

# 5 The issue of food genomics: about reluctant citizens and united experts

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## 5.1 Introduction

After cloning and genetic modification, there is now a new conversation topic for the coffee table: genomics. The substantial investments in what is called so pleasantly the social component of genomics raise suspicions that the stimulus by the government to deliver speeches and to debate is not completely without obligations. And they will talk. As usual we will be regaled with flowery stories about what can and cannot in this budding area of science. With food genomics we are provided with for example sophisticated possibilities for altering our food package according to our hereditary constitution. For the sake of convenience we here use the term 'food genomics' for both the study into the relationship between nutrition and inherited characteristics of people, and for research into the hereditary material of plants.

As stated in the recent experts' meeting: "Just as there are already specific foods for people with diabetes, gluten allergy and an increased cholesterol level, there will be, thanks to nutrigenomics, foods that will come on the market specifically for people with an increased inherited risk of intestinal cancer or depression for example." (Appendix 2).

For the time being the term genomics will only ring a bell for a small minority. Although the esoteric character of the term undoubtedly contributes to this limited renown, other reasons are also probably lurking in the background. Experts scrupulously avoid association with genetic modification and emphasise the neutral, ordering nature of genomics: it is first concerned with *mapping* the complete DNA information of man, plants and other animals, as Professor Stiekema recently argued in an interview (*Resource 3 2001*) which can also be read in the report of the experts' meeting of 31 January 2001 (Appendix 2).

Learning from earlier social conflicts on biotechnology, the pressure is on the experts to turn over a new leaf and skirt around the loaded debate on genetic modification whenever possible. In this respect the attitude of some experts makes one think back to the discussion a number of years ago in which the term ‘manipulation’ had to make way urgently for the less emotive term ‘modification’.

In the meantime it is difficult to deny that genomics and genetic modification are very closely linked to each other. For food genomics, the area of genomics to which we limit ourselves here, there will be considerably fewer applications on the horizon if the way to genetic modification is blocked (Jansen 2001). Furthermore the development pathway is much longer for applications that take place via the traditional route of selective crossing. In short, it is highly possible that genetic modification will play a considerable role in applications of food genomics.

No matter how this relationship will develop in practice, the public will not be bothered at all by the territorial fight that scientists will allow over this point. The associations with genetically modified food force themselves on us, earlier or later, whether we want them to or not. From this perspective, and from the understanding that for each evaluation of scientific developments the historical context plays an important role, it is worth taking the trouble to look at earlier experiences from the social debate on genetically modified foods (Wynne 1996, pp.19-46). Starting from the current impasse in this discussion, this contribution is an argument that effective technology development in the area of genomics assumes we should look into the reactions of consumers and the general public even more deeply than previously and then especially at the assumed weakness of this.

## **5.2 The embedding of knowledge and technology in everyday life**

Let us first formulate the issue somewhat more broadly: what do we know in general about the relevance of scientific knowledge in our everyday existence? We could conclude that this relevance is not easy to find from studies aimed at evaluation of science by ‘ordinary’ lay people. Eventually scientific information sources will be evaluated according to “the extent to which they assist in the understanding and control of one’s life” (Irwin et al. 1996, p. 63). The media sociologist Silverstone once said about new media that they must become domesticated, i.e., tamed for daily use, so that they can become part of our ‘normal’ lives (Silverstone 1998, pp. 17-34). Time after time it seems that scientific knowledge and much of the technology that emerges from it is only barely relevant to daily practice. The comment that

“you can’t do anything with it” can cause scientists’ blood to boil but also correctly touches a sensitive point in many cases.

In any case the usefulness of scientific knowledge should not be too narrowly defined: it does not *per se* mean a reasoned sort of usefulness, that occurs based on functional considerations. Questions of identity for example play an essential role in the way in which we deal with our food habits (Caplan 1997). Whether we follow up on nutritional advice that is accurately tuned to our personal constitution (one of the possible applications of food genomics) depends on the calculated advantages and disadvantages and also for example on the question of whether this technology is associated with our own identity or lifestyle.

A related condition for acceptance and use is that knowledge and technology must be allowed to embed into our daily *discourse* and this does not appear to be easy. Those who practice the cultural research tradition of risk and risk perception have found this phenomenon labelled as a lack of image: we go back to old stories and myths that in part feed and in some cases block our powers of imagination (Van Dijck 1997, pp. 83-96). A dominant cultural source is the Frankenstein myth that wakes up both deep anxieties and limitless enthusiasm for science and technology. During the recent food scare in England the term *Frankenstein food* played an important role in causing the panic that broke out after the scientist Pusztai had warned about the, in his opinion, unsound test methods for genetically modified foods (Van den Belt et al. 1999, p.103). The debate became very black-and-white due to this with little space for intrinsic deliberation.

### 5.3 Societal debates on biotechnology

What conclusions can now be drawn if we look with these insights into the progress of the *organised* societal debate on genetic modification? From the 1980s various debates have taken place in the Netherlands regarding the opportunities and risks of modern biotechnology. The approach and organisation of these public debates have been analysed by government, institutes and science. It was not until the 1990s that the public were given a role in this. In 1993 the first real public debate was organised with the very direct question ‘Genetic modification of animals – should it be allowed?’ This debate took place mainly with a lay panel of 16 persons and a panel of experts, according to the model of the Danish consensus conference (Van Est et al. 2002). The results were put into words in a ‘closing declaration’ of the lay panel intended for the Lower House of the Dutch Parliament. The initiative for this first public debate came from the former NOTA (Netherlands Organisation for Technology Assessment, today named the Rathenau Instituut), the PWT Foundation (an organisation to disseminate information on science and technology today named WeTeN) and SWOKA (a con-

sumer research organisation). Under the title *Food and Genes*, the sixth and up to now last debate over genetic modification was held recently ([Hanssen et al. 2001](#)).

One of the most remarkable 'results' of this series of organised public discussions is that they have not succeeded in becoming really public. This observation can be found from an important section of the respondents who were questioned after the *Food and Genes* debate: more than 40 % could not answer the question of what had they noticed most during the debate, about the same percentage found it especially noticeable that people had heard so little (of the debate). How can we interpret this?

A simple explanation lies in the role of the media. Except for the debate on food and genes, organised debates in the Netherlands have been able to attract very little coverage in the media. In the *Food and Genes* debate, what was remarkable was the nature of the interest. About three-quarters of all media attention had no direct relevance to the theme of genetically modified foods, but concentrated on the controversy between the Terlouw Commission that led the debate and 15 social organisations on the rules for the debate. From the above study, it appeared that after the end of the debate this question had hardly bothered any of those questioned: only two percent found that this affair was the most noticeable part of the debate. It would appear that the preferences of the media appealed badly to public sentiment. It also showed that a certain amount of media attention does not guarantee that a public discussion bursts forth.

The question of course remains: what does interest the public? Although there is more than one explanation for the lack of lively debate, it is very plausible to assume that the discussion themes had no connection to everyday life. The daily usefulness was not visible, tangible or otherwise recognisable and thus we did not worry about it very much. This agrees with the much heard remark during the *Food and Genes* debate: it is not possible to explain to the general public what the added value of genetically modified foods now is. There are disputed advantages for producers and the Third World but it is unclear exactly what the citizen-consumer gets out of it. In combination with the unclear risks, the lack of a demonstrable added value could explain why the debate has shaken so little loose, at least in the public sphere outside the NGOs.

## 5.4 Information requirements and the passion to participate

At the same time another apparently conflicting reaction can currently be seen. It became clear from the above-mentioned study of the *Food and Genes* debate that the public wants to have more information on biotechnology and its applications. When asked about the current provision of information, the reply was that it was clearly too little and especially the role of government was called into question. Were they monitoring things properly? Was the information given by the government correct? Who makes the rules? It was also noticeable that the public wanted to be treated less paternalistically and to participate more in the decision-making. Earlier studies into decision-making processes and the flow of social information about the risks of modern biotechnology confirmed that the public claims for itself an important place in that process (De Jong et al. 2000, pp. 165-180).

The results of the study of the *Food and Genes* debate were intriguing because this self-signalled passion to participate suggests the public would also be willing to vent their feelings about gene foods. The question is actually how must we interpret this desire for participation and information? In a fascinating article on the role of trust in risk perception, the sociologist Szerszynski argued that expressions of trust and mistrust directed at institutes that carry responsibility in the area of risk prevention must not be looked on purely as the result of cognitive processes (Szerszynski 1999, pp. 239-252). In other words, with such expressions the speakers are describing not just their mental state but are also performing a 'social act' (see also Potter 1996; Te Molder 1999, pp. 245-263).

It is therefore possible to look at expressions of mistrust as a way of getting institutes to take action, or as Szerszynski formulates it: "to bind the trusted into a relationship and attitude of responsibility" (Szerszynski 1999, pp. 239). Irwin and colleagues show how an apparently 'unambiguous' request for information often contains more than just the satisfaction of a need for information (Irwin et al. 1996, p. 63). Many of those asking the questions want to seduce the appropriate institutes to take initiatives at the same time. Finally, it is obvious that people with complaints and comments on the misbehaviour of this or that organisation or person are not only making a complaint but are also giving out a signal of involvement (the indifferent do not even bother to complain). In that way they are rather confirming their relationship with the organisation in question than undermining it.

With the call for information and participation that appeared to come from the study of the public resulting from the *Food and Genes* debate, something of that sort could be going on. The observation that here it

is purely about the demand for knowledge and participatory influence seems to be far too simple. The tame debate and the apparent lack of involvement talked of here, are not consistent with the explicit request for information and participation urged simultaneously, unless the information and participation need can be interpreted as a way to move the authorities and other responsible institutions into action. In that case one has to say that citizens would like to see these types of things well organised (and kept under control), but may not wish to get involved automatically in the circus of participation that is initiated with even greater regularity around current social topics. This seemed also to be the case in the first public opinion poll that took place within the framework of the public debate on *Food and Genes* in June 2001. From a representative sample of 1019 citizens of 18 years and older, the great majority (73%) said that they did not agree with the statement 'In my opinion only the government should determine how modern technology progresses; 77% agreed with the statement 'Social organisations such as Greenpeace or the Consumers Association should have more influence on decision-making related to genetic manipulation'. No less than 93% endorsed the statement 'I think that it is a good idea that the government and social organisations cooperate more towards finding a solution for the use of genetic manipulation and food'.

## **5.5 Where is the autonomous consumer?**

It is clear that the desire to see everything well managed but without being directly involved is not politically correct. The question is actually why such a desire is not legitimate. Whether it is now laziness, cognition or recognition of ones own limits, the fact is that few living souls can or want to comply with the overstressed requirements of the modern consumer-citizen. This consumer is involved, well informed and continually looking forward to taking his own well-considered decisions. This is the image of the mature, autonomous consumer who inhabits the pages of the policy reports – terms such as freedom of choice of the consumer and right to information fit smoothly with this identity. Daily practice actually shows a completely different image, namely of the passive, apparently indifferent consumer who is not ready actively to react to information and omits even to read labels.

Undoubtedly the first image agrees more with the pleasant policy initiatives. A somewhat slow consumer-citizen is 'activated' with difficulty and is typically a less interested, less involved conversation partner. The roots of this dominant image lie more fundamentally in the political-liberal body of thought that traditionally plays an important role in the discussion on consumer rights (Van den Belt et al. 1999, p.103). However, the ever critical and oh-so-autonomous consumer is very hard

to remove from the discussions on technology development and thus obstructs the creation of a more realistic image (Frissen 2001).

In a certain way this almost romantic image of the consumer is not just maintained but also misused. The much argued freedom of choice in the case of genetically modified foods has appeared to be especially also a 'safe' way in practice: they shift the judgement to the consumer precisely at the moment when the consumer mindlessly dives into the shelves and takes a product. They rarely if ever read the labels, even quickly. Freedom of choice assumes a measure of reasonable self-control that the consumer at that moment should and probably also wants to delegate. The fact that the discussion concentrates on this idea hinders proper debate on development of the technology itself and the actual conditions under which this has taken or will take place.

## 5.6 Public disputes: what next?

The image of the autonomous consumer has paradoxically enough made the same consumer open to blackmail. You will participate; if not then you will lose the right to a different sort of involvement of a more passive nature. Genomics and food genomics may suffer the same fate. The essential question for trust in technological development and responsible institutions is how the voice of the consumer-citizen will be heard. This trust issue will remain an important topic in the next few years, as it is more complex than is often assumed and goes further than the restoration of belief in governments and institutions. Among other things, trust is based on the manner with which politics involves the public in its decision-making, how companies cope with consumer interests, and the perception of the way in which modern biotechnology will influence the lives of individuals. Public trust is finally the referee that decides whether and how a technology develops in the community.

In order to restore trust, openness towards risks and uncertainties is essential. Considering the intrinsic uncertainties of modern technology that trust can never be absolute and unconditional. This means that the debate, the dialogue with the public, has become a continuous process for all involved – not least for government and companies. The dialogue on genomics is a crucial test for this.

Politically correct behaviour, i.e., involving the public in large numbers at specific moments in the development of knowledge or a technology, does not seem to be the proper way. A similar reflex reaction does not remain unnoticed by the public. The Dutch writer Remco Campert recently put this strikingly: "I was spoken to on the street by someone who asked whether I was a citizen. In order to get rid of him I just denied it" (CAMU 2002). The continuity of the debate, in combina-

tion with the expected desire to exercise influence without participation on a large scale makes small-scale initiatives such as long-term consumer or citizen panels more likely.

Food genomics with its potential consequences is a complicated subject. It requires imagination to identify and evaluate these future consequences. How people will make use of the knowledge that a genetic map will provide in terms of short and long term risks and the consequences this will have on daily feeding patterns? There are also the product advantages that crops could have on the basis of information that is gained from genomics. Long-term involvement means that you can get really into the possible social impact of the technology and can train your imaginative powers somewhat. The fact that these panels or forums only make it possible for a selection of participants who in the long term no longer look blankly at the technology (and who does that anyway?), is in short not *per se* a disadvantage but also an advantage. In any case we have not said that large-scale debates should be abandoned – but the reflex with which they are organised should be abandoned. A large-scale public debate assumes a high degree of involvement from a large group of participants and thus a reasonably direct link to our everyday worries and discussions about them. The tendency exists to overestimate this connection yet underestimate the importance of it. We cannot predict whether the genetic map and the principle of custom-made foods will be received with the same enthusiasm as how they were propagated. Long-term issues always have problems finding a place in daily conversation.

One thing that is certain is that in an *early* stage of the technology development, the social consequences must be evaluated. However at the same time many of the daily consequences cannot be envisaged at this stage and especially not for genomics. It is of the greatest importance that, during the development of the technology, possibilities remain for intervention and management and if necessary for decision reversal. The advantages of such a strategy are amply balanced in the long term against the costs. Attention for the initiatives organised by the authorities should really never mean the death of attempts that individuals undertake to influence the development of technology. The most lively debate occurs from spontaneous day-to-day involvement and no organised initiative will change anything of that ([Frissen & Te Molder 1998](#)). It is no accident that *communities* on the Internet set up by users themselves are the most vital and busiest forums of discussion. Being alert to early initiatives and supporting them, also or perhaps exactly in the case of alarm sounding 'bell-ringers', it is a precarious but eventually very effective way to provide social comment on technological developments (Rip 1991, pp. 299-312). Because early signals also lead to possible misunderstandings, it is important that authorities and other involved players not orient themselves to trust as such, but especially to support certain forms of 'mistrust'.



The above discussion assumes finally that there is some clarity about the way in which and degree to which the results of this sort of discussion panel and other initiatives can exercise influence on the decision-making committees. If there is something that was lacking over recent years concerning the set-up of these public debates then it is the clarity of their management scope. The public, as far as they are already involved, has great doubts whether the results of a debate will have an influence on political decisions. Part of the reason is that in the Netherlands there is no suitable channel for translating the results of public debates into political decisions by which the process, in case it is present, remains out of sight of citizens.

## 5.7 A new role for the genomics expert?

Experts will play a crucial role in the upcoming debate on genomics and food genomics. Actually the expert has always been present but the trend for leaving communication about new technology to communication specialists, science journalists and such like has made him into an ogre, not completely despite but also thanks to these experts. All too eagerly experts refer to the information officer when it concerns controversies within sciences involved or uncertainties over the consequences of a particular technology. Food genomics, with its predictable doubts over possible risks, also appears susceptible to multiple referral and this is unjustified. The criticism directed at experts over the recent past and the shortcomings of the prevailing technical approach to risk communication (in which the scientists' role was embedded) makes this tendency to delegation rather understandable.

### Failure of the technical approach

Traditionally risk communication from the authorities, private enterprises and scientific experts consists of providing 'rational' information that is aimed at increasing the knowledge of the public. The idea behind this is that when the public comes into contact with the 'facts' they may change their irrational views on the risks and their subjective perceptions will fall more in line with the objective scientific evaluation (Liu & Smith 1990, pp. 331-349).

Risk communication is seen as a linear process with one-way traffic by which the experts inform the lay people (Gutteling & Wiegman 1996). This perspective on risk communication is seen as the technical approach (Rowan 1994, pp. 391-409). In the most extreme form it consists of one-sided, top-down information flows from the expert to the public based on the idea that this latter group just as the expert himself has a need for accurate (read: technical, quantitative, or statistical) information and scientific expertise. If the public refuses to agree with the risk outlook of the experts then this is assigned to a lack of

understanding or a misunderstanding. This could be corrected by offering the correct information again or by applying persuasive strategies.

There are a number of reasons why such a technical approach, in which the superiority of experts is resolute, is doomed to failure (Cvetkovich et al. 1989, pp. 253-276). The first point of criticism is aimed at the incorrect premise that the public keeps to the same style of analysis as the source of risk information, when the public deals with risk-related messages. By consistently keeping to this rationalist-based communication strategy, doubts from the public on the nature and scope of risks will more likely be strengthened instead of being removed (Rowan 1994, pp. 391-409). It is then not surprising that there are many examples reported of situations in which the public lose their trust in the people who use a similar top-down approach of risk information (Peters et al. 1997, pp. 43-54).

A second point of criticism is that followers of the technical approach mistakenly believe that risks are apolitical. A process that starts as an apparently simple transfer of risk information soon becomes a political issue around fundamental questions about the acceptance of risks (Kasperson 1986, p. 275). Experience in the debate on genetic modification speaks volumes here. More generally, the process in which social choices are made, and the degree in which the advantages and disadvantages of particular activities are distributed fairly over different groups in the community, can no longer be ignored. It has also become clear that a monopoly on risk information in order to create public trust is everything but desirable.

A third and last annotation: the technical approach assumes that the public observes risks in the same way as the originator although studies show that this is seldom the case. There are extensive study reports on public reaction to risks. A number of social and behavioural science disciplines have contributed to that body of knowledge (Rowan 1994, pp. 391-409). Those studies show that this so-called risk experience is not only associated with 'objective' risk characteristics of a situation or an activity. Social unrest occurs when a large group of people experience the relevant risk as threatening. This occurs for example when the consequences are insufficiently known by the experts or public, when people are exposed involuntarily to the risk and when an individual can do little to keep the risk under control. Almost always the public believes that the authorities and/or business have taken insufficient, inconclusive or untimely risk-limiting measures. It seems that citizens have less and less trust that government policy is adequate in risk situations (Slovic 2000).

Studies also show that the risk perception of the public is very different from that of experts. The views of the latter are especially based

on 'objective', statistical, actuarial data aimed at the social but not individual consequences of risks. Douglas and Wildavsky (1982, pp. 49-51) propose that when one studies the relationship between the physical characteristics of a risk and the risk perception one also needs to take account of social and cultural processes that contribute to how people interpret risks. Slovic (1993) observes that there are numerous mechanisms that assist social reinforcement of risks, such as media reporting, the involvement of various social groups (e.g., environmental groups), and the signal value of an incident or an accident for determining the seriousness of the risk.

### **The uniformity of experts**

These insights and experiences have left organisations scratching behind their ears when it is in their interest to work towards a more effective communication process. Assigning more priority to the view on risks in the community is thereby an important first step; the setting up of communication with the public along professional lines is a second. In practice this means 'professionalising' and especially making large investments in public relations and spokespersons, despite the fact that in the meantime the disadvantages of a purely instrumental approach are sufficiently well known.

The fact that experts talk less and less themselves leaving reporting to hired communication experts is an important cause of the apparent homogeneity that groups of experts show to the public. Seldom in history has one seen such a united lobby of biotechnologists facing an almost as homogeneous anti-lobby of a number of social organisations as in the debate on genetically modified foods. For the time being we should not expect anything different from food genomics, many applications of which will use genetic modification. Making visible to the public the presence of diversity, feelings of uncertainty and controversies are important conditions, however paradoxical, for a good dialogue with the public. Infallible scientists who always agree will not be trusted, and rightly so.

Experts themselves are finally the most credible source for this type of risk information, and that does not exclude communication experts, but gives them another role (Szerszynski 1999; Hanssen et al. 2001). It is too simple an argument to say that self-interest would be an interfering factor in the credibility of this information. When evaluating information from others, people are continually taking into account potential interests and this applies not only to experts. Lay people are in general fully capable of separating the wheat from the chaff as long as the diversity of information sources is carefully monitored.

Of course with the involvement of experts the differences in risk perception between the experts and the general public are not immediately

removed. In the longer term it is important to bring natural scientists into contact at an early stage with insights from other disciplines in this area, and many Dutch universities already apply this principle in practice. In the case of, for example, biotechnology that practice is also enforced by the social unrest around this topic. In the short term, it is important to actively support companies and researchers already balancing between the two worlds and who develop initiatives in this area. An example of this is the phenomenon of the Community Advisory Panels who currently function around a number of chemical companies in the Netherlands (Gurabardhi & Gutteling 2001).

## **5.8 Towards a societal agenda**

Despite the friction that is partly inherent in the communication between experts and lay people, it is important that more experts be present at forthcoming debates about food genomics. Many experts dissociate themselves from communication with a wider public or leave it conveniently to communication specialists or professional spokespersons. The experts themselves are primarily responsible for this communication. It may be possible to avoid the rebirth of the Frankenstein myth: it does not concern here obscure scientists preparing their genetic brews in backrooms; at least that must be proved. Transparency regarding any risks and the way in which scientists cope with them, including 'internal' conflict and uncertainties, is of great importance. Openness on potential risks will allow citizens to gain trust that experts themselves will monitor the safety and significance of their own research products (which is not the only guarantee that we must build in).

The attention for 'small scale' and acceptance of diversity in both the form of public initiatives and the degree of involvement of the public itself argued here are closely associated with this 'new' expert role. The more we come into contact with the 'day-to-day' significance of technology for both the public and experts, the more the debate on technological developments will approach its roots. Whatever this pathway will exactly deliver, it should spare us a predictable and difficult to digest debate in the (near) future.

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