The rise and fall of audiology in Denmark, 1950-2010 - a field perspective

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People diagnosed as hard-of-hearing most often face a chronic disability. Here, cure is beyond the patient's reach, and has been replaced by the ideal of a 'good life' (Mol 2008). But what counts as a 'good life' is not clear. Rehabilitation is a practice aiming to restore and reintegrate. In everyday situations it constitutes what it means to be an 'able' and 'competent' person (Stiker 1999). The notion of rehabilitation emerged in conjunction with the First World War and underwent a rapid growth after the Second World War (Alaszewski 1979). It gave rise to new ways of understanding disability. The shift represented a response on part of Western societies to the number of wounded and disabled soldiers. A rapid development in prosthetics was accompanied by the increase of more general notions of replacement and compensation of a prior situation. Hard-of-hearing patients are also evaluated with reference to others and have become a target group for rehabilitation and normalisation. Following the UN Convention on the Rights of Persons with Disabilities (UN 2013), disability has undergone a radical conceptual shift in international policy making. According to this dominant, official version, disability is no longer a purely biomedical condition. Instead, it is a matter of cultural difference and social justice. It is no longer the disabled individual that needs compensation to integrate into normal society. Instead disabled individuals should be included as normal members of the multicultural society. However, as described by Kramer et al. (2005), the dominated unofficial version is that in most European countries audiological rehabilitation is restricted to a dispensation of hearing-aids only.

The aim of this paper is – with Denmark as the case – to reconstruct historically and relationally the origin and structure of hearing impairment and institutions attached to that phenomenon to better understand why in most European countries audiological rehabilitation is solved with a technical fix. In order to conduct a sociological and historical outline of the Danish audiology we draw inspiration from Bourdieu's concept of social space and its transformations. Whereas Bourdieu remained committed to the analysis of education throughout his career, he is also well known for his analysis of what he calls the cultural field. However, he has never shown any great interest in the medical field. We adopt a pragmatic approach to Bourdieu's work. This provides a potential for an explanation of the development in Danish audiology by unfolding the underlying struggles where different interests are at stake e.g. encouragements to economic growth, technology developments, and struggles for professional control. A traditional way of explaining the audiological history is to state that the development is driven by the wish to improve diagnostics, the efficiency of hearing aids, and thus rehabilitation of hard-of-hearing individuals. By detecting positions in the field different explanations evolve:

- The economically oriented position represented by the industry as a major player having an interest in technology developments and economic growth
- The professions oriented position represented by physicians and technicians struggling for control of the area in diagnosing and treatment
- The consumer (patient) position expecting effortful treatment, free and with no waiting time
- The external bureaucratic field where politicians struggle for popularity amongst the population by offering short waiting lists for treatment, low costs, and high production

The paper is divided into four sections. First, there is a presentation of methods and the conceptual frame-

work. Secondly follows a description of what indicates to be the birth of hearing impairment; when and why hearing institutions appear and the position of audiology in the field of other areas in medical specialisation. In this section it is also explored how hearing impairment is orchestrated and effected by a variety of distinct agents in the field and the influence from the bureaucratic field making the field deeply politicised. Thirdly we present in more detail some of the struggles that has not accomplished in transformation of the audiological subfield; i.e. the impact from the humanities, from WHO/ICF, and from patient organisations. Finally, we conclude by stating that the development of audiological rehabilitation has as much to do with the governmental and medical marketplaces as it has to do with scientific advancements.

Methods

Our study involves several different kinds of data to explore what kinds of connections and relations initiated contemporary ways of thinking, acting, and judging about the hard-of-hearing and hearing impairment: historical sources, audiological clinical literature, anniversary publications from medical societies and deaf and hard-of-hearing societies, scientific and journalistic articles, periodicals, books, official records of an administrative nature, consultation procedures, information pamphlets, marketing material, user manuals, television programmes, and websites. These analyses explored how documents are significant for what they are supposed to accomplish and for whom they are written. Thus, documents have a distinctive ontological status in that they form a separate reality and should be recognised for what they are - texts written with distinctive purposes in mind.

We have chosen Bourdieu's theoretical framework in our analysis. Bourdieu places most aspects of social life in the context of objective structures constituting what he calls fields. A field is a configuration of relations between positions. The position of any individual, group or institution, in social space is charted by two coordinates, the overall volume and the composition of the capital they possess. Where 'field' is the centrepiece of Bourdieu's entire relational approach, autonomy and heteronomy are its keystones (Maton 2005). By autonomy, we mean the extent to which the field has developed its own norms and fundamental rules that differ from the fields that surround it. A field with high autonomy is one whose structure and state are relatively resilient to, and little influenced by developments that occur outside of that context, although forces external to a given field are always refracted therein at one level or another. In contrast, heteronomy of the field is affected by the values of other fields, e.g. towards economic and political success (such as generating research income or wielding administrative power).

The bureaucratic field is a way of rethinking the state. One of Bourdieu's main points – in continuation of the school of historicist realism – is the necessity to break with preconceptions and presuppositions inscribed in the obviousness of ordinary experience. As a consequence, it is also necessary to break with state-thought, which is present in the most intimate of our thoughts (Bourdieu and Wacquant 1994). The efficacy and effects of the state are strongest where we least expects them to be: in our categories, constructions, and assumptions about the human being and the social world. The naturalness with which people in general perceive the social world – including its inequalities and injustices – is according to Bourdieu the result of accordance between mental categories and objective social conditions that are prompted by this incorporation. The state is not only something that exists '*out there'* in terms of different institutions, bureaucratic processes, etc. It also exists '*within us*' and adherence to the existing order operates primarily not through the mediation of ideas and ideals, language games, and ideological conviction but through the '*double naturalization*' of the social world '*resulting from its inscription in things and in bodies'* and through the silent and invisible agreement between social structures and mental structures in terms of mental categories, it forms a system of beliefs acquired through our education and our social life (Wacquant 2004).

In our case and figuratively speaking, underneath the bureaucratic field is the medical field. According to Larsen (2003), the medical field can be considered both as a 200-year-old socially prestigious activity and as a symbolic system, oriented towards maintaining or raising the profession's social position. Those who legitimise the field – primarily the physicians – possess exclusive (socially accepted and achieved with

difficulty) competencies that are legitimised partly via the state's authorization. In this field, medical and administrative knowledge about examinations and treatments constitutes the desired and monopolised capital. That the medical field has a relative autonomous nature means the values and markers of achievements generated in the field are not alone in shaping the field; economic and political power also plays roles.

Audiology is part of the larger relatively autonomous medical field. The term audiology came from the USA along with the term rehabilitation and was the result of a program aimed at helping American soldiers to recover due to an increase in noise-related hearing damages during the Second World War. What we see here is that specialization not necessarily reflects the inevitable logic of science so much as the perceived ability of a group of doctors to meet current needs. So the underlying forces that has shaped medical specialization and allied health workers concerned with rehabilitation have been technological developments, political conditions, and historical events.

Audiology in Denmark is a subspecialisation of ear-nose-throat (ENT), which is an official legitimised specialisation within medicine. However, not all specialisations are equally prestigious. The concept of a prestige hierarchy in medical specialities is well documented, and this ranking also applies to the diseases within the specialities (Album 2008). Factors related to characteristics of the disease such as organ location and treatment possibilities are of importance, along with factors related to characteristics of the patient such as age and 'immoral risk behaviour' that influences the prestige (Norredam and Album 2007). We consider audiology as relatively low positioned in the medical field but within this subfield some positions and types of activity are highly positions and possess high capital and relatively high autonomy compared to others. As an example some types of hearing impairment can be cured by means of operation and surgery that 'cure' is high positioned in the medical field. Amongst these is the highly prestigious sensorineural hearing loss that is treated with cochlear implants, surgically implanted, small, complex electronic devices that can help provide a sense of sound to a person who is severely hard of hearing or deaf. Other types – such as presbyacusis – cannot be treated but instead palliated with hearing aids whereby sounds are amplified so that the residual hearing can be utilised. The average age for the new hearing-aid user is around 70 years. Hence, the condition of this type of hearing loss is associated with advanced age and therefore not found on the upper rungs of the prestige ladder of specialisation.

To sum up, in this paper we construct audiology as a subfield to the medical field, and within this (sub)field we can differentiate between an autonome pole where the practice of the field is cultivated by its own logics. This concerns the left pole of the field and is characterised by struggles amongst physicians (and – as will be demonstrated later - engineers) through which agents seeks to preserve the existing distribution of capital (manifested by the ranking of institutions, theories, methods, journals, prizes etc.). The classifications of audiological medical knowledge are inscribed in the associated materiality and representations which illustrate the power held by physicians and engineers in defining distinctive capitals and categories that impinge on this field. The opposed right pole of the field is heteronome and structured by nonmedical power such as economics, politics, and legislation. According to Bourdieu, tensions between agents who hold positions at the autonomous and heteronomous poles of a field provide one of two engines of change; the other is the intrinsic conflict between challengers and the established.

The emergence of hearing institutions in Denmark

There have been several patient organisations for hard-of-hearing and deaf in Denmark serving as patients' representatives or patients' support. Internal struggles of whether they should be run entirely by hard-of-hearing or professional management led to the closure of some and the beginning of others. In 1934, organisations amalgamated to "Dansk Tunghøre Forening" (DTF) thus gaining increased power in the field by strategically converting the resources they possessed (patient knowledge) into the kinds of capital of value in the field. They accomplished to accumulate more political awareness and played an increasingly important role in policy making in health care in Denmark by contributing with lobby to improve the situation for their members. In 1962 the union changed name to "Landsforeningen for Bedre Hørelse" (LBH). In the past few decades LBH has attempted – with only humble results

– to convert capital by expanding its activities into that is normally considered the professionals' prerogatives namely involvement into clinical research (Lindstad 2007) thus moving slightly up/right in the field (see figure 1 below).

Early on, hearing aids had been of a poor standard and were less accessible, and the pedagogical focus until around 1950 was dominated by the use of hearing tactics aimed at teaching the hard-of-hearing how to get along in everyday life with a reduced hearing sense (Forchhammer 1904; Poulsen-Vad and Laursen Ellekrog 1976; Vognsen 1980). Thus, when the Danish Hearing Health Service was founded, the initial heterogeneous social composition of agents was met by new agents that gave rise to clusters of field-specific position-takings. In England, the government-produced hearing aid was introduced in 1948. In Denmark, there were three manufacturers of hearing aids and instead of introducing a state produced apparatus politicians decided to stimulate the manufacturers to produce increasingly effective products via competition. Thus, already from the beginning the bureaucratic field had a large influence on the audiological field. In 1950, a few highly positioned physicians in corporation with DTF established a relationship which on both part was the product of investment strategies. These investments were legitimised symbolically with the act of Parliament No. 21 of 27th January 1950 stating that all examination and treatment is done free of charge for all persons of fixed abode in Denmark irrespective of age and income. Hearing aids were also provided free of charge. The examination, treatment, and rehabilitation was conducted in 3 state hearing centres, which later developed into 14 hearing health services in the various counties. Struggles internally in the field among physicians and DTF of whether the leader of the hearing centres should be a teacher (like in the USA) or a physician were won by the physicians. There were also struggles of the physical placement of the hearing centres – in essence a question of whether hearing impairment was to be considered a disease or not. It ended up with two hearing centres in relation to the local hospital ENT-department and one hearing centre isolated from the hospital. Moreover, in only two of the 3 hearing centres hearing therapists were employed (Roejskjaer 1961). Additional lobby work from the physicians and DTF resulted in another law the year after stating that the hard-of-hearing were to meet only 25 % of the cost of the requisite batteries themselves whereas the state covered the rest. In 1952, the government invited hearing aids to open tenders. This was naturally to obtain discounts on quantity and shows how the state again was able to lessen the role of the Industry and the heteronome pole of the field. Under large protest from the Industry the hearing centres established a battery centre in 1958 where batteries were purchased by the state in bulks at considerable discounts. Thus, the bureaucratic field and the government took over the market and thereby drew towards the right pole of the field.

Whereas lip reading had been the sole rehabilitative service offered to the hard-of-hearing, the hearing aid from the establishment of the hearing centres in 1951 became the prime possibility for rehabilitation. The guidance in the use of the hearing aid was originally given in connection with examination at the hearing centre. However, as effectiveness evaluations demanded from the government demonstrated that a great number of prescribed hearing aids remained unused an obligatory guidance was introduced. For leading participants in the field (physicians) the influence from the USA where audiologists had another educational background led to an investment in a new strategy. In the 1960's they considered listening, lip-reading and speech functions as central to improve benefit of the hearing aids. The hearing centres initiated family courses where the hard-of-hearing and their relatives were drawn into group conversations and trained in the use of the so-called mouth-hand system (Bentzen et al. 1976). However, the legitimate substance of this new type of capital was contested as development of audiometry equipment seemed a better investment and leaders of the hearing centres were in desperate need of engineers to help develop this. It was not a normal procedure for engineers to work in clinical institutions and even less with patients (Roejskjaer 1961). These challengers had the resources needed and thus soon occupied strategic positions in the field transforming the positions in the field as such. During the 1970's it became possible to validate the outcome of hearing aids in individual ears with a probe-tube measuring device that could be used in clinics. A demand from physicians for new competences of the staff employed at the hearing cen-

tres emerged gradually. The education of the hearing educators was just a supplement to the ordinary teacher education. Thus, their relative lack of capital meant that they became powerlessness within the audiological field. Rather than pedagogical knowledge the physicians demanded knowledge of physiology, pathology, audiology, perceptive psychology, personality development, abnormal psychology and other psychological disciplines. The proposal was intended to be economically attractive for politicians as it was meant to be obtained by integrating different functions by fewer staff. However, the proposal did not gain a hearing in the government. Instead, the physicians themselves initiated an education programme of audiology technicians who then both performed the work that the physicians had previously done and slowly took over the job of the hearing therapists. Then the hearing therapists initiated the 5-year university degree of audiologist.

Drawing on Bourdieu's approach, a social reform in 1980 can be understood as representing a refracted from of wider external pressures affecting the field. The Danish service sector was then subdivided into three organizationally separate sectors: the health, education and social sectors. In itself it was just an administrative reform initiated from the government to replace the responsibility for some handicap groups from the government to the local counties and hearing handicapped were just a small group amongst larger groups of mental and physically handicapped. The reform initiated major protests from the handicap-organisations including "LBH". What it meant was that the hearing aid now came within the service law and became defined as an 'assistive device', despite that according to EU-standards it is a 'medical device'. The implications of defining the hearing aid as a remedy, rather than a medical device are that the municipalities are responsible for the payment. Audiological rehabilitation is sustained mostly in hospitals and an audiologist is always part of the validation before the hearing aid is granted. But with the subdivision of the service sector a social worker now has to make sure that the conditions for the subsidy are fulfilled. And what happened was that some counties in Denmark decided that they had to approve whether the hard-of-hearing would have the aid granted even though a doctor already had approved it. This has had implications for the overall waiting time for the patients.

The evidence-based movements introduced in the 1990s have exerted strong influences within the health care profession in general codifications of practice, such as clinical guidelines with which physicians must comply. At present, governments in North America, Britain, Western Europe, and Australia fund institutions that commission research, collate evidence, and produce evidence-based guidelines, and physicians are encouraged to use these findings in their clinical practice (Wahlberg and McGoey 2007). When EBM was introduced by Cochrane (1972), contributing to the collecting and collating of 'current best evidence', it was concerned not only with ensuring that individual patients were offered the most effective treatment but also that the national health delivery systems worked as efficiently as possible. Therefore, treatment guidelines, i.e. those present in the hearing clinics are informed not only by 'current best practice' but also often by judgments about 'cost-effectiveness'. Cochrane challenged diagnostic and therapeutic practice outcomes based on indeterminacy. His methodological strategies are developed within and have contributed to struggles of hegemony and authority in both medicine and health care. It was precisely this doubt that made the concept of evidence a basic concern (Jensen 2007). From a field perspective, EBM's rise can be linked to a shift from a form of collegiate control of autonomy to one exerted by the state. Thus, truth is the set of representations regarded as true because they are produced according to what is agreed on in terms of the principles of verification (Bourdieu 2004). We argue that EBM is a state-based control strategy that claims to reduce uncertainty by identifying economically effective interventions and by removing economically ineffective treatments from clinical practice. Therefore, it critiques and challenges physicians' previously dominant ontological understandings of clinical practice in the audiological field. In addition, it can be seen as a mechanism for lending an illusion of objectivity to what are essentially 'political' decisions.

Presently, there are very few among the structurally dominated groups who assume the role of 'position-taking' in a situation wherein the logic of this particular cultural pole is increasingly usurped by that of the economic counter pole. As claimed by Bourdieu (2005:

44), in the highly competitive context of a field whose autonomous logic is increasingly undermined by the exogenously imposed dictates of the market, paradoxically this does not lead to the differentiation of products but instead to their homogenisation.

The impact from humanities on the audiological field

For the audiological field to claim autonomy, it must have its own rules of entry into the field. These could be cultural capital in the form of educational opportunities, career opportunities, or far-flung networks to other fields in which one could also gain and produce capital. The term 'professional dominance' originally formulated by Friedson (1970) posits that the traits that identify professions are internal control over the technical aspects of its work and the power to organise, supervise, and regulate subordinates. Twenty years after the establishment of the Danish National Hearing Health Service and gaining encouragement to compensate for ascending physician shortages, the physician-leaders founded the official educational course for a group called 'audiology technicians'. The audiology technicians were delegated functions formerly considered the prerogative of the physician and were the more mundane, everyday segments the physician had carried out that could be delegated to a trained technician with a restricted scope for autonomy. This transformation illustrates that the hierarchy of expertise is also a hierarchy of resources; hence, the external policy requirements of efficiency and cost-effectiveness were delivered. As an example of this process is how brainstem response audiometry (BRA) has become the predominant choice for threshold testing and retrocochlear evaluation compared with the more sophisticated electrocochleography (ECoG), as BRA is less time consuming and does not require medical assistance but can be performed by the group of subordinates (Hindhede and Parving 2009).

Moreover, increasingly, physicians delegated to audiology technicians functions that had been considered the prerogative of hearing therapists and teachers, thus sounding the death knell for these layers of staff in many of the hearing clinics. The academically educated audiologists who entered the field from 1980 onwards also were delegated functions on a par with the audiology technicians. Pursuing a credentialist strategy by obtaining state licensure from humanistic disciplines therefore has not mitigated the downward exercise of power through subordination of audiologists, whose skills depend on physicians' assessment. The capital gained from social science knowledge is not considered worthy of a struggle nor is it valorised. Hence, the physicians retain control of the interactions with patients both in the physical examinations and in the fitting encounters during which the subordinates persuade the patients to become hearing-aid wearers. Presently in fitting encounters, patients are categorised based on their biomedical problems and the sets of tasks needed to accomplish their disposals controlled by physicians. That medical and acoustic knowledge resides in the artefacts (such as the computer software used when fitting the hearing aids or the other technical equipment) means the subordinate/dominated worker has limited room to improvise. Rapid technological development is a challenge for this group of staff.

The government decided to allow subsidised purchases of hearing aids in private hearing clinics in 1990. The law was intended to lessen the pressure on the public clinics. As a consequence, a lot of private clinics sprang up. With them a lot of audiology technicians applied for jobs in the private clinics, which could offer better working conditions. The arrival of a relatively large numbers of private clinics would thereby shift the balance of power between principles of hierachisation in favour of the heteronomous field and so reshape the field in ways inimical to professional knowledge. Competition among producers entailed that there were constant changes in types of hearing aids. Following the increased complexity of equipment, the hearing centres had to rely on the producers and their software when tailoring the hearing-aid to the patient's hearing loss. Thus, the producers became the repositories of the relevant knowledge in these encounters.

To sum up, the audiologists have not been able to promote their own concepts, classifications, and logics (e.g. hearing tactics). Rather, their position is impeded by the embedding of these very concepts, classifications, and logics within the discourse of medical science. The medical power functions on the basis of symbolic violence – the subtle imposition of systems of meaning that legitimises and thus solidifies structures of inequality. The medical language, the medical object, and the

medical classification are disseminated and viewed as natural, universal, and self-evident in the medical field. As dominated agents, the audiologists inscribe the arbitrary as self-evident and indisputable. As their on-the-job training advances, they become blind towards considering patients as people who bring valid experiences, who have lived with hearing impairment, and who also can disseminate relevant knowledge to them. Over time, physicians have developed an increasingly specialised language to treat many aspects of hearing loss, i.e. the notion of acclimatisation, background noise, open fitting, feedback sounds. This language, along with scientific logics, is socialised to the subordinates who also reproduce/advance the medical ideas of impairment and rehabilitation. The possession of technical competence, such as being able to fit hearing aids, does not in itself represent capital. Recognition builds upon the group's beliefs, which are constituted over time, within a social context, and especially through a struggle between beliefs. That the legitimacy is so strong results from everyone, including the audiologist, mentally and bodily perceiving and acting in the world according to this model.

The impact from WHO/ICF

In the late 1990s, disability came to be considered contextually instead of categorically as a handicap. Hearing impairment was conceptualised by WHO and its ICF as hearing disability, one now recognised as an emergent force between the hard-of-hearing and his/her context (WHO 2001). Where the focus in traditional audiological rehabilitation was on aural perception, visual perception and speech it now gradually changed from the compensatory side of rehabilitation and more to the acceptance and coping sides. Within this "new paradigm", disability was recognized as an interaction between features of the person and features of the context; a so-called ecological approach to the rehabilitation-attempts. England and Sweden were predominant in this change of focus. It is important to understand that WHO and ICF are merely ideologies and not active agents in the field. For ideologies to manifest in the audiological field, they need to trigger changes in the perception of what constitutes audiological rehabilitation. This can be done only by matching the doxa in the field. Expressed another way: If money is given to realise a holistic approach to audiological rehabilitation or if WHO has the power to impose sanctions, it will be possible to influence the doxa of the field and initiate a shift in focus from cause to impact for the individual. Otherwise, change will not occur. So far, no trace can be found of any political efforts to change the general objective for Danish hearing disability policy based on a more relational understanding of disability.

The impact of patient organisations on the audiological field

Countervailing power is widely recognised in the study of social movements. The establishment of the National Hearing Health Service was based on the creation of policies. The first law, passed in 1950, established a Hard of Hearing Committee and hearing centres, to which the deaf and hard of hearing could apply for help. The Hard of Hearing Committee consisted of just five members, of whom two were appointed by the Danish Association of the Hard of Hearing – in other words, they were representatives of users/consumers. In 1951, another law introduced an insurance plan that provided for a hearing aid, batteries, and assistive listening devices to be dispensed at no charge to the wearer. As in England, a centralised form of political institutions and a centrally regulated charity sector has encouraged the Danish hard-of-hearing patient group to use conventional channels, such as cooperative work with professional organisations and paying close attention to the mainstream political process (Allsop et al. 2004). The very existence of the National Hearing Health Service must be partly ascribed to the argumentation that the hearing-impaired representatives themselves were able to put forward in a Government Commission, which *'at any rate at the beginning was extremely unwilling to listen to the requests of the hard of hearing'* (Thuesen 1976: 28).

Today, less than 1 % of the hard-of-hearing are members of Høreforeningen (the Danish Hard-of-Hearing patient group) (http://www.hoereforeningen.dk), far fewer than are members of other social activist movements; hence, there appears to be no struggle to resist oppressive accounts of their identity (Hindhede 2012). Instead, groups are organised by various sorts of 'proxies' for patients. It means that Høreforeningen does not necessarily represent the 'public understan-

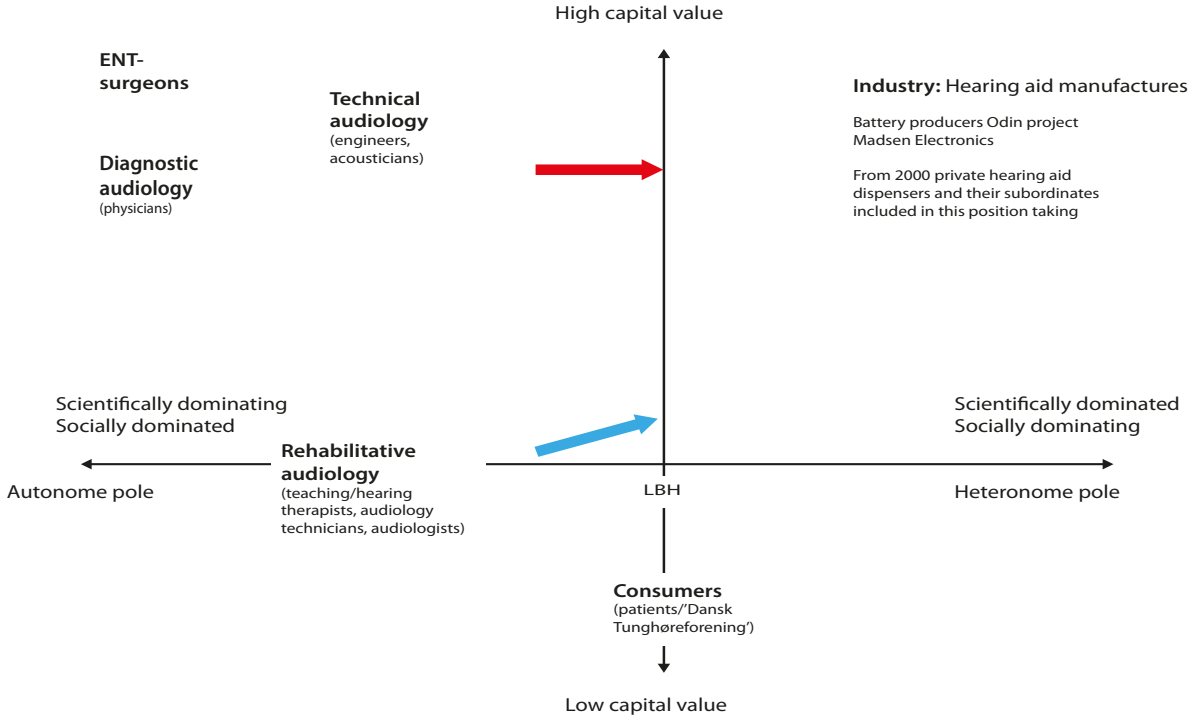
ding of hearing impairment' but instead functions as a specific and concrete entity. This kind of activism, however, does not seem to have prevented the extension of medicalised frameworks of understanding.

The explicated goals concern improving the quality of life for the hard-of-hearing, the development of practical advice for managing one's impairment, the raising of funds for research, and encouraging the experiential knowledge of hearing-impaired patients themselves (www.hoereforeningen.dk). Høreforeningen does not consider privatisation of the hearing-aid market as an asset, because it means that hearing aids are no longer provided free of charge to the individual. Moreover, it means a decrease in hospital-related research, as private dispensers make no profit on these activities. Hence, audiology as a subfield lost part of its autonomy, while other neighbouring fields such as plastic surgery, biotechnology, etc. gained ground as subfields in the medical field, managing to attract agents who shared an interest or invested in the stakes of the struggles within these subfields (Larsen and Larsen 2008). This may have led to a decreased value and interest in audiology. Presently, audiology no longer is seen as a field in which the 'craftsmanship of a physician' (Larsen 2005) can or does occur. Instead, it has been co-opted by engineers, with audiological knowledge gradually accumulating and culminating in an artefact. According to Bourdieu, those relegated to subordinate locations are more liable to deploy strategies of subversion and seek to introduce heteronomous standards because they need the support of external forces to improve their dominated position in it. The Danish government's approach to privatisation can be considered as an intrusion from the bureaucratic field where scientific originality has been challenged by commercial profit and/or political rectitude.

Hearing-aid manufacturers have established their own research centres. In addition to competing in the consumer market attracting potential users/wearers/patients, they continue to collaborate. Three of them, Oticon, Widex, and GN Resound, co-finance a research group at Technical University of Denmark (DTU) called the Centre for Applied Hearing Research (CAHR). According to the centre's mission statement, its purpose is to promote research and education in the field of acoustic communication.

Positioning agents within the 50-year period in a Bourdieuan diagram gives rise to the following figure:

Figure 1: The audiological sub-field. The bureaucratic field (health ministry, Technical Acoustic Laboratory (TAL), politicians, communities United Nations, World Health Organisation (WHO), Evidence Based Medicine (EBM)



The audiological field is organised by two cross-scutting principles of differentiation, whose distribution defines the oppositions that undergird major lines of cleavage and conflict in advanced society. The first, vertical, division pits agents holding large volumes of either capital – the dominant against the dominated. The second, horizontal, arises between the scientifically dominating with a high degree of autonomy against the socially dominating with a high degree of heteronomy. The profiles of agents in the audiological field - as described earlier - are - in short:

Left above: 'Diagnostic audiology': physicians, ENT doctors/private practitioners

'Technical audiology': engineers, acousticians. This is where recognition is directed towards diagnostics, increased knowledge about audiology, 'breakthrough' knowledge. It is characterised by a high degree of autonomy. With the privatisation of hearing-aid dispensation, some of these agents move towards the above-right pole (illustrated by the red arrow head), as it is strengthened with increased privatisation (where key values include: cost/benefit, profit performance, optimisation, etc). The autonomy of the audiological field is therefore reduced

Right above: 'Industry': the hearing-aid manufacturers, battery producers. Characterised by high degree of heteronomy. Are relatively strengthened by privatisation as demands for hearing aids increases - although Denmark probably does not compose a very large proportion of the total market for the Danish hearing-aid manufacturers

Left below: 'Rehabilitative audiology': the first group of rehabilitative staff was the teachers who became hearing therapists. Then the hearing therapists initiated the 5-year university degree of audiologist. Neither teachers nor hearing therapists remain in present-day hearing clinics. Since 2000, an increasing number of those relegated to subordinate locations have deployed strategies of subversion of the existing distribution of capital by moving towards the right pole where rehabilitation tasks are designated and made operative (illustrated by the blue arrow head). This diminishes those remaining in the position representing the public sector of audiological rehabilitation

Right below: 'Consumers': patients, patient organisations. They are low-positioned and because of their minimal investment in the field, they are not able to change the rules of the games within the field but instead plead for their position by defining the situation in a slightly different matter – they take a patient's perspective and argue with reference to the 'particular' or the 'unique' about an individual's situation. As they have no autonomy or legitimacy within the field, they claim their position with reference to a 'holistic view' of the patient. From this position, some patients/consumers feel empowered by the increased options following privatisation, but some do not and instead defy such technologies and, perhaps surprisingly, demand to be treated and disciplined in a more traditional sense.

As illustrated, many profiles have entered and exited the audiological field over the past 50 years. Because of the rise in dominance of the economic/heteronome pole vis-à-vis its scientific/autonome counterparts, physicians and engineers on the upper left of the diagram are constrained to think in terms of the economic drive to maximise profits and secure a market share for their 'products': their knowledge of audiology and 'best practice' of audiological rehabilitation. Notions about EBM assume an increasing role when new audiological knowledge is being tested and new audiological interventions are tried out. The influence from the state has meant that an alliance between the highly positioned on the left side of the diagram towards the heteronome pole is attempted. Thus, when audiological scientists are applying for research resources, they must relate their findings to evidence and clinical trials.

Stephens (2009) underpins Bourdieu's thinking on fields and emphasises how positions in the field are also comprised by individual agents. He points out seven pioneers who, as struggling agents, have been quite central in the development within the audiological field. The first generation of pioneers who occupied the dominant positions in the field was Harald Ewertsen, Christian Røjskjær, and Ole Bentzen who ran the State Hearing Centres in Copenhagen, Odense, and Aarhus, respectively. Stephens explains: '*While there were frequently conflicts between them, they worked together to support and develop a fine system'* (Stephens 2009: 82), and he notes that the struggles and competition for legitimacy intensified, creating a cultural climate in which

the three pioneers were compelled to display and 'make a virtue' of their individual differences and dispositions in order to carve out novel, distinctive positions. The reward was recognition for '*developing a fine system'*. This striving for distinction was made possible by high levels of structural autonomy within the field.

The second generation of pioneers who tended to pursue strategies of conservation of the existing distribution of capital was Gert Salomon, Kurt Terkildsen, and Bjørn Blegvad. The two last mentioned both died prematurely. The third generation included only one person, Agnete Parving, who is the only professor ever of Danish audiology. According to Stephens, '*She fought over the years to improve the service and provisions, but was able to achieve little in improving services for adults without support from capable colleagues*' (2009: 83). Hence, the 'decline' in Danish audiology is not due to an influence from the bureaucratic field. Instead, it can be ascribed to the fact that eventually only one person remains who is fighting for the sacred devotion to audiological reasoning. The diminishing dedication to provide still better quality hearing care to the public; this more or less unthinking commitment to the logic, values, and capital of the field corresponds to what Bourdieu calls 'illusio' and is also a premise for the degree of autonomy in the field. Stephens concludes: '*We must remember that the key people for whom the services are important are the Danish people with hearing problems'*. He is alluding to present audiological and rehabilitative practices that are what Bourdieu refers to as 'doxa', the unquestioned and prereflexive ways of experiencing and negotiating the world. A phrase like this is most likely produced out of good intentions. It might also be descriptive of reality. However, it could contradict it and perhaps mask the absence of such a service. According to Larsen (2003), one might say that the more prevalent the rhetoric of '*the key people for whom the services are important are the hard-of-hearing*', the more grounds we have to fear that the patient's needs are marginalised.

What Stephens does not engage in is the fact that these 'personalities' with their capitals and their positions are possible only within a specific field configuration in which the capitals are potent and are worthy of struggle. This also means that the social structure of a field is emergent from but irreducible to such constituent agents and their practices; the relational whole is more than the sum of its parts. The relations comprising a field are therefore not limited to interactions between agents.

Conclusion

In this paper we have traced the history of those forms of rationality that comprise the present situation in hearing clinics where the normalising professional order is deploying technology as a technical fix. How this field is structured and how services are provided are matters of 'accumulated history' (Bourdieu 2005). The agents in this field (i.e. the hard-of-hearing person, hearing care professionals, etc.) create, through their relationships, the very space that determines them, although this space only exists through the agents placed in it. Following from this, the social conditions of possibility for audiological knowledge to emerge are practical and institutional, involving a collection of persons in particular places and their organisation within particular practices. What audiology and audiological rehabilitation is today is – cf. Rose (1999) – the outcome of controversies and disputes over truth that involve the deployment of arguments, prestige, cultural intelligibility, and practicability.

As stated in the beginning, according to UN it is no longer the disabled individual that needs compensation to integrate into normal society. Instead disabled individuals should be included as normal members of the multicultural society. This paper has demonstrated that the reason for this is that the development of audiological rehabilitation has as much to do with the governmental and medical marketplaces as it has to do with scientific advancements. Our main emphasis has been on the vertical relationship of the established-challenger (dominant-subordinate) relationship within the field. However, there have also been cases in which the field has changed as a result of conflict among the established, that is dominant networks of the field. Highly positioned towards the economical pole have typical rationales (habitus) expressed in conceptions like efficiency, production, evidence based knowledge and optimizing the delivery of public services. So the interest in improving health and the 'good life' is economically based. On the other hand there is the scientific rationality where conceptions like basic research are valued

highly. Pay-off in this subfield is not only economical but also recognition via submitted and published articles in international journals.

EBM remains a professionalising strategy through its potential to control the indeterminate relationship between physician and patient. This paper illustrates this indeterminacy. Several struggles of clinical truth occurred in the period during which the practices described represent particular standpoints in relation to other practices and were subject to negotiation, opposition, struggle, collaboration, or isolation (Hindhede & Parving 2009). The results that were eventually accepted as evidence depended on the ontologies enacted in these particular practices.

Drawing on the theory of Bourdieu allows for constructing results in a historical account which focuses on scientific developments emerging as alliances and conflicts between claims of authority and their subsequent impact on rehabilitative audiology and the different conceptualisations of hearing impairment. They illustrate how the myth of present audiological scientific reason is not merely logical and rational but also complex and contradictory.

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Abstract
In this paper, we trace the history of those forms of rationality that comprise the present situation in hearing clinics. The paper takes as a starting point the 1950s when audiology became a public service. The formation of the field of audiology is framed according to Bourdieu's conception of fields. This approach allows for constructing results in a historical account where we focus on scientific developments emerging as alliances and conflicts between claims of authority and their subsequent impact on rehabilitative audiology and the different conceptualisations of hearing impairment. How the audiological field is structured and how services are provided are matters of 'accumulated history'. Our findings illustrate how the myth of present audiological scientific reason is not merely logical and rational but also complex and contradictory.

Keywords
Audiology, field theory, hearing impairment, rehabilitation

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