal sounds very well. The vocals are important for our speech understanding. Then adjusting volume will not improve the client’s hearing. You need to fine tune the hearing aid, try to optimize the fitting according to what hearing the client has left. At the dispenser they do not measure speech understanding or discomfort level, they lack the expertise and they do not have the equipment for these tests. Consequently, they cannot fine tune the hearing aids” (I. Olausson personal communication February 3, 2006).

In order to fine tune the hearing aid, one must use the advanced layers in the fitting software where other parameters than volume are adjustable. When personnel are not educated audiologists, they are often not aware of or trained to operate these interfaces because it demands a higher level of audiological competence. In order to serve the client’s needs, the fitter must understand the interrelatedness of elements of sound, for instance between volume and discomfort. While a user-friendly interface might be an efficient tool, it is also crucial that personnel are aware of its limitations and know how to interpret the client’s complaints and when to use the more complex layers. In some cases, when dispensers cannot maximize the technical potential of the hearing aid, the moral responsibility to adapt is passed on to the client, as we hear from the senior audiologist:

“Many of the clients coming here are frustrated because they can not get their hearing aids to work properly. They have been told by the dispenser that it is them who have to be more active in their listening, position closer to the person speaking, use the volume control more and so on. I think that is bad because then it is the dispenser who tries to conceal their lack of competence by blaming the users, making them compensate for a poor fitting job. The producers know that the personnel at the dispenser have to like their software in order to sell their hearing aids. If the personnel struggle with the fitting they will not use that program and they will not sell the hearing aids. Therefore, the producers make simple software, even though it might not be the optimal for clients” (I. Olausson personal communication February 3, 2006).

Ironically, clients who start in the commercial routing system can end up in the specialist system because of the lack of technical expertise at the level of the dispenser. Because of long waiting lists, many clients are happy they now can go directly to a dispenser. It is easy to make an appointment and the consultation does not take much time because the dispensers only set the audiogram. The risk is that the quality of the fitting is reduced. But, for most clients it is hard to assess the quality of the service they receive. The dispensers are seen as the experts and the clients trust them to be competent. In order to manage a growing customer base, and without formal requirements for training, what results is increasingly that dispensers use programs that reduce the complexity of the fitting. Thus, allowing more clients to get service, but at the same time, compromise the opportunity for fine-tuning of hearing aids. Through the design of different layers for hearing aid fitting, producers actually invite such a shift in quality.

While I have proposed that the two dominant drivers in the deregulated system for hearing aid dispensing are rapid technological development and increased competition, it is also my supposition that these cannot be seen in isolation. They are co-producing the emerging system. Technology is not inevitably leading to less local knowledge and control. However, when intensively used as an administrative tool, in a commercial system where the priority is sales and personnel that can attract customers, this lack of knowledge and local control may be the result. Emphasizing the human factor, assessing a hearing aid fitting according to lifestyle and individual preferences and the context of use at first seems as a progressive move in the direction of a more user driven development. However, the administrative framing involved in implementing a standard assessment tool risks dislocating expertise and decision-making.

The result is that dispensers weaken their sensibility for the local context and the ongoing social interaction with clients. The way that the corporate order intertwines with technology at work in these practices offers possibilities for new relational forms between dispenser and clients, but the same tools may also compromise the quality of the service provisions. There is potential tension between standardization and flexibility, between profiting on a growing customer base, while offering high quality service provisions, tension that is not addressed by policy. What is further thought provoking is that the new system thus far, has not proved to be cost efficient. Because of unsatisfactory fitting jobs, many hearing aid consumers end up in the specialist system after all. Therefore, the cost of hearing aid distribution is today the same as before the de-regulation at the same time as there has been a slight overall decrease in the quality of service provisions (AZOS, 2006). The difference is that now the consumers increasingly contribute to cover the costs.

### Summary

Market-oriented policies are currently involved in the shaping of a new system for hearing aid distribution in the Netherlands. In this system, a large part of the expertise and control over hearing disability has shifted from the medical field into the market. Rather than depoliticizing issues, negotiations over criteria for protocols and procedures are brought out of the central political body and down to the level of stakeholders operating in the market. One of the problems with “light-touch” regulation is that the market is narrowly conceptualized in terms of neoclassical economics, a form of economics that assumes that competition inevitably leads to lower price and increased quality of services. By using the concept of co-production to follow this policy in practice, I have tried to show that this assumption is not necessarily the case. Profit drive inspires development and use of standardized assessment programs and bureaucratic tools for the administration of a growing customer base.

These types of programs are designed to evaluate and systemize the human factor and reduce the complexity of individual cases of hearing loss and translate their characteristics into suggestions for hearing aids. With regard to knowledge and control in relation to these tools, it seems that dispensers do not always need to understand the audiological calculations that these suggestions are based upon. In an evaluation report, AZOS (2006), explains the shortcoming of the new system as dispensers’ lack of competence. Consequently, more training is recommended to improve the situation. With the notion of co-production, I have strived to show that

technology at work in the practice of hearing aid distribution also plays an active role in the production of the new Dutch system, and actually supports the shift in quality.

To what extent commercialization makes both practitioners in the field and consumers of hearing aids more dependent on a technology driven industry, is a question for further investigation. However, as producers increasingly are seen as key experts within the sector, their control over the sociotechnical aspect of rehabilitation is expanding. While hearing aid dispensers, audiologists, and insurers are identified as central actors in policy documents, the role of the multinational corporations and their interventions in the field is not discussed. Yet, given that the transnational competition model has been adopted by the Dutch government, it is the policy of these corporations that grows in importance since decisions made by transnational corporations in the hearing aid industry directly affect the lives of hard of hearing people. In an epoch in which the State is being reshaped and the market takes on additional significance as the distributor of welfare services and identities among disabled people, the corporate discourse on hearing disability, including its ordering of hard of hearing people and the audiological practices that surrounds them, must be opened up for public scrutiny in order to prevent institutions from forming a self-governing consensus that disregards the well being of the community. Herein lies a challenge for the hard of hearing community to explicitly address the issue of technology, to organize on an international level, and to conduct independent research that will enable them a powerful voice in the future development and distribution of hearing technologies.

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## Endnotes

<sup>1</sup> For more information about the Dutch health care system please visit the website of the Dutch Ministry of Health, Welfare and Sport: <http://www.minvws.nl>

<sup>2</sup> As determined by the EC Treaty, the principle of solidarity governs the funding and organization of health care whereby to improve efficiency, while guaranteeing access to high quality healthcare services for all citizens. The Netherlands has also adopted the UN declaration on health in its national legislation (For more information on the charter please visit:

[http://www.unhchr.ch/tbs/doc.nsf/\(symbol\)/E.C.12.2000.4.En?OpenDocument](http://www.unhchr.ch/tbs/doc.nsf/(symbol)/E.C.12.2000.4.En?OpenDocument)). Through this charter, the Dutch government is committed to maintaining a health care system that provides people with access to essential medical care of good quality.

<sup>3</sup> So far the Ministry has not released any overall or conclusive assessment of the reform. In provisional statements, the Ministry has pointed out that throughout the 1<sup>st</sup> year (2006) of the new Health Insurance Act, there was a decrease in the average nominal premium and 18% of the policy holders switched to another insurance company. According to the Ministry, the number is an indication that the policy market has become competitive and that the consumers are today more aware of health care cost. The Dutch model has also generated international attention. The Minister for Health has given official speeches both in Germany and Hungary regarding the opportunity for these countries adopting similar approaches to health care reforms (Ministry of Health, Welfare, & Sport, 2007a; 2007b).

<sup>4</sup> Sound varies in amplitude (loudness) and frequency (pitch). With sounds and spoken language as a primary means of communication our hearing is most sensitive for the pitches that are produced in speech. A hearing loss entails that while some will hear the sound loud and clear, for others, the very same sound will be muffled or even completely inaudible. Generally, if the gain is increased, a pitch is more likely to be perceived. The degree of a hearing loss is categorized according to *how much* louder a sound must be made over the usual levels before the listener can detect it. Hearing sensitivity is generally indicated by the quietest sound that an individual can detect, called the hearing threshold. This threshold can be measured by an audiogram. In profound deafness, even the loudest sounds that can be produced by the audiometer, the instrument used to measure hearing, may not reach threshold. There is another aspect to hearing that involves the *quality* of a sound rather than amplitude. That aspect is usually measured by tests of speech discrimination. For more information about hearing disability, hearing tests, and hearing technologies the reader may find the UK website of The Royal National Institute for the Deaf and Hard of Hearing (RNID) helpful: [http://www.rnid.org.uk/information\\_resources/](http://www.rnid.org.uk/information_resources/) However, if you are looking for country specific information, it might be best to consult the web site of the international federation for hard of hearing people and access your country's organization from there: <http://www.ifhoh.org/>

<sup>5</sup> Audiologists have a clinical/educational background that emphasizes diagnostic testing, amplification technology, hearing science, and assistive device fitting. Audiologists also dispense hearing aids. In the Netherlands, the title Audiologist is protected by law, which puts a restriction on the number of specialists operating in the field. Hearing aid dispensers (hearing aid dealers) are traditionally different from Audiologists because they do not diagnose hearing loss or balance disorders and deal strictly in hearing aids only. For more information about Audiology you can visit the website of the American Academy of Audiology: <http://www.audiology.org/>

<sup>6</sup> In addition, digitization has also made hearing aids compatible with solutions based on blue tooth technology, allowing the users to integrate their hearing aids their mobile phone or MP3 players, and FM listening systems and a

separate wireless microphone transmitting voices wirelessly to the hearing aids reducing the effects of distance and background noise.

<sup>7</sup>The authors are not explicit in their definition of “corporate.” Herein lies a potential weakness of their theory since the term corporation has different meanings in and between different national contexts. While in the US, the predominant form of corporation is the privately owned business corporations. In the UK, on the other hand, corporations are more often publicly owned businesses. Corporations may also be formed for local government (municipal corporation), political, religious, and charitable purposes (not-for-profit corporation), or government programs (government-owned corporation). I use the term “corporation” here to refer to the modern business corporation, a privately owned company pursuing profit in the market for hearing technology.

<sup>8</sup>Take for instance “Beter Horen,” a hearing aid dispenser chain in the Netherlands. The company is owned by the Italian based “Amplifon Group,” which operates throughout European countries under different local names. “Amplifon” develops hearing test software and hearing aid fitting processes that are used in these countries. In addition, “Beter Horen” has a deal with “GN Resound” and markets their products as their “house brand.” “GN Resound” has roots in the telegraph industry and is now also a global manufacturer of technology headsets, hearing instruments, and audiological diagnostic equipment. “GN Resound” is listed on the Copenhagen Stock Exchange. The company has almost 40,000 registered shareholders and the foreign ownership in the company is estimated at more than 50%. The majority of “GN Resound's” manufacturing is located in China, with more than 95% of sales generated outside of our company headquarters in Denmark. The corporation currently employs approximately 4600 employees worldwide, with the majority of employees based overseas in North America.

<sup>9</sup>The empirical material is from an ongoing Ph.D. project investigating use of technology among hard of hearing people in the Netherlands and Norway. The core of this project is an ethnographically inspired study of hard of hearing users. Although the results of this study are not an explicit part of this article, the concerns that are raised were identified partly through my interaction with hearing aid users. The users’ needs and aspirations thus form an important background for this article.

<sup>10</sup> Additionally, the GPs are often important actors for the initial screening

<sup>11</sup> For more information on “Beter Horen” please visit their website: <http://www.beterhoren.nl>

<sup>12</sup>For more information on “Hans Anders” please visit their website: <http://www.hansanders.nl/>

<sup>13</sup> For more information, please visit the Star website at: <http://www.audicienregister.nl/>

<sup>14</sup> For more information on NVVS please visit: <http://www.nvvs.nl>

<sup>15</sup>For more information, please visit:

<http://www.amplifon.com/wps/wcm/connect/SiteCompanyCom/en/Professionals/Professional+Organisation/The+Protocol/Amplifit/>

<sup>16</sup> For more information on this study, please see: <http://www.oorakel.nl/shownieuws.php?id=740>

