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Questioning Medical Technology

The Discourse on Technology in *Läkartidningen* 1978–1985

Prologue: Medical Technology on tv: Sweden, October 1984

In October 1984, two programs were broadcast in prime time by the Swedish public service television channel TV2, which discussed the role and human value of high technology in modern health care.[3] In *The Hospital Magnet* and *The Health Machine*, the complex and costly medical technologies were depicted as ethically questionable instruments as opposed to human care. The rhetoric of both programs was based on two central ethical questions: should we give priority to high-tech medical investments, or to health-oriented proximity care (primary care)? Has high technology perverted the fundamental values of medicine?

In *The Hospital Magnet*, a central argument lay in opposing high technological specialised care to primary care on the basis of 'humanity'. This opposition was made very obvious by a striking transition: a scene showing Sweden's first MRI device (magnetic resonance imaging) in a science-fiction technological setting at the University Hospital in Uppsala, with a radiologist looking like a scientist creating digital images of the inner body,[4] is followed by a travelling shot through the hospital cellar filled with unused technological devices. The scene ends with Louise, an assistant nurse, riding her bicycle around town on her way to visit an old lady whose foot she treats daily. Louise has the wind in her hair and we can hear a joyful spring-like soundtrack as a background. The program was composed in a way which clearly suggested we should not forget that health care is about care and human values, as opposed to a fascination for high technology and advanced science, held by specialist doctors within big hospitals. Contesting further the efficacy of specialised care, the program also made the implicit point that in an era of limited resources for health care, a choice has to be made – and that choice should be primary care.

The second program, *The Health Machine*, broadcast less than a week later, offered a debate on political priorities in health care, focussing on the question of technology and primary care. It brought together representatives

from three different professions: the radiologist Anders Hemmingsson, who had introduced MRI to Sweden and who was staged as a spokesperson for high technology in health care; Edgar Borgenhammar, economist and former administrative head of one of Stockholm's big hospitals, *Södersjukhuset*, who had publicly spoken out against high technological medicine and in favour of more humane approach to health care; and the county politician (*landstingspolitiker*) Leni Björklund, presented as decision maker on priorities and responsible for health care spending in her county. The core of the debate was whether costly advanced technology should be considered necessary or even just desirable for health care in an era of limited economic resources. Although the political climate was favourable to the government's long-term plans of the expansion of primary care, Björklund turned out to support Hemmingsson's position, arguing with him that new expensive technology often saves resources, since it may reduce patients' reliance on other less reliable methods. Borgenhammar was portrayed as an ideologist with limited credibility. The program's hosts denied promoting hostility towards technology, yet Borgenhammar's arguments recalled those expressed in *The Hospital Magnet*: that society's trust in high technology was exaggerated and hid society's "real" medical need for proximity and humanity of care.

Thus, by 1984, medical technology seemed to have developed into a specific and complex issue. How had the debate been presented before then? What were the sources of the "medical technology" debate? In other words, what broader trends within health care had shaped the emerging discourse on technology up to 1984? By *discourse* on technology I mean implicit and explicit ways of understanding and of thinking about 'technology'. In that sense, *discourse* encompasses what is said about and what is done with technology.

The present article is thus a demonstration of the discourse on health care technology within the medical profession in the first half of the 1980s. It aims at linking the emerging attitude towards technology to other debates about health care promoted by different actors such as health care administrators, research policy actors, politicians and medical specialists. I shall argue that in the early 1980s a shift took place in the way of thinking about medical technology, leading to the establishment of technology as a theme in its own right in the medical debates.

This article is to a large extent based on an analysis of all issues of *Läkartidningen (LT)* from 1978 to 1985. *Läkartidningen* is the journal of the medical profession's union, The Swedish Medical Association (*Sveriges Läkarför-*

bund) and is thought to reflect debates within the medical profession. However, it is not clear just how representative *Läkartidningen* and TV2 are as arenas for debate: did these published discussions correspond to those actually taking place within the medical profession and in medical practice? This article is thus the study of one single arena, that of the medical profession's public debates.

Concerns about an expected economic crisis appeared within the medical profession at the end of the 1970s. I shall first situate technology as a minor, non-specific issue in this changing mood within health care. I shall then demonstrate how four discourses concerning technology emerged from different issues in the early 1980s. Two of these issues were particularly important: one focused on the scientific rationalization of technology diffusion, and the other questioned whether high-technology was an ethical alternative for health care. We shall see how these discourses were embedded in the wider context of professional tensions, economic pressure and specific ethical debates during the late 1970s and early 1980s. I shall finally argue that from 1984, 'Technology in health care' became a topic *per se,* dominated by the scientific discourse of technology assessment within health economics.

A Growing Shadow: Early Feelings of Economic Crisis in Läkartidningen 1978–80

> Greater efficiency, stiffer controls, clocking-in in individual wards, greater demands on able-bodied, more compulsory early retirements. […] That was how they [the management] honed the knife when they wanted greater efficiency.[5]

The debates we will study took place against the background of a dramatic expansion of the health care system during the 1960s and 1970s in Sweden – as in much of the Western world. That period saw the construction of new hospitals, later known as the new "welfare cathedrals", and higher recruitment of personnel, while care became increasingly accessible.[6]

The 1960s and 1970s also witnessed dramatic revolutions in medicine, a rapid medical-technological development, an intense technification of health care, and dramatic growth in health care administration.[7] The rate of evolution in health care was enthusiastic and unchallenged during the 1960s. It was not until the 1970s that people began to see signs of limitations in this expansion.

By the late 1970s it was clear that an economic crisis was brewing. Worried contributions in *Läkartidningen* depicted a looming, unstoppable, long-term crisis for Swedish society in the 1980s, which would lead to reductions in resources for welfare services, and which would consequently provoke a serious crisis in health care. Core articles about this phase of anticipation gravitated around expected cuts in resources, and the need for preventive measures to restructure and rationalize health care activities. A typical illustration of this position in a 1978 editorial in *Läkartidningen* entitled "Is there enough cash?" read: "Will there be enough money for the continued expansion of health care – or should the question be asked in this way: Which branches of health care must we force into starvation to be able to handle the whole health care?"[8]

Other articles used titles such as: "Profit or loss? How can we manage a future resource limitation?", "Why don't care days cost the same?" or "The price of health care".[9] These articles discussed the origins of the rising cost of health and often questioned the ideological premise that all demands for health care must be satisfied.[10] Many actors in health care became spokespersons for a medical field, type of hospital or profession.

In 1980 the discussion about the pending need to rationalize health care focused on five main themes, which I will call "the rationalization discourse".

Firstly, the growing dilemma was seen as a *historical consequence of the 1970s* which was considered as a decade of expansion and of national inquiries about "organization and the role of different professional groups in health care". The results of these inquiries (*utredningar*) were due to come into force during the early 1980s, which was perceived as a "decade of implementation".[11]

Technology was not a very recurrent topic in *Läkartidningen*, and it was mostly treated as a dimension of this transition from the unworried abundance of the 1970s to the awareness of coming restrictions in the 1980s. Several articles warned that all technological devices purchased during the 1960s and 70s would have to be replaced during the 1980s.[12] In particular, the Swedish Medical Research Council (*Medicinska forskningsrådet* – MFR) emphasized the need to increase resources dedicated to maintaining levels of technology.[13] MFR demanded that the government increase the budget for funds to be attributed to "costly scientific equipment [*dyrbar vetenskaplig utrustning*]". MFR brought up an aspect of this technology replacement: the question of the equipment's *safety*, thus identifying maintenance and replacement of technology as unavoidable measures. This can be interpreted both

as a first problematization of technology within health care – though it does not question the *value* of technology – and as a strong strategic argument allowing MFR to promote technology replacement as an important priority at a national level.[14]

Secondly, the problem of health care resources was defined as an *organizational* issue, and the controversial solutions proposed related to coordinating resources, merging certain health care regions and cutting down on personnel, for instance at Stockholm's prestigious Karolinska Hospital.[15] Thirdly, another definition of the problem focused on the *practice* level, and proposed to reduce costs by rationalizing routines and methods.[16]

A central point here was that, although the issue of technological safety was raised, technology in itself was not questioned. Criticism was directed at competence, responsibility and maintenance, organizational aspects: for instance, the fact that devices were stocked in hospitals' cellars because people lost interest in them, as shown in *The Hospital Magnet.* Technology was depicted as a neutral, effective or superfluous tool in the hands of doctors, researchers or engineers.

Fourthly, articles became interested in the *evaluation of medical methods*. In 1980, the national authority SPRI (The Swedish Planning and Rationalization Institute of the Health and Social Services) organized what was, to my knowledge, the first symposium on "Assessment of Medical Methods" held in Sweden.[17]

Fifthly, another suggestion gaining legitimacy among the medical community was the beginning of research on 'health care' (*hälso- och sjukvårdsforskning*), i.e. on the organization and practice of health care, a theme proposed as a field for investment at the Annual General Meeting of the Swedish Society of Medicine (*Läkaresällskapets Riksstämma*) in 1980.[18]

Only one article during the period 1978–80 announced the rise of a new, morally critical discourse about technology within health care. Its author was Edgar Borgenhammar, an economist and administrative head of the Stockholm county council's southern region, and who would later become a proponent of the anti-high-tech position in the 80s health care debate. After comparing health care systems in other countries, Borgenhammar turned to the question of the growing use of technology in medical treatment, which he saw as a worrying trend which resulted in rapid increases in costs, and which conveyed the risk that high-tech devices, such as computed tomography (CT), would "become a 'fun toy' [in the hands of the medical specialists], its value having no relationship to its cost".[19]

So far, technology as such had not received much specific attention from the medical community in the Swedish debate on the looming health care crisis. However, it is during the same period that the introduction and diffusion of one specific technological device, the costly computed tomography (CT), provoked strong emotions abroad – providing the grounds for a later emergence of an economic and institutional discourse focusing medical technology. In USA and other countries regulations were introduced in the 1970s to contain the dramatic diffusion of CT.[20] A new type of criticism emerged, which opposed politicians and administrators ("bureaucrats") to the medical specialists. It was concentrating on the legitimacy of costly medical high technology under the control of doctors: Was CT luxury equipment or a scapegoat for a political will to control health care?[21] A "health-economic" way of thinking promoted the view that technology should follow rules other than those relating only to medical practice; medical technology should then be seen as part of broader economic concerns. In Sweden medical technology was submitted to regulations, but did not become an explicit topic for debate yet. Rather, two discourses on medical technology emerged without addressing the question head on: the health-economic approach and the debate over CT. [22]

Visibility and Suspicions: Technology Rendered Suspect in Sweden, 1981–1983

> Thin tubes ran from the bottle into a grey container, and from the container a tube ran to a plastic knob on the inside of his left elbow. An alien feeling crept over him. He was no longer sure where his own body ended and where the machines began. […] "Myocardial infarction? Coronary thrombosis? Heart attack?" he thought. It had nothing to do with him. It wasn't his heart any longer. The hospital had taken over the responsibility for it.[23]

In Sweden the expected economic crisis broke in 1981. Whereas health care professionals "plan[ned] for the confusion that comes up when you are forced to cut costs", the health care planning authority SPRI took the initiative of bringing together professionals for discussions about the growing health care crisis and, in particular, organized a debate entitled "What does the 1980s medical development mean in an economic stagnation?".[24]

In 1981 the government imposed an economic "crisis package" for the whole country, which included, among other measures, the devaluation of

the Swedish currency and saving plans for the county councils. The Federation of Swedish County Councils (*Landstingsförbundet)* was critical of the government's plan and claimed that the whole package would hurt the county councils. Among other consequences *Landstingsförbundet* predicted that the devaluation would make it more difficult for county councils to import health care equipment; they also foresaw that the planned expansion of health care services, as well as existing care services, would have to be cut.[25]

Tensions between health care professions increased. Medical practitioners went on strike in 1981, a move described as a test of *Landstingsförbundet*'s strength and as the worst conflict ever seen between the medical profession, the health care administration and the government. Later doctors accused *Landstingsförbundet* of attempting to take over the main role in organizing health care, and the state of not including doctors' representatives in a survey on medical education.[26] One of the serious debates centred on Uppsala University Hospital (UAS) where cuts in resources and personnel were planned, and where ownership would be transferred to the county council by late 1982 or early 1983. UAS would then be the last Swedish university hospital to be transferred from a national to a local authority.[27]

Meanwhile, informal economic approaches to the question of health care on a micro-/meso-level appear in *Läkartidningen*.[28] For the first time published articles offered models for costing specific health sectors, measures and treatments, though this turned out to be a more complex task than expected.[29] Strategies for making savings on health care were much discussed in 1982, particularly in terms of cutting administration and administrative costs. These went further than earlier proposals to cut costs by rationalizing, but were also related to the tension between the medical profession and the health care "bureaucracy"; medical professionals produced a discourse of expertise in which health care administration was considered secondary, if not superfluous.

Four subdiscourses on technology

A striking evolution in the discourse on the health care crisis was the growing place of technology from 1981 onwards. Surprisingly the debate over technology clearly fell into four independent themes during the period 1981–1983: technological renewal and security; responsibility for purchase and use of technology; technology assessment; and opposition between high-tech medicine and human care.

Technological renewal and security

This first approach to technology – minor compared to the others – was a continuation of the treatment given to technology in *Läkartidningen* between 1978 and 1980: medical technology was linked to problems of safety and the debate focused on who was responsible for technology and whose competence was at stake.[30]

Worried about the technological future of diagnostic radiology radiologists linked the need for new equipment to replace ageing and unsafe equipment to the need for new types of technology, whether already available (such as CT), or announced (MRI), and highlighted the difficulty of obtaining funds for new equipment.[31] Public anxiety about the dangers of X-ray was evident in medical articles such as "Radiophobia – a widespread affliction" (1982).[32]

Who should decide on new technology?

The earlier debate about responsibility for technology in use in hospitals moved onto new ground: responsibility for deciding which technology was to be purchased. Technology, once an integral part of broader medical practice, became the focus for issues relating to decision-making and to the legitimacy of various professional groups.

The issue of 'medical technology' arose as part of earlier discussions on rationalizing organization and economic responsibility in health care. In 1981 a conference entitled "Who shall decide upon medical technology?" included discussions of the interests and demands of different professional groups: patients, whose interests were in principle represented by the doctors; the users: doctors and other health care personnel; hospital technicians (*medicintekniker*), and health care administrators. This conference failed to establish a consensus on decision-making.[33] The difficulties in creating consensus about professional control on technology show that 'medical technology' was a new issue; they also show that the question of rationalization was closely linked to the question of control over technology.

The idea that medical technology could no longer be neglected in reviewing the cost of health care gained legitimacy in the debates on health care. In 1982, controversy surrounded the publication of *Health Care Affairs*, a year before its planned release. Its authors stated that public health care decision-makers were responsible for "billions of tax money being wasted when [they purchased] equipment", due to their apparent lack of competence in negotiating with the salesmen from the medical equipment industry.[34] As the reac-

tion of SPRI's director in 1983 shows, the idea that it required professional competence to purchase technology was new and had to a large extent arisen because of difficulties due to economic restrictions: "[Torstén] Thor [Head of SPRI] further says that it is easy to look back and be wise about the huge flood of equipment in the 1960s and 1970s: – We had another approach then. There was plenty of money, and it would be far too easy to say today that the purchases were a total mistake". [35]

Politicians entered the arena on the question of control over technology indirectly, as they focused on setting priorities and coordinating health care resources and, more specifically, on specialised care.[36] The discussion about highly specialised care took place as part of the power plays between politicians and doctors. That this was a sensitive topic became obvious during *Landstingsförbundet*'s annual congress in 1982: the Social Democrats advocated centralized control of highly specialised health care resources, in opposition to the Conservatives' position. Before the congress a local Social Democrat politician, Leni Björklund, tabled a motion "for politicians to have more influence over the introduction of new treatment methods",[37] and continued: "The Conservatives try to make researchers and doctors believe in a freedom unto death. New scientific advances will not be possible because of the lack of resources. I want us politicians to elicit facts [for decision-making] in time so that we can make sure that we can afford to introduce important new methods". [38]

Björklund's speech suggested that the project of rationalizing health care on a scientific basis, which had arisen because of early feelings of crisis, was gaining legitimacy in the political arena. Her rationalization approach indicated that the introduction of new methods was not to be neglected. Whereas the medical body saw *Landstingsförbundet*'s power expansion as an attempt to take over the control of health care organization, and ultimately of the profession, political control over the implementation of new medical methods was becoming a real issue.[39] In October 1982 *Landstingsförbundet* declared a ban on purchases of MRI equipment, after the first decision to purchase a MRI scanner in Sweden. In the same directive *Landstingsförbundet* also pinpointed CT: "exercise great caution when purchasing additional computed tomographs".[40] Although this directive was a recommendation, without regulatory power, for decisions by the county councils, *Landstingförbundet* made a strong statement of its intention to play a role in decisions relating not only to general organization, but also to specialists' practice of health care. Costly medical technologies were now explicitly treated in the continuation of the

issue of CT. The medical body saw *Landstingsförbundet*'s attitude as an attempt to take over the control of health care organization, and ultimately of the profession.

Thus, new medical methods and technology became an explicit organizational issue. It became an issue and a concept for politicians and administrators, various professional groups were now involved with the responsibility for and control of the purchasing and funding of medical technology. At the same time the way of thinking medical technology was inscribed in the continuing debate on priorities in health care, the earlier installation of CT, tensions between professional bodies, and the will to continue to improve health care in a spirit of rationalization.

Assess technology!

As suggested by the Social Democrats' position in 1982, technology became a factor in the process of making science of the rationalization of health care between 1980 and 1983, a process which I will from now on call scientification of this rationalization. Health economics was the scientific frame which authorities relied on in order to conduct this rationalization and handle the economic crisis.[41]

The first explicit sign of this discourse appeared in *Läkartidningen* following MFR's announcement of its funding priorities for the year 1982/1983.[42] Of the three fields given the highest priority, two were "health care research" (i.e. research on health care practice and organization) and "assessment of medical technology".[43] MFR wanted first to establish health care research as an area of expertise and production of knowledge, and then to position itself, at government level, as the national body with the responsibility for such a research program. This approach revealed an evolution in the rationalization approach to practice and technology: MFR's explicit goal was to establish those two areas as fields of scientific research, not as political issues, which could be interpreted as *"making science" of these issues*, in line with growing interest internationally in health care economics. In other words, *the rationalization of health care was becoming not only a political, but also a scientific discourse.* And this discourse implicitly included medical technology as an integral part of medical methods.

At the end of 1981 and early in 1982 MFR also decided to finance the purchase of Sweden's first MRI device to assess this new complex, and costly, technology. In 1982 funds for purchase and research were assigned to an Upp-

sala team led by the radiologist Anders Hemmingsson – which explains why he became a spokesperson of technology on tv in 1984. Though other actors would assert that the idea was theirs, MFR considered itself the initiator of the project: this was a key issue, since the assessment of MRI would contribute to, or symbolize, the broader ambition of establishing assessment as a national scientific field.[44]

Later, in 1982 and 1983, MFR was to insist on these priorities, asserting its role in establishing health care research as a discipline, and arguing for extending the scientific field to include technology/method assessment: "The priorities defined in the [government's] proposition on research politics are in line with MFR's. MFR has, during the recent years, initiated and financed more and more research within a certain number of such fields. *The largest such initiative has concerned health care research*, but contributions have also been made within general medicine and *assessment of medical methods/technologies*. *MFR considers that these contributions ought to be increased* [italics mine]". [45]

In 1981 SPRI held a conference on the assessment of medical methods and technology. On that occasion, Tore Scherstén, who had much influence within MFR, quoted the words from the Watergate scandal: "Once the toothpaste is out of the tube, it's going to be very hard to get it back in". [46] Here he was referring to the difficulty of reversing the dynamics of purchase and the diffusion of medical technology, as well as of controlling the rise in associated costs. In the conference proceedings advanced models of technology diffusion were presented, thus illustrating the process of making science of the health care rationalization discourse, *this time relating exclusively to medical technology*.

In 1981, the creation of a "high level body" for the assessment of medical technologies and methods was proposed. Among the representative groups invited to participate in the shaping of a new organization were SPRI, *Landstingsförbundet*, MFR and *Socialstyrelsen*–but not the medical profession. In other words, the question of shaping and establishing medical technology and methods assessment had become an explicitly political/health care issue, giving politicians, administrators and researchers an opportunity to shape their own instruments of power. Making science of the rationalization discourse was thus also part of political goals.

In 1982, Scherstén also argued for a new form of conference in use in the USA, the "consensus conference".[47] Scherstén and others presented an example of American consensus conference in *Läkartidningen*, and their article dis-

cussed the efficacy and legitimacy of certain technologies, such as CT and MRI, in medical practice. With regard to MRI, the authors pointed out that: "It was emphasized [at the US conference] that *the costs of [MRI] as related to its clinical importance must be assessed first, before a decision can be made* about the method [italics mine]". Thus, it is not only the form of conference that the authors wanted to 'import' from the USA, but also its results. This way of making conclusions from abroad relevant for Sweden suggests further that diffusion studies of medical technology were being made into a science.

In 1983 cost-efficiency analysis of technology was still in the early stages of development in Sweden, and this interest was new but growing. A professor of health care economics, Bengt Jönsson, drew attention to the "need for better assessment of the effects of medical methods", especially in order to acquire *knowledge* about their *cost*. Jönsson defined technology and technology assessment as one of five central means of improving cost-efficiency in health care.[48]

Finally the question "Can we afford new technology?" was explicitly formulated in 1983. The Swedish hospitals' association held its annual meeting, at which its members discussed, among other issues, the question: "Can we afford new medical technology?" Key arguments, which would later become classic, focused on the costs and benefits of technology: in spite of the high cost of purchase, new technology could actually make more efficient use of resources because improvements in efficacy and performance would save time and reduce medical complications for the patient. However, with technological developments in diagnosis and therapy, patients would expect more from health care services–and this would lead to increases in total costs.[49] Technology thus became understood as part of a complex chain of health care measures, which were difficult to quantify in economic terms.[50] At the same time other authors pointed out that this concern about the cost of technology was exaggerated: "Equipment stands for a small part of health care costs. The high cost items are those related to personnel, and these are ruled by the decisions of the parliament".[51]

The emergence of the cost of medical technology as an explicit subject for debate announced the next stage in the development of the discourse – medical technology would become a topic in its own right from 1984.

In brief: Medical technology had become visible, in explicit economic terms, by 1983. Broadly speaking the answer to the question "Can we afford new medical technology?" had been formulated: "Assess it first!". The medical value of medical technology could no longer be considered as intrinsic,

on a par with its clinical potential alone; its value had to be redefined in economic terms. The dominant discourse no longer focused on whether the best performing medical technology should be used; rather, the purpose of medical technology was now seen as maximizing benefits for health care. Assessment would be conducted on the scientific basis of cost-efficiency analyses, as part of the rationalization of health care, and this rationalization project was also identified as a scientific field.

High-tech medicine vs human care

A dilemma emerged slowly in 1981; it opposed care to medicine's high technology, as different moral values to choose between in an era of defining priorities. This argument was tightly linked to issues of professional and organizational responsibility, of assessment and of CT, and took an increasingly complex ethical line.

My point here is not to enter into a thorough discussion of the ethics involved, nor to reproduce the ethical debates as a whole. However, I would like to explore the moral questions relating to technology which were absent from the earlier discussions about technology in health care.

The increasing atmosphere of crisis produced an ethical dilemma: should greater priority be given to primary care or to high-tech, specialised medicine? This then became an integral part of the debate on rationalization of health care. A new Health and Medical Services Act (*Hälso- och sjukvårdslagen, HSL*) was being drafted during the early 1980s, and identified primary and preventive care as priority issues. [52] In the early 1980s, primary care had already created its own momentum, though not without criticism. Voices were raised about the county councils' choice of priorities for expanding primary care as "one of the biggest social or socio-medical experiments we have had in a long time".[53]

In continuation of the crisis anticipated in 1978–1980, the issue of priorities was discussed more concretely in 1981, when primary care versus specialist care became a major axis of the debate.[54] The general discussion about priorities became bipolar, i.e. the question of priority was defined in terms of choice between two alternatives: further expansion of primary care in health centres versus expansion of high technological specialist medicine at university and regional hospitals. For instance, this "either-or" choice was presented in an editorial in *Läkartidningen* asserting that the continued expansion of priority fields such as primary care would lead directly to 5–10%

cuts in emergency care, a medical specialty heavily dependent on technology.[55] A debate on surgical priorities produced another highly illustrative argument: if a choice had to be made between the technologically "spectacular" surgery and more mundane "everyday" surgery, then priority must be given to everyday surgery.[56] It appeared that, in the battle "care vs high-tech", care had the moral advantage.

Other sections of the ethical debate on high technology and human care focused the intrinsic human value of technology. Edgar Borgenhammar took a critical stand as regards technology in an article, "Good morning – brave new health care".[57] The article's reference to Aldous Huxley's novel emphasized Borgenhammar's intention to create an association with Huxley's dystopia of medico-tehnologically controlled and designed individuals. Borgenhammar agreed with a view that "recommends […] *'the healthy alternative' against over-technification*. Not primarily because of the cost, but for us to be able to live on [with] shared values [italics mine]". The double meaning of "the healthy alternative", used as a critical metaphor for a dysfunctioning society and referring to health and care as opposed to technology and highly specialized medicine was morally weighty, as was the explication that follows. Although the issue of costs was not denied, it was first of all on a basis of humanist *values*, suggested Borgenhammar, that we ought to oppose the further technification of health care – and the process may already have gone on too long.

I do not want to make this short quotation a decisive point in the debate on health care, but I want to argue that it is an illustration of an early, growing trend in the 1980s debate on medical technology, which positioned high technology and the further technification of medicine as morally unacceptable, and opposed to the notion of care – which was there defined as the core and primary purpose of medicine. This echoes James Le Fanu's critical argument about the over-technification of care, which this article started with.

I cannot but link this ethical re-evaluation of technology to three major ethical debates in *Läkartidningen* in the 1980s, which were coupled to the difficult issues raised by the use of technology in symbolically central life processes, procreation, birth and death. The first was the introduction of in-vitro fertilization (IVF) in the late 1970s, the second was the increased use of foetal diagnostics in the shadow of the law on abortion from 1974, and the third was the re-definition of death as "cerebral death", linked to issues of artificially maintained life and organ donation in the 1970s.[58]

These specific debates seemed to trigger the establishment of technology-related ethical debates within medicine. The way that a specific technology

– newly developed reproduction technologies in 1982 – became questionable can be seen in two particularly explicit examples. The title of the first article, "Foetal diagnosis – more ethics, less technology?", clearly opposed ethics and technology/technological potential in the process of making difficult decisions in diagnosing malformations in the unborn child. The second example is the debate over the IVF technology, then only recently available in Sweden, in which a contribution was entitled "Human life must never become a research object: Don't look for security in technology".[59] Here again, technology was suspected of avoiding morally difficult issues by making people concentrate on technical or scientific problems.[60]

However, the debates mentioned above considered the three problematic technologies as specific issues, and did not question medical technology as such. A more explicit contribution to the general debate on the ethical value of medical technology came from Björn Rosendal in 1982, in an article entitled "Medical science is not natural science". This article was harshly critical of the technological-scientific paradigm within medicine. Rosendal described technology as part of the issue because it created an illusion of safety and led to reductionism, quantification and "false objectivity". [61] This argument echoed Jersild's as stated in *House of Babel*: "In the field of clinical research, most people, almost without exception, were content with description. To try to "understand" was somewhat subjective. To try to find out how people really functioned was not science. Or to be more exact, not natural science. One of the strangest features of modern medicine was just this logical clumsiness: equating science or knowledge with natural science".[62]

In his contribution Rosendal did not attack technology on the basis of moral arguments and values, but rather his intention was to shed a relativist light on its place in medicine. In other words, it could be argued that the perspective that this text illustrated was not critical of technology *per se*, but of the attitude towards it, i.e. taking technology to be the given and unquestionable future of medicine.

A later contribution asked the question "What kind of medicine do we want and what does it imply about our view upon the individual?" and linked the debate on priorities in health care with the "care vs high-tech" debate.[63] The author of the article, Eva Boethius, argued for a "total view" of the individual, as opposed to a technology-related, fragmented and reductionist view.[64] Or, as Jersild put it: "A common mode of thought through the whole field of medicine was lacking, an overall approach. There was no language common to all". [65]

Boethius also clearly associated technology and the technification of care to the specialization of medicine since World War II.[66] It was actually the combination of technology and specialization which was guilty of the "dehumanisation" of medicine and care: "We have been getting an increasingly specialised health care during the last decades, in pace with the development of research and technology. Both staff and patients have experienced that the human being has 'disappeared' from health care. We have today 44 medical specialties and 200 subspecialties, each of which is interested in one small part of the human body. […] As a reaction to this high-technocratic specialist care, the demand for a 'total view' has grown stronger and stronger".[67]

Thus, two ethical discourses on technology emerged between 1980 and 1983, in line with the 'either-or' debate (primary care vs. specialised hospital medicine): on the one hand, the debate focused on the issue of priorities in health care (an "ethification" of this issue?), and on the other, it insisted that the fundamental values of care had been perverted by the public's and doctors' faith in high technology. The meeting point between these two discourses was the view that technology was part of the historical development of health care, including specialization and scientification of medical practice, and that the technification of care had serious ethical consequences.

A Room Of Its Own: Health Care Technology Becomes a Theme Per Se, 1984–1985

Debates about the health care crisis, its origins and possible solutions, became more and more serious from late 1983 and 1984. The issues were discussed on many different levels: organization, politics, economy, professional power, culture, etc. After 1983 "Can we afford care?" became a key question, and a central aspect of that debate was the distribution of resources between primary care and specialised hospital medicine. Because it was intimately linked with specialised care and its costs, technology was also indirectly at stake. Discussion about the importance of primary care led to growing tensions within the political as well as medical circles: "It is necessary", said Gunnar Hofring, Social Democrat vice-director of *Landstingsförbundet* in 1983, "to remove a blockage from within the debate: We politicians are willing to recognise that the hospitals will play a central part, even in the future, when it comes to complicated and emergency care – but then the specialists must also stop saying contemptuously that primary care only involves 'colds and the laying on of hands'". [68]

Primary care was the foremost priority for health care development according to the "new program for the future of health care" for the 1990s and 2000s: HS 90 (*Hälso- och sjukvård 90*), proposed in 1984.[69] An important part of the medical profession opposed the introduction of HS 90 and this gave rise to a heated debate in 1984 and 1985.

Ethics became a topic in its own right, and started to appear in medical study programmes. Ethical debates about brain death, IVF, foetus diagnosis and abortion were important in 1984–1985, while discussions about high technology as such tended to disappear from *Läkartidningen* – probably due to the extension of the debate over specific technologies. A last example of general ethical criticism of technology in early 1984 dealt with intensive care and formulated quite clearly the climax reached by scepticism about technology: "Intensive care is going through a crisis. This crisis seems not only to be of an economic nature, but also to depend on a tendency to an exaggerated faith in technological and pharmaceutical methods at the expense of humanity, human warmth and consideration". [70]

Health economics was very much in the spotlight following a series of articles in *Läkartidningen* dedicated to this issue from February 1984.[71] Technology became a topic in its own right in the continuation of the period 1981–1983. Additional precursors could be found in *Läkartidningen* in 1983: one example is a review of Ulf Boström's "Technology in health care – history, present times, and possibilities for the future", and another, an article about radiological equipment which linked the problems of equipment, safety and economy.[72]

More visible was the way that "technology in health care" became synonymous with "technology assessment on an economic basis" between 1984 and 1985. Moreover, technology assessment became a central issue in health economics. Two of the first four articles in a new series on health economics in *Läkartidningen* centred on medical technology and its assessment, with such evocative titles as "Economy and assessment of medical technology" and "Medical technology, economy, and the secondary effects on society".[73] Both promoted improving health care efficiency as a solution for the crisis, and attempted to describe the diffusion of medical methods, including technology. Scientific, economic models for the diffusion of technology and its causes were elicited. Significantly enough, those explicative models included some of the arguments about technology that we have seen earlier: expansion and specialization of health care, the will to invest in capital-intensive devices (such as CT or MRI), the expansion of the patient group for a technology

already available, political pressure and the expansion of the medical body. The implicit message was that all these factors should be controlled according to scientific theories of health economics and assessment, if the diffusion of technology was to be contained.

In other words, the rationalization of technology diffusion had obtained scientific status: a new expert field had been established. MFR was given national responsibility for medical technology assessment in 1984, and invited researchers to apply with project proposals in the field.[74] The field was thus already in a phase of expansion and establishment; in 1985, MFR published its methodological experiences and demonstrated its ambition to take a leading position in this field internationally.[75]

In 1985 The Ministry of Health and Social Affairs held a conference entitled "Medical technology and future health care", which ended with a statement about the importance of producing surveys and eliciting knowledge rapidly.[76] This conference showed that discussions had been conducted not only in research forums and at the local level, i.e. hospitals or county councils, but also at the administrative level of national health care authorities.

In October 1984, *Landstingsförbundet*'s ban on MRI was revoked. By this time many university hospitals were already in the process of purchasing MRI using research funds or private funds.[77] *Landstingsförbundet* issued a "milder" recommendation, arguing that, if MRI was to be purchased by more university hospitals, "a wider assessment would be possible".[78] Instead of recognising the failure of containment measures, *Landstingsförbundet* reformulated its position in more acceptable terms of evaluation and concentration of the technology in regional and university hospitals.

In 1984, the article "Regulation of medical technology in USA: What can we learn?" stated that major issues in "medical technology" might be safety, costs and rules. The influence of USA on Swedish control of medical technology was made explicit by two comparative articles.[79] Safety issues related to medical technology also regained importance in Sweden; and the debate suggested that cuts in resources were partly responsible for ageing, obsolete and unsafe technology.[80]

An illustration of the evolution of "medical technology" by 1985, in addition to being a health economics issue, could be seen in the program of a meeting organized by Gothenburg's Society of Medicine. Under the title "The role of medical technology in health care", discussions were organized on topics such as the definition of medical technology, safety issues, purchasing issues, technological development and computers in health care.[81]

While not expressed in health-economic discussions, much of the attention paid to technology in 1984 and 1985 focused on computers, their introduction and possible applications in health care.[82] Among other issues, fears about the safety of computers developed into what certain people have called "techno-stress", i.e. all stress "that could be linked to computer technology" – which some considered to be just one more element in a techno-frightened spiral.[83]

Epilogue

Thus, in less than a decade, medical technology had become a topic *per se*. By 1985, it had become both a visible and important dimension of health care rationalization, as well as giving rise to fundamental questions about its value on economic and ethical grounds.

In the late 1970s and 1980s, this questioning of medical technology seemed to be mostly a part of a process by which politicians sought to take control of the introduction and the use of costly medical methods in an era of difficult economic conditions, and this gave rise to tensions with the medical body which wished to defend what it saw as its legitimate role for making such decisions.

However, in the early 1980s, new discourses emerged from that context, focusing specifically on medical technology. One discourse focused on the assessment of technology according to scientific-economic models, as well as issues of safety and organization by 1985, while the second dealt with ethical issues and questioned the place and moral value of technology in health care. This argument was integral, on the one hand, to debates on the creation of priorities relating to highly specialised hospital medicine and primary care and, on the other hand, to debates relating to specific technologies, such as foetal diagnosis.

By 1985, medical technology had developed into a topic discussed mostly in terms of assessment and health economics, which by then had been recognized as established scientific fields. These new fields of expertise constituted a project for the rationalization of health care, and were promoted both by the medical research community (MFR), national authorities (such as SPRI) and by political figures (*Landstingsförbundet*).

In the light of this analysis, the television programs mentioned in the prologue to this article appear to be representative of the early 1980s' debate on medical technology. In particular, the panel of experts in *The Health Machine*

reflected well the tensions that had developed between the various professional groups, and the ideologies and interests inherent to the question of technology in health care.

One question remains: How representative are sources like *Läkartidningen*? How were discourses on medical technology reflected and constituted in medical practice?[84] My hope is that this article provides a background against which further empirical studies can be conducted to highlight the relations between technology, medicine, professions, and society.

Abstract: Questioning Medical Technology

In the early 1980s a new, explicit, and critical discourse emerged in Sweden that focused specifically on medical technology. This article analyses how technology became synonymous with issues of safety, organization, and most of all ethics and economic assessment, as reflected in the Swedish medical journal *Läkartidningen*. The present study also aims to situate the emerging discourse on medical technology in the early 1980s context of professional tensions between doctors, politicians, and administrators. Another important contextual aspect is the economic crisis that forced rationalization and priority-making in health care, which constructed primary care and high-technological specialised medicine as two opposed poles of an 'either-or' choice. This was clearly reflected in economic-political and ethical terms. By 1985 medical technology had become a topic in its own right, dominated by health economics and technology assessment, which the author suggests reflects the making of the political issue of control of technology into a science.

The anesthesiologists ruled in Intensive Care, those self-important asses with all their tubes and apparatus. They could keep people alive, that they could, but a janitor could do that with that equipment. As soon as anything began to go wrong, a bell rang or a warning lamp blinked. Couldn't be more difficult than driving a bus. But Intensive Care had no more profound medical knowledge than that. They didn't know what the art of healing was.[1]

The culprit is not technology itself, but the intellectual and emotional immaturity of the medical profession, which seems unable to exert the necessary self-control over its new-found powers.[2]

In the late 1970s, the Swedish physician P. C. Jersild published the controversial novel *House of Babel.* This novel leveled a fundamental criticism against advanced and highly technified hospital care. Twenty years later James Le Fanu brought up a similar argument in *The Rise and Fall of Modern Medicine.* A section of Le Fanu's book was dedicated to the description of a distrust of the *over-technification* of medicine, which, he says, causes many patients to be

”hopelessly entrapped by machinery more sophisticated than the ethics governing its use”. Le Fanu traced the concept of over-technification back to the 1980s – after decades during which technology enjoyed a privileged position as a motor of medical development.

Medical technology seems to have become a subject of distrust and questioning in the late 1970s to the early 1980s, and this suspicion still influences us today. This article asks the empirical question of how the medical discourse on technology in Sweden took shape around that supposedly formative moment, the seventies-eighties turn. When did technology become subject to criticism, containment and control in the present history of Swedish medicine?

Noter

1 P. C. Jersild, *House of Babel* (Lincoln & London, 1987; orig. *Babels hus* 1978), 117.
2 James Le Fanu, *The Rise and Fall of Modern Medicine* (London, 2000), 260–261.
3 *Svenska bilder: Sjukhusmagneten,* Broadcast on TV2, October 10, 1984, 21.00–21.35; *Svenska bilder: Hälsomaskinen,* Broadcast on TV2, October 15, 1984, 20.00–20.35.
4 In Swedish, MRI is referred to as *magnetresonansteknik* (MRT, MR or NMR) or more commonly as *magnetkamera* or *magnetröntgen.* Radiologists are doctors in charge of imaging the body (in Swedish: *radiolog, röntgenläkare*).
5 Jersild, *House of Babel*, 201.
6 *Utgångspunkter och riktlinjer för det fortsatta arbetet / Hälso- och sjukvård inför 90-talet (HS 90)*, SOU 1981:4, (Stockholm, 1981), 35–44; *Produktions-, kostnads- och produktivitetsutveckling inom offentligt bedriven hälso- och sjukvård 1960–1980,* Departementserien Finansdepartementet 1985:3, Rapport till Expertgruppen för studier i offentlig ekonomi (Stockholm, 1985), 28–32; P. Å. Öberg, ”80-talet: Vad hjälper ny teknik inom sjukvården om kunskaperna om dess användning brister?” *Läkartidningen (LT)* 77 (1980), 32–34; Medicinska forskningsrådet (MFR), ”Blygsamt men ändå positivt”, *LT* 77 (1980), 300; Dag Linnarsson, ”Recension av Ulf Boström, ed., *Teknik i sjukvård: Historik, nuläge och utvecklingsmöjligheter*”, *LT* 80 (1983), 2275; Gösta Tibblin, ”Svensk sjukvårdsplanering genom 40 år: Envig mellan läkaren och administratören med politikern som åskådare och domare”, *LT*, 76 (1979), 3368–3369; Edgar Borgenhammar, ”För mycket administration?”, *LT* 79 (1982), 89–90; Carl-Axel Nilsson, ”Sjukvårdens byråkratisering”, *LT* 81 (1984), 13–14.
7 By ’technification’ of health care I mean the process of integrating more and more complex technology; making health care more dependent on technology. About medicine’s ’structural dependency’ on technology, see Stuart S. Blume, *Insight and Industry* (Cambridge, 1992).
8 ”Räcker slantarna?”, *LT* 75 (1978), 1971–1972. All references to and quotes from *LT* are originally in Swedish; all English translations in the present paper are mine.
9 ”Varför kostar vårddagarna så olika?”, *LT* 75 (1978), 2926; ”Vinst eller förlust? (II): Hur ska vi klara ett resurstak?”, *LT* 75 (1978), 2278; ”Vårdens pris”, *LT* 75 (1978), 3009.
10 See e.g. ”Räcker slantarna?”, *LT* 75 (1978), 1971–1972.

11 ”Mera realism!”, *LT* 77 (1980), 3–4.
12 MFR, ”Den medicinska forskningen måste återfå realvärdet!”, *LT* 75 (1978), 3417; ”Forskningsrådnämnden begär fördubblat utrustningsanlag”, *LT* 76 (1979), 3371; Öberg, ”80-talet: Vad hjälper ny teknik inom sjukvården om kunskaperna om dess användning brister?”, *LT* 77 (1980), 32–34; MFR, ”Blygsamt men ändå positivt”, *LT* 77 (1980), 300.
13 MFR is in charge of defining research priorities within medicine. Every year it allocates government funds to public medical research projects. MFR is composed of researchers elected within the medical community.
14 The question of technical safety, among others in relation to technical ageing, is treated within the broader context of accidents and safety in health care that started to attract special attention in the late 1970s. ”Hur göra sjukvården säkrare?”, *LT* 77 (1980), 1824–1826; Börje Hallén, ”’Olyckor och tillbud’: Tio års erfarenheter av medicintekniskt säkerhetsarbete”, *LT* 77 (1980), 2444–2445.
15 ”Karolinska”, *LT* 77 (1980), 719; ”Utskottsuppvaktning: Vårdkris vid Karolinska sjukhuset om budgetförslaget följs”, *LT* 77 (1980), 1051; ”Preliminär uppgörelse: Karolinska överförs till landstinget 1982: Jämställs med övriga universitetssjukhus”, *LT* 77 (1980), 4742; ”Regeringen om regionsjukvården: Örebrosjukhuset får ’dela region’ med Uppsala. Lagfäst planeringsskyldighet för huvudmännen”, *LT* 77 (1980), 2857–2858.
16 Margareta Blombäck, ”Till kolleger och politiker: Tänk i nya banor så går det att spara pengar och minska lidande”, *LT* 77 (1980), 2234–2236.
17 SPRI [*Sjukvårdens och socialvårdens planerings- och rationaliseringsinstitut*], symposium mentioned in *LT* 77 (1980), 2150.
18 Svenska Läkaresällskapet, ”Ej läkarmonopol på landstingens forskningspengar: Tonvikt på utvecklingsarbete”, *LT* 77 (1980), 4878–4879.
19 Edgar Borgenhammar, ”Sjukvårdssystem – en internationell utblick: Har andra länder hittat ett bättre system än vi?”, *LT* 75 (1978), 283–287. In Swedish, CT is usually referred to as *datortomografi* or commonly *skiktröntgen*.
20 Earl P. Steinberg et al., ”X-ray CT and Magnetic Resonance Imagers: Diffusion Patterns and Policy Issues”, *The New England Journal of Medicine* 313 (1985), 859–864; Blume, *Insight and Industry*, 183–184.
21 Blume, *Insight and Industry*, 183–184; Bettyann Holtzmann Kevles, *Naked to the Bone: Medical Imaging in the Twentieth Century* (Reading, Mass., 1998), 167; Ulf Berggren, *Datortomografins framväxt och spridning* (Lund, 1982); Torgny Greitz, *Intryck från ett halvt sekel svensk neuroradiologi* (Lidingö, 1988), 13.
22 That CT was the catalyst of political concerns about medical technology in Sweden was expressed in *Hälso- och sjukvård i internationellt perspektiv / Hälso- och sjukvård inför 90-talet (HS 90)*, SOU 1981:3, (Stockholm, 1981), 30.
23 Jersild, *House of Babel*, 21–22.
24 Per Anders Ahlgren, ”När sjukvården måste spara: ’Planera för den förvirring som uppstår när man tvingas till nedskärningar!’”, *LT* 78 (1981), 2587–2588.
25 ”Landstingsförbundets ordförande: Krispaketet från regeringen kostar oss 500–600 milj kr”, *LT* 78 (1981), 3555.
26 See among others ”Verksamheten 81/82”, *LT* 78 (1981), 3871–3881; ”I huvudrollen?”, *LT* 79 (1982), 1855–1856; ”Stängda dörrar”, *LT* 79 (1982), 3135.
27 ”Budgetprutning katastrof för Akademiska”, *LT* 78 (1981), 3452–3453; ”När tillväxten dör…”, *LT* 78 (1981), 3987–3988; ”Nytt avtal klart för UAS-läkarna vid övergången till landstinget”, *LT* 79 (1982), 4887.

28 ”Kostnad och nytta”, *LT* 78 (1981), 4413.
29 Kurt Kolstad, ”Kostnader i den slutna vården”, *LT* 78 (1981), 2864–2866.
30 Börje Hallén, ”Rapport från Medicintekniska nämnden: Olyckor och tillbud under 1980 mest vid anestesi- och intensivvård”, *LT* 78 (1981), 2444; ”Vilket ansvar är förenat med användandet av medicinteknisk utrustning”, symposium at *Läkaresällskapets Riksstämma* 1981, *LT* 78 (1981), 3817.
31 Anders Nystrand, ”Röntgendiagnostiker oroade inför framtiden: Behovet av ’förnyelsekapital’ underskattat. Ny teknik behövs, underhållet är eftersatt”, *LT* 79 (1982), 2975–2976.
32 Paul Edholm, ”’Radiofobi’: En utbredd åkomma”, *LT* 79 (1982), 4382–4383.
33 ”Konferens med medicintekniker: Vem skall besluta om medicinsk teknik?”, *LT* 78 (1981), 1897.
34 ”Miljardslöseri med skattepengar när sjukvården köper utrustning”, *LT* 79 (1982), 3742.
35 Bo Lennholm, ”Debattbok: ’Landstingens inköpsrutiner orsakar miljardsvinn’, överdrivet och generaliserande, anser SPRI-chefen”, *LT* 80 (1983), 1883.
36 Highly specialised care has developed through an intensive technification and concentration in the 1970s; therefore, specialised care and high-technology are intimely connected issues, as shown in Stanley Joel Reiser, *Medicine and the Reign of Technology* (Cambridge, 1978).
37 ”Landstingsförbundet kongressar. Fälldin inleder debatt om stat och landsting. Utbildningsfrågor dominerar motionsfloden”, *LT* 79 (1982), 2269.
38 ”LF:s kongress”, *LT* 79 (1982), 2525–2526.
39 ”I huvudrollen?”, *LT* 79 (1982), 1855–1856.
40 ”’Risk för investeringar’ – Landstingsförbundet vill vänta med NMR”, *LT* 79 (1982), 3770.
41 *Utgångspunkter och riktlinjer för det fortsatta arbetet / Hälso- och sjukvård inför 90-talet (HS 90)*, SOU 1981:4, (Stockholm, 1981), 40.
42 Henry Danielsson, ”Medicinska forskningsrådet begär höjning med 32,6 milj kr. Allmänmedicin, medicinsk teknologi, hälso- och sjukvårdsforskning prioriteras”, *LT* 78 (1981), 3583.
43 Note that ”medical equipment” [*medicinsk teknik*] is a part of ”medical technology” [*medicinsk teknologi*] which stands for medical methods in MFR’s jargon.
44 ”Joint initiative of MFR and RmC to assessment of nuclear magnetic resonance (NMR) as medical diagnostic method”, (1982), document in folder ”Anskaffning NMR – 1981–1982” at The Department of Diagnostic Radiology, Uppsala University Hospital.
45 Quote from Henry Danielsson, ”Medicinska forskningsrådet begär höjning med 34,7 milj kr: Allmänmedicin, hälso- och sjukvårdsforskning, medicinsk teknologi, forskarrekrytering prioriteras”, *LT* 79 (1982), 3438. See also Henry Danielsson, ”Medicinska forskningsrådet begär 35,9 milj kr mer: Utvärdering av medicinsk teknologi föreslås bli prioriterad forskning”, *LT* 80 (1983), 3430.
46 Yngve Carlsson, ”SPRI-konferens om utvärdering av medicinsk teknologi: Nödrop från politiker till läkare: Hjälp oss att ’få tandkrämen i tuben igen’!”, *LT* 78 (1981), 4421–4424.
47 The principle of the consensus conferences is that different professional corps are represented for the purpose of jointly establishing guidelines for medical practice as regards a given method. Tore Scherstén and Björn Smedby, ”Svensk konferens om konstgjord höft i vår: Amerikansk consensus-konferens förebild”, *LT* 79 (1982), 912–913.

48 Bengt Jönsson, ”Sjukvårdspolitiska konsekvenser av kostnadsutvecklingen inom svensk sjukvård”, *LT* 80 (1983), 2789–2792.
49 The same arguments can be found in *Hälsomaskinen,* Broadcast on TV2, October 15, 1984.
50 Kristina Husberg, ”Sjukvårdsadministratörer om vårdekonomin: Svårt att mäta lönsamhet, men stora vinster kan göras med sjukdomsförebyggande insatser”, *LT* 80 (1983), 2476–2477.
51 David Finer, ”Varannan ny apparat i sjukvården felaktig: Nu skall medicinteknisk provning regleras”, *LT* 80 (1983), 4001–4002.
52 ”Ledare”, *LT* 80 (1983), 3.
53 On the expansion of primary care, see for instance Lars Isaksson, ”Konferens om HS 90: Offensiv hälsovård. Mer primärvårdsforskning”, *LT* 78 (1981), 4383.
54 Ahlgren, ”När sjukvården måste spara”, *LT* 78 (1981), 2587–2588.
55 ”När tillväxten dör…”, *LT* 78 (1981), 3987–3988; Hans Fällman, ”Landstingspolitiker på symposium: Sjukhusen får central roll också i framtiden men omfördelningar är motiverade och möjliga”, *LT* 80 (1983), 4863.
56 Ahlgren, ”När sjukvården måste spara”, *LT* 78 (1981).
57 Edgar Borgenhammar, ”God morgon – du sköna, nya vård”, *LT* 79 (1982), 609–610.
58 On IVF, see e.g. Tor Sverne, ”Barnets rätt vid insemination bör garanteras genom lagstiftning”, *LT* 77 (1980), 3234–3235; ”Perspektiv efter in-vitro fertiliseringen”, *LT* 79 (1982), 4506–4513. On foetal diagnosis, see e.g. ”Medicinsk korrespondens: Har den defekta individen rätt att leva?” *LT* 75 (1978), 3657; ”Etiska synpunkter på fosterdiagnostik”, *LT* 76 (1979), 2540–2542; Yngve Karlsson, ”’Det ofödda barnets rätt’ etisk nyckelfråga som får aktualitet genom fosterdiagnostiken”, *LT* 77 (1980), 1266–1268; Henrik Åkerman, ”Prenatal diagnostik – etik och ekonomi 1–2, *LT* 79 (1982), 2439–2442, 2523–2524; ”Fosterdiagnostik – mer etik, mindre teknik? Ensidig information kan hindra ett fritt val”, *LT* 79 (1982), 4484–4486. For the debate on brain death, see R. Frykholm, ”Hjärndödsdebatten i Sverige: Återblick, analys och nomenklaturförslag”, *LT* 77 (1980), 904–907.
59 Security is an unsatisfactory translation of the Swedish ”trygghet”. At stake here are *not* questions of technical safety, but of moral/ethical security created by technifying humanly difficult questions.
60 ”Fosterdiagnostik – mer etik, mindre teknik?”, *LT* 79 (1982), 4484–4486; ”Perspektiv efter in-vitro fertiliseringen”, *LT* 79 (1982), 4506–4513, which includes the paragraph ”Mänskligt liv får aldrig bli forskningsobjekt: Sök inte tryggheten i tekniken”.
61 Björn Rosendal, ”Medicinsk vetenskap är inte naturvetenskap”, *LT* 79 (1982), 2089–2090.
62 Jersild, *House of Babel*, 45.
63 Eva Boethius, ”Helhetssynen – ett diffust mål för sjukvården: Människosyn och ekonomiska faktorer styr mera”, *LT* 80 (1983), 1185–1187.
64 The argument that life sciences need a holistic view, as opposed to a mechanistic-atomistic perspective that technology would convey, has its own complex, historical momentum. See e.g. Anne Harrington, *Reenchanted Science: Holism in German culture from Wilhem II to Hitler* (Princeton, N.J., 1996).
65 Jersild, *House of Babel*, 233.
66 On how technology has been intertwined with the specialization and concentration of advanced care in the 1960s and 1970s, see Reiser, *Medicine and the Reign of Technology*

(Cambridge, 1978). A striking example of this in Sweden is diagnostic radiology; see Berggren, *Datortomografins framväxt och spridning* (Lund, 1982).

67 Boethius "Helhetssynen – ett diffust mål för sjukvården", *LT* 80 (1983), 1185–1187.

68 Fällman "Landstingspolitiker på symposium", *LT* 80 (1983), 4863.

69 David Finer, "HS 90 blickar framåt. Primärvården skall få kraftigt ökade resurser. Länsdelssjukhusen får nya uppgifter eller läggs ned", *LT* 81 (1984), 2888–2891.

70 Dag Lundberg, "Modern intensivvård: Självkritiska, psykologiska och etiska aspekter", *LT* 81 (1984), 623–624.

71 Johan Calltorp, "Hälsoekonomi – ett nytt element som kan berika klinik och planering", *LT* 81 (1984), 553–559; Egon Jonsson & Bengt Jönsson, "Hälsoekonomi – ett samlat synsätt för att få effektivare användning av resurser för hälsa", *LT* 81 (1984), 555–559.

72 Linnarsson "Recension av Ulf Boström", *LT* 80 (1983), 2275; Bo Rundelius, "Bättre underhåll av röntgenutrustning reducerar patientdosen, sänker kostnaden", *LT* 80 (1983), 4782–4783.

73 Egon Jonsson and Tore Schersten, "Ekonomi och utvärdering av medicinsk teknologi", *LT* 81 (1984), 1169–1173; Johannes Vang, "Medicinsk teknologi och ekonomi samt de samhälleliga sekundäreffekterna", *LT* 81 (1984), 1175–1181. "Technology" is here to be understood as methods and technical devices.

74 Henry Danielsson, "Medicinska forskningsrådets anslag 1985/86: Två tredjedelar till projektanslag", *LT* 82 (1985), 2352.

75 Bengt Brorsson, "Värdering av medicinsk teknologi: Problem och metoder", *LT* 82 (1985), 615. In 1985 the assessment projects that have been selected to be financed by MFR are announced; one of them is neonatal care which has raised a range of ethical questions, many of them in an economic view, in the previous years. Danielsson "Medicinska forskningsrådets anslag 1985/86" *LT* 82 (1985), 2352. About neonatal care ethical issues, see e.g. Rolf Zetterström, "Etiska problem inom 1980-talets neonatalogi", *LT* 83 (1985), 2857–2858.

76 Johan Calltorp, "Konferens om medicinsk teknologi: Snabb information och utvärderingar behövs", *LT* 82 (1985), 1216.

77 Isabelle Dussauge, "Diagnosing Technology: Multiple visions, MRI comes to Sweden", unpublished working paper, 2004).

78 "Landstingsförbundet och MR-tekniken: 'Mjukare' rekommendation accepterar fler enheter", *LT* 81 (1984), 3884.

79 Sven-Eric Bergman, "Utvärdering av medicinsk teknologi i skilda sjukvårdssystem", *LT* 81 (1984), 4256–4257; Ron Gustafson, "Reglering av medicinsk utrustning i USA: Vad kan vi lära?" *LT* 82 (1985), 3313–3315

80 "Privat röntgen hotas av Malmös sparplaner: Patientprotester mot försämringar av vård", *LT* 81 (1984), 2802–2803; Göran Liedström, "Den medicintekniska säkerheten under utredning: Varför inte klinisk prövning av ny utrustning?" *LT* 82 (1985), 4442–4443.

81 "Göteborgs läkaresällskap håller möte med temat 'Medicinteknikens roll i sjukvården'", *LT* 82 (1985), 2927.

82 See e.g. Ulf Nilsson and Ulf Tylén, "Den datoriserade röntgenavdelningen: En snar verklighet?", *LT* 82 (1985), 726–729.

83 "Varning för 'teknostress': Ett nytt modeord", *LT* 82 (1985), 4549.

84 For instance, my study of the early diffusion of MRI in Sweden suggests that radiologists in university hospitals were not affected by the criticism against high-technological medicine when it came to purchase new, complex devices like MRI.