

GENES OF A NATION THE PROMOTION OF ICELAND'S GENETIC INFORMATION

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Abstract. The Icelandic Health Sector Database generated a huge political and ethical controversy. This controversy has served as a laboratory of a kind to test the viability of an individual, presumed and community consent to regulate participation in population databanks. When consenting to a database of a nation the question of how a database of population can affect the self-understanding and identity of a nation should become a matter of bioethical concern. The proponents of the database project (deCODE genetics Inc.) emphasize the relative genetic homogeneity of the Icelandic population as one of the major assets for a successful and innovative genetic research. An analysis of the marketing and selling of the idea of the Icelandic database shows how some aspects of its promotion stand in a tradition of a discourse on national identity that has influenced the way Iceland and Icelandic products are often introduced to other countries. Notions like homogeneity, purity, uniqueness, Vikings and blondes are instrumental for the analysis of this kind of promotional discourse. The Icelandic database-story is thus an example of how the identity of a population can (re)gain a genetic dimension in times of biobanks. The goal of this paper is to argue that the identity discourse should be an issue for a bioethical analysis of a case like this. Such an analysis can contribute to an understanding that enables individuals and communities to consent or dissent to participation in biobank research in an informed manner by elucidating some of the possible implications of a database of this sort for the identity of a nation or a population. By addressing this issue, bioethics puts the principle of consent that was at the fore of the debate on the databank law, into a broader context.

Keywords: biobanks, population genomics, genetics and identity of a nation, genetic homogeneity, genetic heterogeneity, informed consent, community consent, presumed consent

1. Introduction

At the beginning of the year 2000, deCODE Genetics, Inc., a profit-making genetics company, received a private license to construct the Icelandic Health Sector Database (HSD), based on a law passed two years earlier. It was foreseen that the

database containing the healthcare data in the health records of all Icelanders alive and deceased could be coupled with a genealogy and a genotypic database thus yielding a super-database. The database got a great deal of media coverage in and outside of Iceland for it seemed to herald a new era of large-scale bio databases. The reactions to the enterprise were characterized by astonishment, admiration or fury. Now, four years later, the database project, as originally planned, seems to have stalled. It is unclear whether it will ever be realized, but the company nevertheless continues its work in population genomics and pharmacogenetics.

The most controversial aspect of the law on the database was the fact that the handing over of the medical records to deCODE was to be based on the “presumed consent” of the patients and not their “informed consent”. The case of the Icelandic database has been a forerunner of its kind, and can thus serve as a laboratory to test the applicability of some of the core ethical principles of scientific research in times of bio databanks. The database case is a test for whether traditional principles like informed consent can stand up to the ethical challenges that the population databases confront us with, or whether presumed consent or community consent suffice to secure the ethicality of participation of a population in this case. These questions on consent have been dealt with extensively in an array of writings on the Icelandic database case. A brief overview of some of the focal points of this debate will be given before turning to the main topic of this paper. One of the problems that bioethics has not dealt with at any length in the Icelandic database controversy is the question of how the database of the Icelandic population relates to questions of the self-understanding and identity of the nation. The proponents of the project at deCODE have namely emphasized the very specific composition of the gene pool of the Icelandic people as one of the company’s major assets for a successful and innovative genetic research. Notions of a population’s identity conveyed through databank research should be an aspect of the public deliberations centering on individual and community consent. By examining the possible implications of such a research project for the identity of the population, bioethics can contribute to an understanding of what is being consented to, or rejected. The question of identity should be a part of the public deliberation on consent. With hindsight it can therefore be said that the bioethical approach in the debate on informed or presumed consent during the height of the debate was too narrow. A bioethical analysis of the identity dimensions of the database can illuminate and scrutinize the wider context of the issue of consent. Bioethics can thus contribute to putting consent or dissent into context.¹

¹ The question of identity is merely one dimension of the broader context of the database issue. There are other dimensions that also call for analysis, like the question of what kind of bio- and health sciences this kind of database research promotes, and how it may possibly affect or change our understanding of health and the quality of life. These are topics that are located at the intersection of philosophy of science, history of science, sociology of science and bioethics. Such issues that cannot be dealt with here testify to the fact that an interdisciplinary approach is needed in order to put bioethical concepts like consent into a broader context that also encompasses an examination of how biobank research can influence the future direction of health politics.

2. Genetics, populations, races and nations

According to deCODE's research findings a "relative genetic homogeneity" is characteristic of the Icelandic population (deCODE's *Annual Report* 2000:3). This statement is backed up by research done by genetic anthropologists at deCODE who trace the genetic origin of the Icelandic people (Helgason et al. 2000, 2003). Such work within genetic anthropology has thus added a new dimension to existing historical and demographic theories of the formation of the Icelandic nation.

This development within genetics can have far reaching implications, and not only for Icelanders. Given the increasing demand not only for population based databases, but also for national databases especially for forensic reasons – we are for example witnessing that in Britain – there is an increased pressure on citizens to contribute their DNA to such databases (Tender, Ford 2003). As Troy Duster has argued, developments in the new line of forthcoming research of national DNA databanks are introducing an "ethnic estimation" by use of the DNA (Duster 2003:x). The estimation of a nation carried out in relation to the Icelandic database therefore certainly calls for taking a closer and a critical look at what such estimation can connote. What we are therefore witnessing is a reentry of definitions of particular ethnic, national or racial populations within mainstream genetics. Research on genetic differences in Indian castes is a case in point. In a recently published article in *Genome Research* it is reported that genetic research has shown that "...the upper castes [are] most similar to Europeans...", and the lower castes are more similar to Asian populations (Bamshad et al. 2003).

Historically we have had instances of how all kinds of (purportedly) scientific estimations of specific populations and groups have served to idealize, marginalize or stigmatize them. This can lead to either genetic elitism or prejudices against groups that may furthermore result in discrimination or even in violations of rights of groups or individuals. It would however be rash to assume that estimations of populations, for example those done in the context of research on the Icelandic genome, automatically have to lead to interpretations of the population that are bound to have some kind of objectionable effects. The Icelandic example, however, shows how that can happen in terms of how that research is promoted for sales and marketing purposes. The promotion of Iceland's genes as manifested in newspaper reports, media broadcasts, as well as in secondary analysis of research findings has in many ways been based on ideas and clichés about what is supposedly unique about Iceland and Icelanders. But before taking a closer look at this material, a brief overview of the background of it, i.e. the bioethical controversy on the database law, will be given.

3. Biobanks

The official spokespersons of deCODE have given newspaper interviews about the stalling of the HSD, claiming that the Icelandic Data Protection Authority sets too high standards for data protection. According to the company, the database

cannot be operated effectively if it has to be constructed in accordance with the strict standards required. But even though deCODE has not received the medical records of the Icelanders due to the disagreement between the Data Protection Authority and the company, the company owns and operates a biobank. It has advertised a so-called "Clinical Genome Miner" as its product. The company has collected bio samples (blood, tissues) from more than a third of the adult population (80 000 to 100 000 out of more than 280 000, on a voluntary basis and with informed consent (limited or open)), and it has indirect access to phenotypic data through cooperation with medical researchers. The genealogies of Icelanders are openly available to everyone. DeCODE has put them together in a databank called "The Book of Icelanders" that has been made accessible to the public on the web. Given these assets and preconditions the company does research that is in line with some of the intentions of the original database research. Its goal was to link genetic with medical, genealogical and lifestyle information to find a correlation between genes and diseases, and to identify "key genes linked to ... the regulation of drug response" (Hákonarson et al. 2003:209). The findings are to be sold to pharmaceuticals and HMO's. According to the database law the HSD should also have become an instrument to improve health services in the country. In fact that was one of the main reasons given for the Icelandic government's eagerness in supporting the database project by allowing the handing over of the medical records.

The primary motive for all bio database research is the belief that the information processed from health records, bio samples and family relations, is highly useful for research in genetics. The Icelandic database proposal certainly helped boost the collection and commodification of bio data now resulting in a data fetishism of sorts in the field of population genomics. Biobanks that have been planned or are already under construction follow in many ways the example set by the idea of the Icelandic database, even though they also differ in many respects regarding their design, population and the ethical, legal and regulatory framework. Austin et al. give a fine overview of the similarities and differences of genetic databases in Iceland, United Kingdom, Estonia, Latvia, Västerbotten in Sweden, Singapore, Quebec, and the Kingdom of Tonga (Austin et al. 2003). Other comparable databases that have followed are at the Mayo Clinic and at the Marshfield Clinic in Wisconsin (Kaiser 2002). The First Genetic Trust Inc. in Illinois seems to be a purely commercial biobank (www.firstgenetic.net), but it is also cooperating in the build up of the Howard University database that will contain bio data of Americans of African decent.

4. Bioethical principles and the database controversy

Many of the databases that were conceived after the Icelandic HSD have avoided some of the criticism the Icelandic database law was subjected to, most importantly by requiring explicit or informed consent for the use of health record information. The proponents of the database in the Althing, the Icelandic parliament, claimed that it was not necessary to abide by the rule of informed consent in this matter, the

reason being that the data in the database is anonymous and non-personal. The lawmaker found justification for this stand in a regulation from the Council of Europe on personal and non-personal data, according to which decoded and encrypted data are said to be non-personal data. But even though secrecy was supposed to be guaranteed through anonymity, the critics deemed informed consent inexorable due to the delicate nature of data that contains some of the most secretive and sensitive information to be obtained from individuals. It was also asked whether phenotypic and genetic data could ever be truly anonymous, particularly in light of the small size of the population. The commercial exploitation of the database by a profit-making company also made informed consent seem compulsory. So even though many of the critics did not oppose the database as such they felt very strongly that it called for informed consent of the participants. The only concession the legislature made to this critique was to add an opt-out clause to the database bill, but the original version of the bill did not foresee that. The opt-out from the HSD has spawned a new database kept by the office of the Surgeon General (with over 20,000 entries which is about 7% of the population). The fact that the deceased, children, mentally impaired were to be included in the HSD also evoked disapproval.

The public debate about the database deserves much reflection about issues such as public scientific literacy, the presentation of science, and in this case genetics in the media, and critique of science or lack it in the media. One of the drawbacks in the public debate about the Icelandic database was that it was very much focused on the security aspects of the database. There was too much technical talk about encryption techniques and computer security, giving the impression that the main topic of serious concern was securing the anonymity of the data (Árnason and Árnason 2001). That also goes to show that the discussion of consent was placed in a too narrow context.

The database law was passed in parliament despite the ethical flaws the critics pointed out. The politicians supporting the plan argued that the HSD would be a major milestone in the build-up of biotech industry in Iceland, and the public interest benefit of the enterprise was also very much viewed in the light of how the company offered work for people, and how highly educated Icelanders came back home from abroad to work for deCODE. These were probably the main reasons why the majority of the Icelandic population had a positive view of the database according to polls.

With hindsight, it has often been asked why informed consent was not required (regardless of the supposedly non-identifiable data) because requiring only presumed consent in the database law was so heavily criticized. One possible explanation is that it was thought that requiring informed consent would take too much time. The competition on the biotech market called for a speedy procedure.

There were observers of the bioethical controversy that were not critical of the database law and the public discourse surrounding it. The anthropologists Gísli Pálsson and Paul Rabinow maintained that the public debate that took place in Iceland was equivalent to what has been termed within bioethics as “community consent” (Pálsson and Rabinow 1999). A communal consent that is deemed to have been

sufficient in terms of quality as well as quantity of debate may in a case like this be considered more adequate than informed consent. Informed consent is based on the model of the individual who makes a decision about his or her participation in a medical experiment or contribution to scientific research. In terms of the communal nature of the data pool and the non-individualistic feature of genes (insofar genetic makeup is shared by relatives, families, populations, etc.), an individualistic concept like informed consent has its limitations. However, in my view the individual consent should not have been discarded as happened with the database law, but it exceeds the limits of this interpretation to list the arguments for that position. One main reason is that the public debate did not meet the necessary conditions in order to claim that it could have been comparable to a communal consent that could have made informed consent unneeded. There was far too little debate about the goals of population genomics and the possible effects it can have on the development of medicine, about our understanding of health and its implications for the development of public health. There was moreover not enough attention given to the possible implications of the idea of “relative homogeneity”. This idea undeniably served the purpose of making the prospect of the database attractive to Icelanders and to investors and thus played an important role in the public debate. Given the implications this idea can have for the identity of the community involved it should be an issue of bioethical scrutiny.

5. Genes of a nation

Three of the population databases mentioned before that have been planned or are under way, the Icelandic HSD (the medical records database), the one in Tonga and the one in Sweden have been abandoned or halted (Rose 2003). Out of all the mentioned databases, the Icelandic biobank and the Howard database seem to be the ones that could most explicitly have implications on or feed into the notions of nation, ethnic identity or race. “Race”, “nation” or “ethnicity” can however not be understood as biological categories in this context. It has been forcefully argued that “race” does not have a genetic meaning.² Yet races do exist as social constructs “that are mutable over time and across social contexts and are sustained by a racial ideology” (Parra et al. 2003:177). Nations are also social constructs, and as such composed of a cluster of different meanings most often derived from common history, cultural heritage, language and so on. Genetics can certainly add to the meaning of a specific nation even though national identity as such could never be a topic for it. Researchers at deCODE would claim that their work on the Icelandic genome has nothing to do with questions of national identity. With its findings on the “relative homogeneity” of the Icelandic population, deCODE merely seeks to provide evidence to show how homogenous the Icelandic population is genetically

² For an overview of the debate on whether race or ethnicity can have biological validity or not, see Ken Malik, “Why do we still believe in race?”, www.kenmalik.com.

speaking in relation to other populations in Europe. How such evidence is conveyed, interpreted, and in the case of deCODE, promoted and marketed, can nevertheless undoubtedly color our understanding of the identity of a nation or a population belonging to a certain ethnic or racial group. This does not only become apparent in the promotion of the database but also in criticism of deCODE's findings on the relative homogeneity of the Icelandic population. Geneticists in Iceland do not all agree with deCODE's findings. Einar Árnason, a population geneticist at the University of Iceland, has tried to show how the Icelandic population is less homogeneous and more heterogeneous in comparison to other populations in Europe. An examination of this controversy shows how these opposing positions are in many ways representative of different socially constructed conceptions of the Icelandic population and its history. The notion of the homogeneous population has in some ways clear affinity to ideas of distinctiveness and purity that have been instrumental in a variety of nationalistic discourses in the 20th century. The rival view of the heterogeneity of the Icelandic population aims at challenging and refuting many ideas in support of the idea of purity and distinctness of the Icelandic population. In addition to the genetic explanations given as arguments for each view, both sides give opposing historical and demographic explanations for the homogeneity or heterogeneity of the Icelandic population.

6. "Genetic nationalism"?



The advantages of doing research with the genetic and phenotypic data of an allegedly relatively homogeneous population are the following according to deCODE: Genetic screening is simpler because the number of genetic causes is fewer. That simplifies the finding and understanding of the disease genes and mutations. Iceland is accordingly supposed to be a superb site for population genomics. The reasons given for the relative homogeneity of the population are its smallness and its isolation as an island population compared to most other populations in Europe. The so-called "bottlenecks", such as plagues, natural disasters or famine, are also said to have been constitutive of the homogenic character of the Icelandic gene pool.

According to deCODE's research an analysis of Icelandic genealogies that were traced back to two cohorts of ancestors in the 18th and 19th century reveals that the "vast majority of potential ancestors contributed one or no descendants, and a minority of ancestors contributed large numbers of descendants" (Helgason et al. 2003:1370). The "frequencies of a number of mtDNA lineages in the Icelanders" are also said to "deviate noticeably from those in neighboring populations, suggesting that founder

effects and genetic drift may have had a considerable influence on the Icelandic gene pool” (Helgason et al. 2000). The findings reveal a high frequency of certain genomic variants because they are descended from a small group of founders. The Icelandic genome is therefore said to be determined by a “founder effect”, and that is supposedly very advantageous for deCODE’s research because genetic variation can be traced to a “single ancestor in the distant past” (*New York Times*, September 22, 2003). DeCODE’s annual report from 2000 stresses precisely this idea adorned with a picture of the statue of the first settler of Iceland, Ingólfur Arnarson who arrived in 874, and in front of the statue a modern day young blonde with apparently bleached hair and a glossy lipstick.

In a TV documentary from 1994 on genetic research on the MS disease, Kári Stefánsson, who later became the founder and CEO of deCODE, states this idea more bluntly when he claims the Icelanders to be genetically speaking pure. He adds that little genetic material has been added to the Icelandic gene pool except in recent times. With regard to the MS disease, Stefánsson claims that when traced within the Icelandic MS patient group the disease is characterized by less variety than can be found elsewhere, which is supposed to make research on it easier and more effective.

The idea of the genetic purity of the Icelandic population spread around the world through media coverage of the database. Einar Árnason wrote a letter to the *New York Times* in response to an article by Sarah Lyall about deCODE’s research on Icelandic gene pool. He wrote:

deCODE genetics has evoked the myth of the homogenous Aryan Icelanders to entice foreign investors. And in Iceland the company has rallied support for its plans by inventing genetic nationalism, declaring that the Icelandic DNA is superior to all other DNA. Apparently, Ms. Lyall is also a believer, stating “that there has been little immigration to muddy the genetic pool over the centuries”. The implication is that immigrants muddy or dirty the genetic purity of the population. By the same token, how would the author characterize the population of New York City? (Árnason 1999)³

In his own research on the genetic origin of Icelanders Árnason has reached the opposite conclusion, namely that they are a highly variable people, founded by a mixture of Celtic and Nordic populations. In a recently published article he claims that the Icelanders are “among the most genetically heterogeneous Europeans” (Árnason 2003:5). The findings of the deCODE researchers are in his view false for they allegedly used public databases of mitochondrial DNA, databases now

³ There were others to oppose this kind of coverage in the foreign media, as for example the Icelandic ambassador to the US, Jón Baldvin Hannibalsson, who wrote to the *The Washington Post*, January 25, 1999; Page A20, the following: “In an otherwise balanced and interesting article, ‘For Sale in Iceland: A Nation's Genetic Code’ [front page, Jan. 12], ... the Icelanders [are described] as ‘largely blue-eyed, blond-haired populace.’ Elsewhere in the article he [the writer] refers to ‘the original blend of ninth century Norse stock and Celtic seamen’ as being ‘largely unchanged.’ Well, we gladly admit to our affinity with the Celts (the Irish, the Basque and the Breton), but they never looked particularly blond or blue-eyed to us. Icelanders are of a mixed Nordic-Gaelic origin, as recent medical and anthropological research has confirmed.”

known to be filled with errors.⁴ By tracking down the errors, and by using more accurate DNA data for his own analysis, Árnason attempts to show how Icelanders are genetically a mixed population.

When the findings of Helgason et al. and Árnason are compared, the differences are not that great. When the mean number of paired differences of mtDNA is measured, both Helgason et al. and Árnason come to similar results in terms of the ranking of Icelanders on the scale of European populations. According to deCODE's findings, Icelanders rank number eight on a list of 25 populations. According to Árnason, they are the ninth on the list of 26 populations. When considering statistics based on the number of haplotypes, the differences are greater with Icelanders ranking 17 out of 25 populations (Helgason et al.), or they rank 13 out of 26 populations (Árnason.) On the basis of these results we get opposing interpretations. Helgason et al. claim that Icelanders are relatively homogenous, and Árnason says that they are an average, heterogeneous European population.

To describe it metaphorically, it almost seems as if both parties interpret their data on the basis of half a glass of water. Helgason et al. say the glass is half empty, Árnason claims that it is half full. This may be a crude simplification of these different interpretations of the Icelandic genome. It is nevertheless striking that the differences in ranking are not greater when compared to the conflicting historical evidence the opponents bring forth to support their views on the constitution of the Icelandic genome.

Árnason is skeptical of the founder effect. He does not believe that this effect was augmented through population reductions during bottlenecks that are supposed to have affected the genetic variability of the Icelandic genome. He also maintains that Iceland was never after its settlement an isolated island, like the deCODE researchers assert. The historical evidence seems to be on his side, for there are quite a number of documents showing lively traffic of foreign ships to Iceland in previous centuries. Ships with merchandise came on a regular basis. Large fleets from England and France were fishing in Icelandic waters in the course of centuries, and the seamen had to come ashore once in a while. But even if Iceland was not isolated, there exists little historical evidence to back the fact that Icelandic women had children with men of foreign origin. Stories have however been told about how brown eyes or dark hair prevalent in some families have come from French seamen. It has also been commonly accepted that the genealogies of Icelanders are filled with false paternities, even up to 10%. Researchers at deCODE claim to disprove this. According to deCODE's findings the "accuracy of maternal connections" is 99.3% (*Annual Report 2000*: 5), or ten times less than is commonly assumed.

7. Purity, Vikings and blondes

What do the rest of European populations look like compared to Iceland? The list of rankings offered in the works of Helgason et al. and Árnason shows that people

⁴ For research on errors in data sequencing see Forster 2003, Bandelt 2003

like the Saamis, Basques, the Welsh and even the Swedes are for example more homogeneous than Icelanders, but the Turks seem to be genetically the most heterogeneous population in Europe (Helgason et al. 2000). Notions of purity and distinctness do not necessarily come to mind when thinking of these populations that are supposedly genetically less diverse than the Icelanders. The fact that these notions pop up in the promotion of the Icelandic database is a sign of how precisely its promotion stands in a tradition of a discourse on national identity that has until this date influenced the way Iceland and Icelandic products are often introduced to other countries. The coverage of the database in the media in foreign countries also shows how many journalists are inclined to uphold this image of Iceland. In an article on the database in *The Times* the Icelandic population was for example described as “carrying nearly the same genetic codes as the Viking explorers who settled here more than 1100 years ago” (Binyon 1999).

The image of the distinctness of the Icelanders and the purity of the stock has been conveyed in various ways. It can be seen in popular culture, in literature, but most forcefully in advertising and the marketing of Iceland. The saga and Viking terminology along with ideas of purity and uniqueness of the Icelanders that are abundant in the coverage of the database go to show how the message has come across. Other companies in Iceland also make use of this image of the country and its people, like the picture from a newly published advertising brochure of Icelandair (distributed in the US in 2003) clearly shows.

It is possible that the above statement about the “purest Viking ancestry in the modern world” has been influenced by the recent work at deCODE on the origin of Icelanders, but it is nevertheless representative of a form of image-making that is still heavily permeated with remains of a discourse on national identity that dates back to times when Icelanders were fighting for their independence. (Iceland was a colony of Denmark and gained full independence in the year 1944.) In the case of deCODE's picture of the first settler and the blonde we are therefore seeing how past narratives of national identity have been translated into a genetic discourse on Viking genes and pure heritage.

From the perspective of gender studies it has to be asked why both these contemporary examples of marketing the pure Viking heritage show pictures of young blonde women. Why is the same idea not expressed with a picture of a blonde or even a red-haired Viking looking man? As a matter of fact there are innumerable articles in the foreign media about the Icelandic database that begin



THE PEOPLE OF ICELAND DISPLAY

PERHAPS THE PUREST VIKING ANCESTRY IN THE MODERN WORLD.

Iceland Travel, meanwhile, also leads hiking tours of the Heiðmök Nature Preserve, Hörgull Geothermal Area, and the Langjökull Glacier, and excursions by horse across the lava fields around the Hlégfjell volcano or the hot springs near Hvergerði and Reykjadalur. Iðeztur is a 20-year-old outfit that offers lots of horseback riding tours, including eco-tours that will debut in Summer 2003. Even for the neophyte, this is practically a must-do a day trip on one of the gentle, sturdy Icelandic horses is a bit like riding a sofa with a saddle.

well as day trips to Greenland and aerial sight-seeing high above the Arctic Circle), the most convenient way to visit the island is by car. Hertz has compiled a trio of congenial compact cars that replace the conventional tour guide, and Icelandair includes motoring tours in a number of packages. Promotional material coming

lages, over the landscape of the Saga of Egill, or down to the Blue Lagoon. All include tour guides, transportation, meals, and so on. You can advance all the way to the Grand Tour, twelve days and eleven nights, and by the time it's over, you've covered the entire circumference of the island. Those who choose to drive their

10 www.icelandair.com 1.800.223.5500

with a description of Kári Stefánsson, the CEO of deCODE, as a tall, imposing, even ruthless Viking. In fact Stefánsson has become a sort of a “poster boy” for the database project in the foreign media like Jeff Barker has remarked (Barker 2003:138). In deCODE’s promotion of the project it was however decided to use the young blonde as a kind of cover girl for the Icelandic genome project. That gives the purity of the Icelandic genetic heritage an enticing dimension. It becomes enticing purity. This display of enticing purity is much more explicit in Icelandair ads that have been placed in the foreign media to tempt tourists to come to Iceland. Icelandair has in fact been heavily criticized for an advertising campaign that was run in the UK. Photos of blonde beauties in bikinis bathing in the Blue Lagoon with the slogan “Fancy a dirty weekend” caused outrage among feminists in Iceland. For many observers these ads were laden with sexual undertones that were considered to give the impression that Icelandic women were loose and quite willing to spend a “dirty weekend”. The public relations people of Icelandair tried to defend the campaign by saying that these ads were just supposed to appeal to a certain kind of British humor that thrives on suggestive ambiguities. The Icelandic Committee for Gender Equality was however not amused claiming that it was offensive and humiliating to portray Icelandic women like this to lure tourists into traveling to Iceland.

Obviously deCODE would not like to be associated with this kind of advertising. It does after all apparently have nothing to do with the research and the work of the company. The company’s promotion of the idea of homogeneity nevertheless stands in some ways within the tradition of the notion of purity in Icelandic discourses on the meanings of national identity, and can be looked at in that light. There is for example a long tradition of preserving the purity of the Icelandic language. Therefore great efforts have been made to translate everything into Icelandic and to avoid integrating foreign or international vocabulary into it. To that end new words have been made up for technical inventions like jets and computers and other novelties. This language policy has not only had the goal of preserving the language, but also of cleansing it of foreign elements. Linguistic purism has therefore been one of the constitutive elements of national identity in this country.

In recent years purity has perhaps played the greatest role in the promotion of Icelandic nature to get tourists to come to the country. The online brochure of the Iceland Tourist Board describes Iceland on its front page as “pure”, “natural” and “unspoiled”. Here a direct link between nature and purity is most obviously forged. The connection between homogeneity and the biological nature of Icelanders is also apparent in statements about the genome of the Icelandic population. In a recent interview in the *New York Times* Stefánsson described the Icelandic population in crude biological terms. “I am convinced,” he said, “that Icelanders are a good animal model for *Homo sapiens*” (Wade 2003). So far no one has opposed this depiction of the Icelandic population even though it shows grave lack of respect for the people who are contributing their bio data to the company’s research.

Many may object to taking such vulgar statements (that are perhaps even meant to be funny) seriously. Similar statements as well as the promotional and advertising material may just demonstrate a lack of awareness about different layers of meaning apparent in images and notions to express purity and homogeneity. (Perhaps the brains behind this kind of promotion do not simply understand the possible symbolic connotations of the signs and language being used.) The work researchers at deCODE are doing may be sophisticated regardless of the way they are presented or promoted in the media. It is clearly not the goal of this analysis to judge deCODE's scientific research for that is the task of other researchers in the field and peer reviewers. The goal has been to point out socially and culturally value-laden aspects of the accounts of this research. One could respond to this analysis of deCODE's promotion of the database by saying that the company (just like some other companies) may at times produce tasteless promotional work, but that its research may be sound. The genetic anthropologists at deCODE could be right and Icelanders may be genetically speaking a "relatively homogeneous population". Or, they are less homogeneous and more diverse like Árnason attempts to show with his findings. What, however, makes one wonder whether there are marketing and sales motives behind the whole promotion of the "relative homogeneity" of the Icelandic population, are statements like the following. When Stefánsson was asked in an interview whether homogeneity is a big advantage for the company's research he replied: "I think that genetic homogeneity is overrated. It helps. But the big advantage we have is the genealogy of the entire nation in a computer database" (EMBO reports interview 2001:965).

What is interesting about this clash concerning the genes of a nation in philosophical perspective is that it seems to represent opposing tendencies that have a bearing on how a particular identity is articulated in the modern world, and in a particular country in Europe (for the Icelandic genome in these studies is not compared to the genomes of populations outside of Europe). In this clash one side emphasizes difference, showing us that Icelanders are genetically speaking unique. The other side argues that Icelanders do not stand out genetically as a European population. Both sides can be put into a broader philosophical perspective in terms of questions of identity. Within identity studies in the humanities there are those who "stress the importance of human commonalities and those who stress the importance of human differences" (Malik 2003). For that reason the controversy about the identity of the Icelandic nation with regard to ancestry is reflective of a much larger debate on "who we are".

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