

Parallel Session 22: Public perception of GMOs

PUBLIC CONCERNS TOWARDS GM FOODS ARE NOT DRIVEN SOLELY BY CONCERNS ABOUT THE TECHNOLOGY, BUT MORE STRONGLY BY CULTURAL DIFFERENCES

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Abstract

Public concerns towards modern biotechnology, particularly GM foods, are not driven solely by concerns about the technology, but are strongly influenced by cultural differences.

Much has been made of the contrasts between European and American acceptance of GM foods. Scientists and industry have advocated increased acceptance through public 'education'. However, this approach is not fully effective because it does not acknowledge that many attitudes are based on cultural traditions which drive acceptance of new technologies.

Further, decisions about acceptance of biotechnology applications are underpinned by personal and cultural ethics, which need to be understood to effectively address attitude change. Information and education on GM technology alone does not, therefore, address attitude formation fully.

Key words: cultural attitudes, GM foods, public concerns

It is clear even to casual observers that there are substantial differences between European and American attitudes with respect to any number of issues. These differences are especially stark when considering attitudes to biotechnology in general, and GM foods in particular. Indeed, Robert Zoellick, the US Trade Representative has called the EU's stance "Luddite" and "immoral" (when discussing Zambian rejection of US food aid in 2003). David Byrne, the EU's health and consumer protection commissioner countered that the EU's position on GM food "is that it is as safe as conventional food".

While this is official EU policy, it is clear that consumers and some member state governments do not agree. Indeed, politicians have won office after campaigning to ban 'Frankenfoods'.

When considering the debate about GM food, gross generalisations such as that of Robert Zoellick's are unhelpful. There are distinct, embedded differences between the cultures and beliefs of the EU and the USA, which need to be considered when discussing their opinions. These differences appear stereotypical, but are absolutely underpinned by distinct different cultural drivers.

One important distinction between Europe and the USA is in their relationships with food. There is a general European food culture, with emphasis placed on food origin and taste, whereas this is not so prevalent in America, who are large consumers of new and convenience foods. Many Europeans buy their fruit, vegetables, dairy products and meat from farmers' markets, whereas most Americans shop at grocery stores stocked with products from large food suppliers. Europeans tend to be more aware of how their food is produced than Americans, who are generally removed from farms and have less understanding about food production.

Europeans also tend to put priority on safe and proven foods, whereas Americans place more faith in food science. Americans are generally unaware that there is a high proportion of GM ingredients (approximately 70%) in their food and are not overly concerned if they do.

Canadian firm Environics has shown that attitudes towards GM foods are driven more by attitudes towards food and food safety than towards gene technology (Figure 2).

These issues over food are exacerbated by differing attitudes towards authority, leaders and regulation. Americans generally have reasonably strong faith in federal food regulation and science in general. British and European handling of several food safety issues in the 1980s and the BSE outbreak led to a significant lack of confidence in government and regulation; consequently progress of GM foods through the regulatory system has been slowed, with development of more stringent and transparent legislation to address the management of potential risks and concerns. In the wake of a recent range of food-related scares, most US consumers are still expressing a reasonable level of confidence in the safety of their food supply (Slagle, 2004).

Europeans place a higher priority on environmental concerns than Americans and are sensitive to campaigns by environmental organisations. Aligned with this is European suspicion and distrust of large multinational companies, which is largely the reverse to that of the USA. Europeans (and indeed many other cultures) are also strongly resistant to the influence of American culture.

It is interesting, however, to look at concerns towards GM foods across cultures in the context of other food-related issues. Figure 1 illustrates that concerns about pesticide use and food poisoning are, in fact, slightly higher in Australia than the UK, and GM food concerns were the lowest among food concerns in all three countries. A recent University of East Anglia opinion poll found that GM food was relatively positively evaluated (particularly when compared to climate change and radioactive waste), although it is noteworthy that a substantial minority still felt that GM food is a bad thing. Nevertheless,

most appeared neutral by indicating that GM food is neither good nor bad (Poortinga and Pidgeon, 2003).

This illustrates that context is extremely important for the consideration of attitudes to GM foods, and even more so when considering different cultures.

Another contextual issue in cultural decision-making is that of ethics. Ethical decisions made by individuals, regardless of the country they live in and culture that surrounds them, will also vary across a wide spectrum of opinion. A person's intrinsic (that cannot be altered) ethics can drive opinion more strongly than extrinsic (moveable, context-dependent) ethics. In making these decisions, reasons for food being modified can be as important as it being modified at all. Our research shows that communities are discriminating about individual applications of biotechnology and make decisions on the basis of the reason for the modification, who benefits or is harmed and who has undertaken the work.

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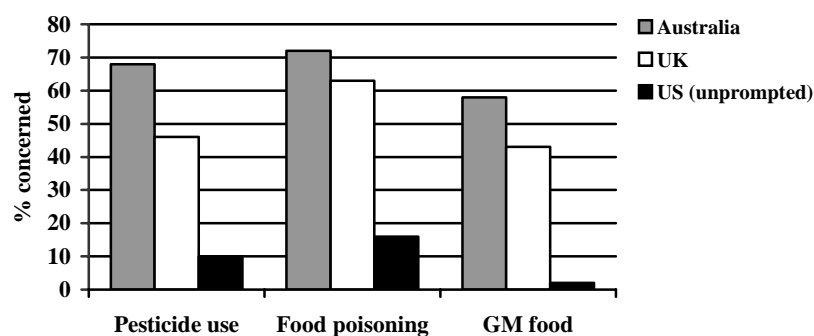
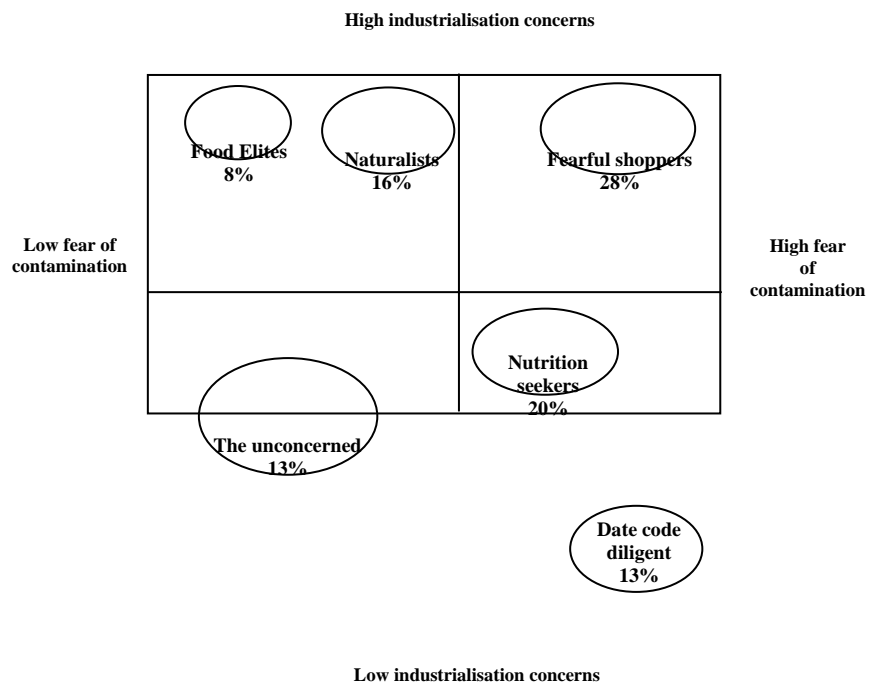


Figure 1: Relative food concerns by country.

Figure 2: Food concerns segmentation map (Environics International, 2001).



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BIOTECHNOLOGICAL CULTURE IN SPAIN: SITUATION AND TENDENCIES

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Abstract

The results of a report made for Genoma España on the biotechnological culture in Spain are presented. The report covers the period 1994-2002 and is based on data from different public opinion surveys and the analysis of the archives of the electronic versions of Spanish newspapers, and the Spanish News Agency EFE. There is a relatively optimistic vision of the biotechnological culture in Spain and the public interest in biotechnology has increased (the presence of these subjects in mass media tripled 1994-2002), focusing on new hot subjects related to research into stem cells and genetically modified foods.

Key Words: biotechnological culture, biotechnology, Spain

Text:

Context

During 2003, Genoma España elaborated the report “Avance del Estudio Estratégico de la Biotecnología en España” that integrates all the information available on the Spanish Biotechnology sector, using a series of numerical indicators from the Biotechnology OECD definition (OECD, 2003), classified in three areas: Science and Technology Companies; Venture Capital; Sociocultural and Public Understanding. In this paper the main results of the Sociocultural and Public Understanding section are presented.

Objective

The objective has been to measure the biotechnological culture in Spain. We have analyzed and processed surveys of public perception of biotechnology in the EU, the electronic archives of two Spanish newspapers (El País and El Mundo) and the state news agency (EFE), from 1994 to 2002.

Methods

We have summarized and commented available data from the following surveys of opinion on public perception of biotechnology:

- 1) The Eurobarometers “The Europeans and biotechnology” (1991, 1993, 1996, 1999 and 2002. European Commission).
- 2) Centre of Sociology Research Survey, “Spanish Opinions and attitudes on biotechnology” (1996 and 2001).
- 3) Advances on results of other recent surveys (not published): “The Spaniards’ Opinions and attitudes on biotechnology” by Milward Brown for Ullé, (2003), and “European Study on Biotechnology by the BBVA Foundation” (2003).

For the content analysis of mass media we used the following methodology:

- 1) Automatic and manual processing of the electronic archives of the media
- 2) Constructed week sampling techniques to reduce the quantity of information.
- 3) Comparative study of the national newspapers (“El País” and “El Mundo”) and the state news agency (EFE).

We used the “**constructed-week**” method to select a sample of the texts of the newspapers (editions 1994-2002) and the Agency EFE’s news (editions 1994, 1999 and 2002) to be processed. To select relevant texts, a double procedure was used: keywords were used in the search of the electronic archives, followed by a manual review to discard those texts that were not relevant. A total of 931 newspaper texts were selected and 666 texts by the Agency EFE.

Results

Conclusive data of the opinion surveys are the following:

- 1) Spaniards maintain a doubtful general attitude towards biotechnology and its applications, but are more optimistic than other Europeans.
- 2) They value medical and environmental applications more than food and agricultural ones.
- 3) The positive valuation is sometimes combined with negative attitudes concerning personal use of the biotechnological applications.

The main results of the media analysis are:

- 1) The subjects related to the biotechnology occupy an important place in analyzed mass media, on practically a **daily** basis.
- 2) The media’s interest in biotechnology is increasing because of the sector’s rapid expansion. References made to biotechnology have **tripled in 8 years**.

- 3) The news published are fundamentally reports from international events and sources, but the number of national news has increased.
- 4) Unlike the observed in previous studies, we note a deep transformation in the way biotechnological subjects are integrated in the culture through mass media. A **greater complexity and intensity** in the presentation of biotechnological data was detected. News on **scientific policy and its social impact become more important**, as opposed to more traditional scientific reports. All this indicates a change with respect to the traditional weak interest or participation of the Spaniards in the biotechnological subjects of public interest (Muñoz, E. 1998, 2002a,2002b).
- 5) The evaluative tone transmitted in the analyzed media is predominantly neutral or positive, despite the controversial character of many of the events and subjects.
- 6) Biotechnology is mostly organized in three areas in the media: human health or medicine, clonation and transgenic foods. In addition, human, animal or vegetable genetics are generally associated with generic references to science and technology. The media interest has moved from the traditional medical subjects (cancer, genetic therapy, etc) to subjects related to clonation and transgenic foods.

Conclusions:

The predominantly optimistic attitude of the Spaniards in relation to the biotechnology has traditionally been interpreted as resulting from the modest development of this sector in Spain (Gasquel G, 1997). Other data and opinions (J.L. Lujan and Todt, 2000) indicate that the collected data of the Eurobarometers do not reflect the true position of the Spaniards regarding the biotechnology and that this position is better reflected in other surveys (Cis, 1996, 2001). More refined analyses are needed to process the complex information on biotechnology (Muñoz, E. 1998). However, the data that we have obtained from the analysis of the media allows us to draw the conclusion that the Spanish biotechnological culture is undergoing a transformation, which can be resumed in the following terms:

- 1) The biotechnology plays an increasingly important role in the scientific culture of the Spaniards.
- 2) The interest is moving from the subjects related to the medicine (prone to a greater consensus between the population), to the subjects related to the reproduction and human clonation and with the transgenic food production which raise more controversial questions.
- 3) These transformations will probably change the Spaniards' perception of the challenges faced by the biotechnological culture, in a context that will probably be more polarized, with a more controversial content and with general attitudes approximating those of other Europeans.

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UK GM DIALOGUE: SEPARATING SOCIAL AND SCIENTIFIC ISSUES

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Key words: GM consultation, social issues, dialogue

Background

In 1996, GM soya and maize were imported into Europe from North America. At this time, general public awareness of the new GM foods was low. During 1998 and 1999 there was extensive coverage in the UK of the controversy surrounding GMOs in the media, some of it involving HRH Prince Charles, Dr Pusztai (the scientist researching GM potatoes), the UK Prime Minister Tony Blair, the Minister of Science Lord Sainsbury and the supermarket chain Iceland. Over the next 5 years GM crops and produce were also destroyed by activists, numerous legal actions were taken by organic farmers and supermarkets removed GM foods from their shelves.

The UK was still getting over the BSE crisis and in 2001 another agriculture crisis erupted with the Foot and Mouth epidemic exposing some less than hygienic agricultural practices. Thus the arrival of GM food into the UK occurred at a time of decreasing confidence in agricultural procedures and in the safety of food.

The UK government responded slowly to the growing concerns surrounding GM foods, waiting at least four years after the controversy surrounding GM food was in the public domain, announcing the launch of the consultation in mid-2002. But not only was the timing late in terms of public controversy, the public consultation occurred a few months **before** the scientists conducting the GM field trials were to announce their findings.

GM consultation – the three strands

The government accepted the advice of its strategic advisory body on biotechnology issues affecting agriculture and the environment and announced that it would promote a broad national debate where all voices could be heard.

The national dialogue on GM had three stands: the science review (led by the Office of Science and Technology, OST), a costs and benefits study (led by the Prime Minister's Strategy Unity) and a public debate (conducted by an independent steering board). Each strand was to focus on its remit however it was stated by government that each strand would interact and feed into each other.

The BA's involvement – the science review strand

The BA was commissioned by the OST to organise the open meetings as part of the GM science review strand.

The aim of the science strand was to review the current scientific knowledge on GM. The review was led by the government's Chief Scientific Adviser, who worked with a panel comprised of 25 prominent scientists in their field from a variety of backgrounds. The open meetings and the science strand website provided other scientists, and non-scientists, to raise scientific points of view.

From the outset of its involvement the BA indicated its preference to not separate the social and scientific issues, but this was not the remit of the science strand. As expected, social issues such as economics, politics, regulation, justice and consumer choice, were raised at the open meetings, however, these points were not discussed further by speakers or panel members.

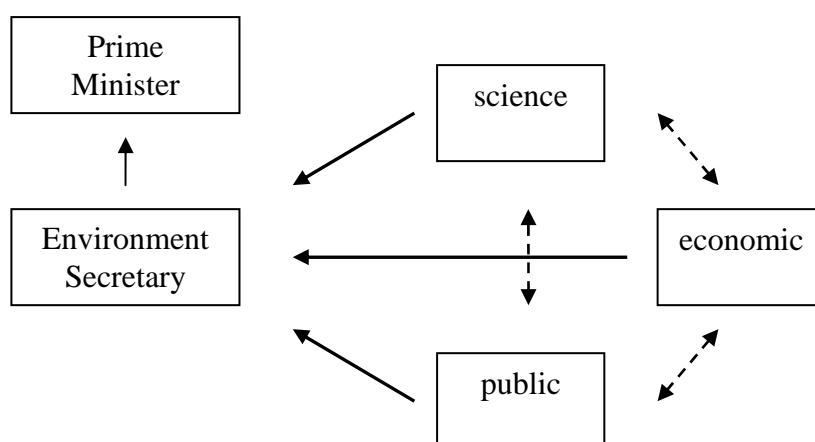
Each of the open meetings addressed a different area of science (food safety, biodiversity, horizontal gene flow, and future applications). The open meetings consisted of 3 or 4 speakers who were questioned by up to 4 of the science review panel members. Members of the audience were also invited to ask questions or make comments.

Observations

The GM dialogue was the largest public consultation on a science issue undertaken in the UK and has been promoted as an innovative procedure as well as criticised for its poor timing and implementation.

It was reported that “the activities of the [three] strands were different but closely related”ⁱ and that the other two strands would feed into the science strand, including the open meetings that the BA organised. However the science open meetings were not held in parallel with the other two strands and as a result there was minimal interaction.

In a Statement of Relationships it was reported that “each strand will report separately”ⁱⁱ feeding directly to the Environment Secretary where ‘a decision would be reached’. The diagram below represents this model.



Although the Statement of Relationships outlines the interaction of the three strands, there was no clear indication of these relationships when the BA was organising the open meetings, nor how the information gathered during the consultation would be used to make a decision.

The independent evaluation of the GM public strand concluded that there was a “lack of cross-fertilisation with [it and] the science and economic reviews”.

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At the outset the government stated that the public consultation would be open and transparent. And in many ways it was, the meetings were held in public, minutes were available on the websites, public views and opinions were gathered. However, one of the most important elements to public consultation, how it will feed into the decision-making process, was not apparent from the beginning of the process.

Further, separating the scientific elements from social issues restricted the interaction of scientists, stakeholders and members of the general public. The BA has observed over the past 3 years that scientists, as well as members of the public, benefit from face-to-face communication. Sometimes this has to be approached in stages to reach a common language, but separating public and scientific dimensions does not progress public engagement with the future of scientific developments.

The decision to separate the dialogue into three strands was taken at a high level at the outset and the whole exercise was constructed on that basis.

One positive outcome of the separate science strand was that scientists were able to discuss the level of uncertainty of current technology in public, albeit among a fairly expert set of people. In our experience this rarely happens when scientists are placed in the position of having to defend their research once an issue becomes controversial.

ⁱ <http://www.gmsciencedebate.org.uk/default.htm>, accessed on 9 May 2004

ⁱⁱ <http://www.gmpublicdebate.org.uk/docs/StatementOfRelationships.pdf>, accessed on 9 May 2004

ⁱⁱⁱ A Deliberative Future? An independent Evaluation of the GM Nation? Public Debate, Understanding Risk programme (a major research initiative based at the University of East Anglia and involving researchers from Cardiff University, Brunel University and the Institute of Food Research at Norwich. February 2004.

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DIFFERENCES IN PERCEPTIONS OF AGRICULTURAL BIOTECHNOLOGY: A COMPARISON STUDY BETWEEN GERMANY AND THE UNITED STATES.

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Abstract

To understand differing attitudes, knowledge and opinions about GM food, 29 qualitative interviews were conducted in Germany and the United States. Individual cognitive maps were created to examine relevant constructs. The findings suggest differences exist related to the perceived consequences of the technology. While Americans largely focus on the potential impact of GM food on their own lives, Germans focus much more on the potential impacts to the environment. These findings have important implications for understanding the differences in how GM is perceived in each country.

Key words: Public Opinion, Public Understanding of Science, Risk Communication

Context

Differences in opinion about agricultural biotechnology are substantial between the American and European publics. In addition to distinct public policy approaches, there may be inherent underlying perceptual differences that influence the perceived acceptance of the technology. Considering these differences may be useful in guiding policy makers and in shaping communications relevant to the global debate about genetically modified foods.

Objective

To determine what underlying differences exist between how Germans and Americans perceive GM food related risks.

Methods

Fifteen qualitative, face-to-face interviews focusing on knowledge, opinions and attitudes concerning genetically modified food were conducted in Germany and 14 were conducted in the United States. High school teachers were recruited as a

convenience sample by phone and e-mail from both countries. Interviews in both countries were conducted in English. Using a conversational format, participants were asked to tell what they knew about genetically modified food. After this initial conversation was exhausted, follow-up questions were used to probe the constructs produced by the respondents. Interviews were recorded, then transcribed verbatim and coded for common themes. Interviews were conducted with 11 males (4 American & 7 German) and 18 females (10 American & 8 German) and averaged 31.5 minutes overall. Participation fees were paid in cash at the end of the interview (\$25 USA & 30euro Germany). From these analyses, individual cognitive maps were created to examine the constructs used by participants to elucidate what they know and feel about genetically modified food.

Results

Overall awareness and knowledge of GM food seemed to be greater for the German participants than for the Americans. The German respondents were able to consistently provide more complete and elaborate arguments related to the pros and cons of the technology. In general there was also a greater sense of passion apparent in the German interviews than in those conducted in the US.

The defining constructs used to describe GM food also differed between the United States and Germany. Within each interview a dominant theme emerged. While health concerns were expressed in both countries, the German respondents were much more vocal about the possible environmental effects associated with the production of GM foods. Nine of the 15 teachers interviewed in Germany focused their conversations about GM food most heavily on their concerns about the environmental risks posed by producing agricultural biotechnology crops.

In contrast, 12 of the 14 American interviewees focused their concerns on the risks of GM foods for their own or their family's health. Only 4 Americans voiced any environmental concerns whatsoever

Themes within the German interviews reflected the perception of an ominous threat of "unintended consequences" or that the "long term effects are still largely unknown" for the environment. Of particular note were issues related to potential cross-contamination caused by gene flow from air pollinated plants such as corn and the possible ramifications of such cross pollination on the balance of the ecosystem. Many referred to the "unbalance of natural habitats" or the "upset of the ecological balance of nature" due to the introduction of "manufactured genes with the potential to change nature permanently on the genetic level." Others expressed the idea that evolution would somehow become unbalanced due to the effects of "monocultures reducing the gene pool." One interviewee surmised the environmental threat as the ever-present "danger in constant change and the human influence on our food". Several of the German interviewees had recalled hearing about specific environmental threats to wildlife such as to caterpillars, birds, and ants.

In contrast, few of these themes emerged for the Americans. Of the four American respondents who mentioned environmental concerns, these were

typically expressed as the need for long-term studies that would evaluate the possible effects on the environment. In only two interviews were concerns expressed about the possible effects to the “balance of the ecosystem.”

For the Americans, the primary health concerns were related to the perception that GM implied something artificial added to their food. These concerns were seen as analogous to the perceived food health risks related to the addition of hormones and antibiotics, particularly in animal production. Other concerns focused on the uncertain unintended consequences of consuming these foods over the long term. These included ideas that eating GM foods might lead to cancer or other diseases, or acute or chronic threats to human health.

Participants in both countries stressed a need for clear information regarding food safety risks that could be made available to consumers by objective sources. Most said they did not want this information from industry or government but instead would prefer and trust a source without any economic interests or ties to the biotech industry. For most, the subject of information sources was broached unaided and highlighted within a framework of past experience with BSE for the Germans and hormones/antibiotics for the Americans. The “mad cow” experience seems to have put Germans on a heightened awareness about food safety issues.

While agricultural biotechnology was understood by almost everyone in both countries as having great potential, for the Germans, this awareness was overshadowed by the possibility of “risky biological dangers”. Many in Germany were skeptical about industries strong economic motivations taking precedent over sufficient environmental impact considerations. There was an understanding that agricultural biotechnology has the capability to reduce world hunger but this was interpreted as problematic for the Germans since, “people who are hungry won’t even think about the risks or damage that could be done.”

Perceptions of an adequate time for testing to determine these possible risks were expressed within a range of 30 to 100 years for the Germans. Americans also stressed a need for long-term studies related to implications for human health but offered a much shorter time frame of 10 to 50 years. In contrast, while their health concerns were paramount for the American interviewees most said if they received information that GM food was safe then this would alleviate these fears.

Conclusions

Based on this small sample of respondents in the United States and in Germany, there may be clear differences in the primary concerns of consumers about GM foods in each country. Information materials, public debate, and policy decisions about the potential risks and benefits of GM foods should take these differences into consideration.

**THE PLACE OF POLEMIC: THE NEED FOR
POLITICALLY-ENGAGED SCIENCE COMMUNICATION
RESEARCH**

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Abstract

Over the past decade, the UK has experienced several periods of intense media debate about the development of GMO's. Concerned at the possible effects on public perceptions of GMO's, scientists and politicians alike have criticised this coverage as hysterical and sensationalist. Academic studies of the media coverage have reached more complex conclusions. Yet in some ways these studies are also framed by the values of the dominant actors in the controversy. In this paper, I hope to open up a space for science communication scholars to examine the assumptions which are often embedded in research in this field and to reflect on the political dimension of our work.

Key words: Media, Research, GMO's

Text

Studies in the sociology of science have demonstrated the ways in which science is informed by the wider culture. In this view, science is a social structure shaped by particular politico-economic conditions: science, politics and industry are not distinct spheres but overlapping and entangled activities. This is particularly apparent in the case of biotechnology. Experiments to develop herbicide-resistant crops or field trials into the ecological impact of such crops simply would not take place if it were not for an industrialised system of agriculture able to generate large profits from such technologies. The very concept of GMO's is predicated by the socio-economic culture in which it has emerged.

Yet the dominant players in scientific controversies frequently appeal to a view of science and society in which science is seen as an 'objective' enterprise entirely distinct from political or commercial interests. In a period of intense UK media coverage of the GM controversy in 1999, Prime Minister Tony Blair stated that: 'the worst way to proceed would be to raise fears in the public mind before the evidence is put to the people.' The best way forward, he said, was 'on the basis of scientific evidence' (*The Sunday Times*, 14 February 1999, p.16).

At one level, this is entirely sensible advice. But at a deeper level it implies

that the concerns raised by the public are irrational fears, that the only issues at stake are technical ones, and that the relevant evidence can be generated without reference to public concerns. In other words, it assumes a strict demarcation between science and politics. It delegitimises social responses to questions such as what constitutes a sustainable approach to agriculture or how we can safeguard food security worldwide, and instead promotes technically-framed questions about how to grow cash crops most efficiently without jeopardising public health. Blair's demarcation of science from politics and his prioritisation of a technical framework was repeated by many other actors, including scientists and journalists, in the media coverage of the debate.

We might expect academic analyses of the media coverage of the GM controversy to expose implicit assumptions such as these. Yet several significant studies have failed to adopt a critical position. For instance, Durant and Lindsay's analysis of the 1999 media coverage, which was extensively cited in the influential Lords' Report on Science and Society (House of Lords, 2000), found that certain newspapers explicitly decided to campaign on the GM issue. Durant and Lindsay concluded that this 'was a decision to politicise coverage of GM food' (p. 21). Like Blair's statement, this assumes a prior state in which GM food is unpoliticised; a time in which the science and politics of GM were clearly demarcated.

Further, Durant and Lindsay reproduce the concerns of dominant actors about 'sensationalist' headlines (p. 47), failing to discuss instead the ways in which such headlines draw on humour and intertextual references to caricature events; they refer to the acts of environmental protestors as 'vandalism' (p. 10); and they problematise the increase in media coverage rather than the media compliance which suppressed coverage of earlier events.

Durant and Lindsay's report is not without merit. Their content analysis shows that certain events triggered an increase in media coverage and that certain papers played a leading role in the subsequent debate. But, like other content analyses, they do not present any close reading of the actual contents of the texts they analyse. In failing to do so, they are unable to reveal the ways in which the debate might have given voice to a deep-seated (and entirely legitimate) public unease about corporate influence, the globalisation of food supply, and the reliance on technocratic approaches to farming. Even the impressive longitudinal study of European media coverage of biotechnology co-ordinated by Durant, Bauer and Gaskell (1998) suffers from similar problems. The identification of media frames, such as 'progress', 'economic' and 'global', suggested by the media texts themselves, eclipses the frames which are absent altogether. Such an approach accepts the dominant framing and looks at variations within such framing, rather than challenging the framing itself and the implicit demarcations upon which it is based.

All analysis is an act of interpretation. In content analysis, the interpretative act is hidden behind a screen of numbers which conjure an aura of objectivity. When science communication researchers aspire to objectivity, they mimic the positivist claims of science – the very thing they should be exposing. As scholars we have a duty to use our intellectual resources to uncover the ways

in which our conceptual landscape is delimited by dominant powers. We must expose the ideological forces which structure the institutions of science and the media and we must be aware of, and honest about, the ways in which our own work is ideologically informed. Collecting numbers is not enough. We must produce rational evidenced arguments which challenge injustices and protect the things we care about. We must be political.

References

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Parallel Session 22: Public Perceptions of GMO's

GENETIC ENGINEERING AND SOCIAL DEBATE

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Abstract

The present debate in many European Union (EU) member states on genetically modified organisms (GMOs) highlights the influence that social groups can exert over technology. Social actors which were not directly involved in the development of a technology but affected by it can successfully influence that technology's trajectory.

The article analyzes the influence which social actors not directly involved in regulation or product authorization exerted on the development and adoption of GMOs in Spain, one of the EU member states. Especially in the area of GMO regulation, non governmental organizations reached decisive influence, forcing the regulators to radically change the basic philosophy for regulation as well as adopting the role of a nexus between civil society and the biotechnology industry. The results obtained from the analysis highlight the importance of trust in the decision makers as well as the entire decision making process.

The results which will be presented in this paper are based on an analysis of pertinent documents as well as research interviews with key actors related to the social conflict about genetically modified (GM) crops and foods in Spain. Among them were the members of the respective regulatory bodies, especially from the Spanish National Biosafety Commission, as well as representatives from non-governmental organizations, the biotechnology and agro-food industry, the scientific community and trade unions.

However, an easy solution to the problem of decision making appears difficult, since the actors' arguments stem from their underlying visions about technology and its place in current society. Despite those fundamental limitations, more participatory decision making processes would allow for improved communication and understanding between actors. That way, preferences and values of different social groups could be better taken into account and help steer policy and product development towards socially accepted goals.

Parallel Session 22: Public Perceptions of GMO's

GENETICALLY MODIFIED PLANTS DEBATE IN THE SPANISH PRESS: POPULARIZATION OR PERSUASION?

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Abstract

In the last few years, the information about genetically modified (GM) plants in the daily press has generated a widespread public debate about benefits and risks related to this technology. The different actors related to the development of this biotechnology use various lexical-semantic naming strategies to refer to transgenic plants. Taking this communicative reality into account, the aim of this presentation is to analyse, within a discourse analytic framework, the variation of names used in the daily press. This resource is used in the representation as well as in the popularization of the knowledge about `transgenic plants`. The various names used depend on the social, economic, legal and geographic contexts of press discourse. Using a computer program, DiScientia Transgênicos, this discourse analysis is based on a systematic analysis of the contents of the articles on transgenic plants in the Spanish newspapers El País and La Vanguardia.

The analysis of the lexical-semantic characteristics of naming shows that the representation and the popularization of knowledge about genetically modified (GM) plants has an instructive and persuasive purpose. The instructive purpose is related to the objective of providing scientific information to the general public. The results of our analysis show that the origin of the information in various social domains (science, industry, politics, NGOs, etc.) determines the naming variation and defines the persuasive characteristics of science communication.