

Promises of a Healthier Future

Medical Genetics on Finnish Television News 1987-2000

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In the mass media, medical genetics is often represented in terms of great promises of a healthier, and therefore, 'better' future for humankind. The public representations of genetics suggest a view in which locating genes for cancer, cardio-vascular diseases, or certain behavioral characteristics will lead to better cures for diseases. On television, the metaphors of medical genetics 'conquering the unknown' and genes as 'keys' or 'secrets of life' are backed by visual images of scientists in white lab coats conducting experiments in the laboratory with highly technical equipment. The metaphors and visual images derive from the collective imagery of medical genetics, and reconstruct this imagery over and over again (Van Dijck, 1998).

Metaphors and visual images play a crucial role in the communication of scientific and technological issues to wider publics. Metaphors and visualizations are used to popularize and concretize the otherwise complex practice of genetic research, and the otherwise invisible genes. They are also effective ways of addressing the audiences in their multiple roles (Michael, 1999), and constructing linkages between the past, the present, and the future (Brown et al., 2000). Discussing genes in terms of 'letters in the book of life' (Condit, 1999; Van Dijck, 1998), and using images from inside the laboratory suggest that science is a global endeavor in fighting against 'nature' by means of civilization (books, technical equipment). Both metaphors and visuals seem to suggest a modern view of 'science as progress' (conquer the unknown, news visuals from the laboratory where the 'breakthrough' took place). Despite the crucial role of metaphors and visual images, they have seldom been studied together.

This paper traces the uses of metaphors and visual images in the construction of popular images of medical genetics. The aim is to discuss what kind of an image of science, in general, and medical genetics, in particular, these metaphors and visuals suggest. The popular images, I argue, build upon a complex interplay between the popular metaphors and visual imagery concerning medical genetics. The interplay between visual images and metaphors is discussed in relation to the construction of links between the past, the present and the future as well as in terms of the audiences. Substantially, the study is based on the coverage of medical (human) genetics on Finnish television news during the period 1987-2000.

The Interplay Between Metaphors and Visual Images

In the mass media, science is often portrayed and discussed in terms of steady progress: scientific advancement consists of a succession of innovations that can overcome all sorts of obstacles (Nelkin & Lindee, 1995; Rosner & Johnson, 1995). This popular image points in two different directions depending on the context of use: either in the direction of positive knowledge and control, or in the direction of relentless progress that is out of control. Where medical genetics is constantly discussed in terms of 'discovering the secrets of life' and 'conquering the unknown', agricultural biotechnology is often depicted in terms of progress that is out of control: 'scientists are playing God' and 'creating new Frankenstein's monsters' (Hellsten, 2002)¹. These metaphorical narratives suggest different views on the 'goal' of science, and on the expectations for the future (Van Lente, 2002).

Metaphors are used to concretize and popularize techno-scientific issues for wide audiences.

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Metaphors suggest a particular view on science as practice and as a way of knowledge production. In the mass media, medical genetics is constantly covered in terms of great promises of a healthier, and therefore, 'better' future for humankind. For example, when popular views are presented of genes as the ultimate 'keys' or 'secrets of life' (Nelkin & Lindee, 1995), and medical genetics as 'conquering the unknown', they often imply the idea of genetic determinism: locating genes for cancer, cardio-vascular diseases, or certain behavioral characteristics 'opens the doors' for new medication to treat diseases.

Similarly, visual images are used to concretize and popularize the public images of science (Seppanen & Valiveronen, 2000). On television, the images of laboratories full of technical apparatuses and scientists conducting their research in white lab coats are very common. The laboratory carries the symbolic meanings of social power, and scientific authority and expertise. As Knorr Cetina (1999) noted, the laboratory is where science tames the wild creatures of nature. The constant laboratory images are in accordance with the popular images of science as an expert-driven, techno-scientific endeavor.

In general, metaphor means discussing complex, abstract or otherwise incomprehensible issues in terms of more concrete issues (Lakoff & Johnson, 1980). Metaphors provide us with a point of departure and one possible perspective on issues. They restrict the possible perspectives on issues by suggesting a specific perspective (Burke, 1989). The perspective suggested, however, is always a partial view. Similarly, visual images always represent issues in specific contexts: specific laboratories where certain scientists conduct certain experiments. The laboratory, and the research conducted therein, is a means to gain control over an uncertain future (Wyatt, 2000; Van Lente, 2000). Hence, metaphors and visuals are used in constructing continuity between the past, the present, and the possible futures.

The metaphors and visualizations address the audiences in complex ways. Representing genetics as laboratory practice invites lay people to 'witness' scientific practice. At the same time, lay people are also addressed as potential consumers of biomedical applications, as taxpayers and citizens funding the research (Michael, 1998). Similarly, the metaphors of 'breakthroughs' and 'steps' on the road invite the audience to witness science, whereas the metaphors of genes as 'the keys of life' may justify funding for genetics. On television news, the audience is addressed in all these roles simultane-

ously. First, as taxpayers they must be convinced about the importance of the research, second, as consumers about the usefulness of the expected outcomes of the research, and finally, as witnesses and interested spectators about the importance of the research.

Sometimes, the role of metaphors and visual images seems to be complementary: the lack of popular metaphors may increase the need for popular visualizations and vice versa. The DNA molecule has a popular image of a double helix, the cell becomes visible in the microscope, but the gene is more difficult: Who knows what a gene looks like? Therefore, there seems to be a constant need for metaphors in providing popular imagery concerning genes, and genetics as an effort to locate and modify these genes.

In summary, metaphors, and visual elements are needed for restricting the complex nature of technoscientific issues, such as genetics. The main focus of this study is on the interplay between the metaphors and the visuals used in the coverage of medical genetics on television news. The interplay between the metaphors and visuals is interesting because, first, they are effective tools of science popularization; second, they provide links between the past, the present and the future; and, third, they allow the audiences to be addressed in several roles at the same time. The research questions are: What is the role of metaphors and visuals in the construction of popular images of medical genetics? What kinds of pasts, presents and futures do these images suggest? How is the audience addressed in the news?

Medical Genetics on Finnish Television

The study focuses on medical genetics as represented on Finnish television news. The public opinion toward genetics in Finland is one of the most positive in Europe (Eurobarometer, 1997; 2000). In contrast to many other European countries, the media coverage in Finland is consensus seeking (Rusanen et al., 2001). This holds true for television as well. The main function of the news is not to organize public debate around medical genetics, but to report on the latest news on the location of specific genes, new acts taken by the EU and implemented in Finland in regard to biotechnology, or the development of genetic testing and screening. These special characteristics of Finnish news on medical genetics are reflected in the use of metaphors and visuals.

Biotechnology and genetics gained wider attention in the Finnish mass media only in the late 1980s when the Academy of Finland granted funding for biotechnology research for a five years period (1987-1992). This analysis, therefore, covers the years 1987 to 2000. The material was collected from the archives of the Finnish Public Broadcasting company, YLE. The key words used in the search were 'gene', 'biotechnology', and 'genetics'. For this study, I have selected news items dealing with medical genetics. This resulted in altogether 52 news items that are here analyzed qualitatively.

The news items can be categorized under four distinct storylines (Hajer, 1995) or interpretative packages (Gamson & Modigliani, 1989). The most common storyline consisted of reports on 'gene discoveries', i.e. successful location of specific genes. The tone often referred to the possible future applications of the 'discovery'. Second were stories on gene tests and genetic treatments that deal with extant applications of medical genetics. Third, biotechnology was also represented as a new, emerging economic issue. This storyline aimed at highlighting biotechnology as a national project in Finland. Fourth, the regulation of medical genetics was the main theme in only three news items. Each of these storylines had slightly different key metaphors and visualizations, and I will discuss them under separate sections in the following analysis (see Figure 1).

In the early reports, biotechnology was discussed as an emerging, promising field in which Finland could become a 'forerunner'. Discoveries of genes and their potential applications gained wider attention on Finnish television from the early 1990s. The main focus was on the role of Finnish

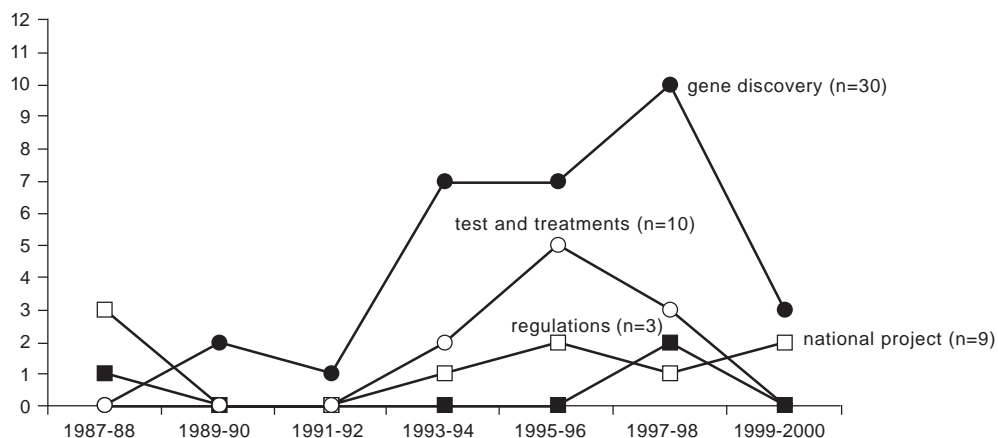
research institutes, research groups or individual researchers in medical genetics. Regulation of genetic research, including ethical issues dealing with genetics, received far less attention on Finnish television. This is in accordance with survey results, such as the Eurobarometer surveys. According to the Eurobarometer surveys (1997; 2000), Finland is one of the most positive European countries in terms of its attitudes toward modern biotechnology and genetics. Also the newspaper coverage in Finland has been positive toward genetics (Rusanen et al., 2001).

Gene Discoveries

The most common storyline focused on locating and discovering specific genes for cancer, the genetic background of Alzheimer's disease, multiple sclerosis, migraine, diabetes and epilepsy as well as more appealing stories on the location of the 'gay' gene (TV news July 16, 1993) or the obesity gene (TV news August 10, 1995). The cancer research concentrated mostly on colon and breast cancer, but also on more general, basic research on the genetic background of cancer. These stories were often reported as 'steps' in 'the scientific progress' toward developing medication for certain diseases.

For example, in a report on the gene that may cause multiple sclerosis, MS, journalist Paksula reported, "this is a *step2* toward the solution, but that solution is not near as yet" (TV news October 24, 1992). The idea of discoveries of genes as steps taken on the road to curing diseases was repeated constantly. The location of a gene that increases the risk of contracting Alzheimer's disease was re-

Figure 1. Medical Genetics on Finnish Television News, 1987-2000



ported, “This is not the solution but *a step* toward the solution” (journalist Tanninen on TV news August 13, 1993). Locating the gene for diastrophy was covered as a huge step, “is considered as a *breakthrough* because the same method can be applied to finding other disease genes.” (TV news September 22, 1994). In the case of locating a gene that increases the risk of tumors, the journalist Damstrom reported, “cancer research took again *a small step* forward” (TV news December 30, 1997). All these metaphors suggest the promise of a cure, sometime in the future. The promise of a healthier future is escaping to the distant future.

While the metaphors for locating genes were the same for all types of disease, the visualizations of cancer research and more specific genetic conditions differed from each other. Research on the role of genes that may cause cancer is visualized mainly via scientists conducting research in the laboratory, and lay people as a mass of anonymous individuals, the potential customers and patients that are the target of the research. The research on multiple sclerosis, Alzheimer’s disease and diastrofia, in turn, is visualized via the patients and their families. For example, the story on the location of the gene for Alzheimer’s disease, referred to as ‘the Alzheimer risk gene’ in the news was powerfully visualized in an interview with a recently arrived patient who could not recall when and by whom she was taken to the nursing home, but who just said, while smiling, that ‘it could be stated that there is a man saying, and you go away.’ (TV-news November 9, 1995). In both cases, medical doctors and nurses took the role of mediating between the lay people and the scientists, i.e. taking responsibility over the applications of the research and informing scientists about certain patient groups with genetic diseases.

There are several genetic diseases specific to Finland, and research on these diseases gained wide attention on Finnish television. These include two fatal children’s brain diseases (AGU and INCL) and two eye diseases. Also, MS disease, schizophrenia and specific types of cardio-vascular diseases are far more common in certain parts of Finland than in other parts of the world. In these stories, the main visual narrative was similar to cancer research: anonymous people walking on the streets (‘us’ the Finnish people), and on the other side, scientists conducting research in the laboratories.

This Finnish ‘disease heritage’ was sometimes referred to as an excellent ‘material’ for genetics – or as Francis Collins (TV news May 29, 1995) put it, “The population of Finland is derived from a rather small sample of original founders, perhaps no more

than 500 about 2000 years ago. That means that the genetic structure of the population is more homogeneous than in most other populations. I think Finland could be seen as a genetic laboratory for the whole world.” This statement did not cause any further debate on television news.

In summary, the main metaphors were those of a scientific journey of constant progress represented as ‘breakthroughs’ and ‘steps toward solutions’. The main visual storyline concentrated on scientists in the laboratory. Scientists took on two roles as either an anonymous researcher conducting experiments in the lab, or the head of the research project interviewed in the laboratory. Lay people also took on two roles in the news: anonymous masses of people as potential consumer-patients or more specific patient groups via a representative of these groups (see Table 1 for a summary of the results). The visualizations gave a sense of ‘presence’ to the metaphors, which provided tools for imagining the future.

Gene Tests and Treatments

The second storyline focused on genetic tests and treatments. Whereas locating certain genes was conceptualized as a first step that could lead to effective medication, the stories on gene tests and treatments focused on extant applications of medical genetics. Seven of the altogether ten stories dealt with genetic treatments, and three with gene tests.

The first news story on gene treatment, broadcast in May 20, 1993, dealt with an experimental treatment given to two babies suffering from SCID, severe immunology deficiency, in the United States. The experiment was reported in terms of a ‘breakthrough’, and visualized via the newborn babies and their parents in the hospital environment. In Finland, the first gene treatment for a patient suffering from brain cancer was conducted two years later; it was reported on television news on the 10th of May and 14th of July, 1995 as a ‘significant breakthrough’, and visualized via the hospital environment. Developing new medication against AIDS was also covered in terms of, ‘*advances in the fight against AIDS...* a gene that could provide protection from AIDS is a new way to treat AIDS.’ (TV news, August 9, 1996). The metaphors used were similar despite the different diseases being treated.

The stories on gene tests in the United States (TV news July 8, 1996) and in Finland (April 04, 1997) also raised ethical questions. In the United States, the ethical question dealt with possible discrimination based on gene tests. In Finland, the

question was about what would be a good target group for the tests. Both stories were visualized via the expected target groups: families with a genetic condition, and pregnant women, respectively. Generally, however, the attitude toward gene tests was positive. For example, journalist Papinniemi reported, "Genetechnology is a good thing. Gene tests help in anticipating diseases, and *cancer may be defeated* in an early stage." (TV news May 7, 1998).

The main metaphors were those 'breakthroughs' and 'advances in the fight against diseases'. The main actors in the visuals were medical doctors and nurses, on the one hand, and patients, on the other. The most common places were medical health care centers and hospitals (see Table 1). All these imply addressing the audience as possible recipients of the treatments, and as concerned citizens.

Biotechnology as National Project

The storyline of biotechnology as an emerging field and national project of excellence carries a strong economic aspect. In the late 1980s, the news reports dealt with the importance of investing in the emerging field, whereas the reports of the late 1990s covered the entrance of the biotechnology companies onto the exchange markets and the importance of biotechnology industry to the Finnish economy.

At the early phase, it was typical in the news to refer to 'biotechnology' as a monolithic bloc without distinguishing between the medical and agricultural branches. For example, one of the first news accounts reported that "Biotechnology may help in finding solutions to the world nutrition problems, to over-production in world agriculture, to environmental problems in forest industry and in finding new effective vaccinations against, for example, viral diseases" (TV news January 30, 1987). In this early phase, the reporting was highly positive and focused on biotechnology as an emerging field loaded with high expectations of rapid progress to curing diseases.

The first biotechnology center was established in Finland in 1988 (TV news, January 30, 1987; February 16, 1988)³. In the early 2000s, the first Finnish biotechnology company, Biotie Therapies, ("Bioroad" in English), entered the exchange markets (TV news June 12, 2000). The importance of biotechnology to the Finnish economy was also reported three months later (TV news September 13, 2000).

In summary, the main metaphors were those of 'entering new markets' and 'emerging field of expertise'. The main visualizations were outdoor pic-

tures of the biotechnology companies. The main interviewees were the heads of the companies, or the leaders of the research groups (see Table 1). Here, the main way of addressing the audiences is as taxpayers, and possible investors in biotechnology.

Regulation of Genetics

Regulation of genetics is closely linked to the issue of genetic testing and screening, as these are the issues that mostly call for regulation. The stories here mainly covered the various phases of the regulatory process concerning research on human genetics during the period 1987-2000. The Gene Technology Act was implemented in Finland in 2000, replacing the older act from 1995. The Board for Gene Technology was established in 1995 by the Ministry of Social Affairs and Health.

The first news report on the rising need for regulating genetics was broadcast already in 1987, in the context of an international conference that took place in Finland. The reporter said, 'Genetic research needs clear *rules of the game*... for how much nature can be modified according to human needs.' Similarly, the establishment of the Board for Gene Technology in Finland was reported as, "The Ministry of Social Affairs and Health aims at establishing a National Advisory Board on Health Care Ethics to set common *rules of the game* for euthanasia, fertility treatments, gene tests and organ transplantations..." (TV news January 28, 1998). Here, medical genetics was represented as a game that needs to be controlled by non-scientific institutions in society.

In the storyline of regulation, the main metaphors were those of 'setting the rules for the game'. The main visuals dealt with politicians and policy-makers represented in the Ministry of Health and other political environments (Table 1). Citizens were represented as spectators of the political process.

In summary, there were two main visual narratives: the first starts from general picture of anonymous people as a group, either walking on the streets or gathering in shopping centers or the like, then proceeds to general shots of the laboratory, and to the interview(s) with the head of the research group(s). Graphics, x-rays and other relevant illustrations are often used in between. The other visual narrative starts from the laboratory and proceeds to the patients via the interview with the head of the project. The role of these visual elements is to show 'it happened here', 'science needs all this technical equipment', 'scientific expertise helps us,

Table 1. *The Role of Metaphors and Visualization in the Construction of the Popular Images of Medical Genetics in Finnish Television News, 1987-2000*

	Gene Discovery	Tests & Treatments	National Project	Regulation
Metaphors:	Steps toward solution, conquering the unknown	breakthroughs war against diseases	entering new markets	game
Visual images:				
1. The place	laboratory	hospital/health care center	biotechnology companies	ministries/EU
2. Scientists	laboratory experts/researchers	medical doctors	head of the company	politicians
3. Lay people	anonymous mass/patients	patients	–	–
Addressing the audiences:	Witnesses as consumers	patients	tax-payers	witnesses as
Main orientation:	Future	present-future	past-present-future	present

the lay people'. It appeals to the popular images of science as a trustworthy and expert-driven activity worth funding because of its possible future outcomes. This is also supported by the repeated shots of the technical equipment in the laboratory.

Discussion: Medical Genetics and the Promise of Health

In conclusion, the interplay between the metaphors and the visuals popularized medical genetics, and provided an effective means to address the audiences in several roles as well as to construct links between the past, the present and the future. Whereas the metaphors suggested imaginary futures, the visualizations added an element of authority and legitimacy to the news stories. The metaphors and the visualizations together created powerful images of medical genetics.

The metaphors and visual images used on the television news differed according to the 'place' of the action. Whereas the discovery of locating genes takes place in the laboratory, applying these discoveries takes place in hospitals and health care centers, regulating medical genetics takes place in policy-forums, and biotechnology as a commercial enterprise takes place in the markets. These different social categories of action were supported by the different uses of the metaphors as well as different visualizations of the topic. The metaphors and visual images used also contributed to different ways of addressing the audiences, and suggested different time orientations. The laboratory is something to be witnessed and possibly

later consumed, the hospital is a place to provide an accurate cure for patients, the market is a place to invest in, and finally political regulation is to be witnessed by concerned citizens. Ethical considerations take place outside of the laboratory, thus separating scientists and other social institutions. Scientists experiment, others discuss the consequences of scientific practice.

Scientists took two positions in television news: Either there were anonymous researchers and assistants filmed in the laboratory surrounded by technical equipment, or the leaders of the project(s) or heads of the laboratory interviewed for the news. This hierarchical construction of the research team remained the same over time. Lay people also adopted two roles in the news: either as an anonymous mass walking on the streets while the intro to the news story tells about new research that may help to provide medication against some prevalent diseases such as migraine or diabetes, while in the news on particular single-gene diseases such as diastrophy as well as such complex diseases as Alzheimer, patients were represented as organized into patient groups, and interviewed as representatives of that disease group.

All in all, the storylines and the related metaphors and visualizations seem to contribute to a very modern image of science as an expert-driven activity that is conducted in highly technical laboratories and aimed at 'solving' problems. This image resonates with the science fiction images of science as well as other 'popular' images of science. The idea of health was taken for granted in the news

broadcasts: locating genes that may cause diseases was dealt with as an uncontested, positive activity aimed at improving ‘everyone’s life’. Genetics is for the ‘common benefit’ of human kind and should be funded because it is a promising, future-oriented area. Only if it is funded here and now, will our future be controlled.

Notes

1. Subsequently, the Eurobarometers (1997 and 2000) show that medical genetics is often perceived in more positive terms than agricultural biotechnology.
2. Italics added.
3. Later on, the reporting shifted into the important role of Finnish researchers and research groups in discovering the genes. These stories are here analyzed as parts of the frame of ‘discovering and locating the genes’.

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