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Science on display: the representation of scientific controversy in museum exhibitions

Sharon Macdonald and Roger Silverstone

This article raises issues concerning popular representations of science, and in particular of scientific controversy, through a case-study of the treatment of food poisoning controversy in a museum exhibition. It is argued that the science that is created for the public is shaped not only by the overt intentions of the exhibition makers but also by constraints inherent in structural aspects of the exhibition-making process and exhibition philosophies. More specifically, we argue that some of the strategies intended to foster public understanding of science create problems for the representation of scientific controversy, and, more generally, for certain types of science. The article also gives attention to scientific sources and the politics of the museum's relationship with the scientific community and the food industry. The contrast with other media is made throughout the article as a means of highlighting the different strategies employed, and constraints experienced, by the various institutions involved in putting science on display for the public.

According to the Royal Society report on the public understanding of science, museum exhibitions are 'a major informal mechanism for effecting the public understanding of science'. The same report also suggests that such exhibitions might be well used for the presentation of issues of current public concern as 'a contribution to a more scientifically informed discussion about public issues'. This paper is about the institutional and cultural mediation of science in museum exhibitions. Based on a detailed empirical study of the representation of a particular controversial issue of public concern in an exhibition in a museum with a clear commitment to public understanding of science, it raises conceptual and practical problems of putting scientific controversy on display.

Scientific controversy raises important questions for the public understanding of science in that it threatens the assumption that the popular mediation of science is simply a matter of transmitting facts gathered by scientists to a more or less receptive public. In scientific controversy the 'facts' are contested, and at least some aspects of the politics of scientific research may well be acknowledged. In some respects, of course, this makes scientific controversy an analytically misleading category. As sociologists and historians of science have argued, scientific facts are always negotiated into existence and there is always politics involved in their construction. These processes of negotiation—of scientific knowledge being shaped by social, cultural, political and economic factors—are not confined to the scientific community but
stretch all the way through the various institutions and publics involved in the represent-
ation and appropriation of science. This is not to say, however, that the construction
of science is necessarily overt or cynically manipulative. Indeed, it is often the
inadvertent and unintended consequences of human decision-making, of institutional
structure and of social context which require particular attention; for these too play a
role in creating the science that is presented to the public.

The purpose of this article is to examine a particular instance of the representation
of scientific controversy in order to illuminate the way in which the complex processes
involved in putting science on display inevitably shape the finished product, and not
always in ways that its makers might have intended.

A museum exhibition case-study

Although there has been a good deal of research undertaken on the role of the mass
media in scientific controversy, the majority of that work has concerned itself with
either macroscopic questions of how much coverage particular controversies, and
particular sides of controversies, get, or microscopic questions of final representa-
tions in isolation from the detailed processes of their making. What is largely missing from
the literature is description and analysis of the complexities of the relationship between
the processes of production of a particular representation and the end-product. Such
studies as there have been have focused almost exclusively on television and the press.
There has been relatively little research carried out on the representation of scientific
controversy in museum exhibitions.

Much of the research on media representations of scientific controversy makes a
distinction between dissent within the scientific community and its social, moral and
political ‘overlay’ once in the public domain. Two contentious assumptions are
involved here: firstly, that disagreements among scientists are not socially and ethically
inflected; and secondly, that disagreements among scientists are necessarily primary in
the generation of a scientific controversy. Accepting these assumptions limits the scope
of research on the role of the media in scientific controversy to questions of bias and
balance. It fails to understand that the representation of accompanying scientific
information often displayed as a neutral background to the controversy can itself
create a biased or unbalanced picture. Important though issues of bias and balance
surely are, we would go further and argue that they cannot be fully assessed without
taking into account the context of the representation, including the representation of
‘background’ science; and that the media—or more specifically, as in our case-study, a
museum exhibition—can shape not just the content of the science on display, but also
the nature of that science.

The case-study material which follows is drawn from our study of Food for
Thought: the Sainsbury Gallery, a permanent exhibition which opened in the Science
Museum, London, in October 1989. The study entailed a researcher being present on a
day-to-day basis for much of the time during the making of the exhibition. In our
discussion here we focus on one controversy in detail, that of food poisoning, though
Food for Thought also covers topics related to other controversial issues such as
irradiation, additives, and the nutritional values of various foodstuffs, such as types
of fats. The food poisoning example is of particular interest, however, because it
concerns an issue which did not become topical until plans for the gallery were well
under way, but which was nevertheless included. More specifically, the coverage
focused on salmonella in eggs, listeria, botulism and bovine spongiform encephalopathy (BSE or mad cow disease).

The museum staff responsible for creating Food for Thought maintained, once the food poisoning controversy had established itself as news, that ‘we must include something on food poisoning . . . we can’t ignore it’. They even claimed, despite the practical problems of including the subject once exhibition planning was well under way, that ‘because of what has happened in the news it would be unfair to our visitors not to deal . . . with food poisoning’. In other words, the fact that they included such material is itself illustrative of an important and formative feature of the philosophy of this particular museum exhibition. The exhibition feasibility study produced by the museum staff (henceforth, the Food Team) before the exhibition began set out this philosophy clearly. In particular, the exhibition was to direct itself towards public understanding: it was ‘to promote an understanding of the relationship between diet and health’, and the science was to be as accessible as possible. It was also intended to appeal to the public, to deal with interests and concerns within the public domain, and to be ‘determinedly populist’. Controversy was recognized as an important aspect of this, as has long been the case with other mass media. The feasibility study states: ‘The gallery should not be afraid to tackle controversial matters of public concern such as world food problems—shortages, food mountains (witness Band Aid), and additives’. It is not surprising, then, that when food poisoning became a matter of public concern, the Food Team argued strongly that it should be included in the gallery. However, it is also part of our argument that the way in which the controversy could be represented was limited not only by the stage in the exhibition’s making at which the Food Team tried to incorporate it, but also by other parameters which had been set by the particular public understanding philosophy which had been devised. In particular, some of the exhibition strategies specifically selected to help make the exhibition attractive and accessible to a lay audience, such as those of simplifying text and using hands-on exhibits, themselves created problems for representing controversy. In a telling comment during the making of Food for Thought, the exhibition manager remarked: ‘One of the problems of this gallery is that once you start mapping the philosophy onto the ground, the philosophy falls apart’.

The food poisoning controversies which the Food Team attempted to include in the exhibition had already been foregrounded, and in a sense created, by other media. Increasingly, exhibition makers tend to see museums as another form of mass media. While this may be useful, it must also be recognized that there are important structural features of museums which make certain types of representations more problematic. Controversy is one of these. While new stories and new angles on topical issues can be turned over rapidly by both television and the press, Food for Thought is a permanent exhibition, due to be in place for ten years or so. Even though updating is envisaged, its mechanisms are slower and its range of possibilities more constrained than those of the other mass media. One of the major concerns of the exhibition makers, then, in deciding whether and how to include food poisoning was to find a way of dealing with a possibly ephemeral issue.

The food poisoning controversies

In the mass media

At the time when plans were drawn up for a gallery of food and nutrition in the
Science Museum in early 1988, there was little in the press about food poisoning except for the occasional report of salmonella outbreaks at hospitals and the like. There was certainly no inkling of the major public controversy that was to make front page headlines and primary television news items by the time the gallery opened in October 1989.

There were indications of a growing problem of salmonella-infected eggs during the summer of 1988, but it was not until November 1988 that the issue really began to take off. In December, Edwina Currie, junior minister at the Department of Health, claimed that most of the egg production in the United Kingdom was infected with salmonella. This claim became the centre of a controversy not just about salmonella in eggs but also about the career of this particular Member of Parliament (long a subject of media interest). In many ways the food poisoning controversy illustrates Dorothy Nelkin's point that public controversies with scientific content are as likely to be voicing social and ethical concerns as to be expressing particular conflicts within science itself. In the food poisoning controversies of 1988, the main questions were: was there an actual increase in the number of salmonella outbreaks or merely an increase in reporting; and, if the increase was real, what were its causes? The debates were often highly politicized and it was made clear in the mass media that there were vested interests in certain types of answer to the questions. Assuming that there was indeed a significant increase in food poisoning, possible causes suggested included intensive farming methods and contaminated animal feed, new food processing methods, and poor food hygiene and storage in the shop or at home. Each of these possible causes in turn suggested different responsible parties and different courses of action.

So although the controversy was constructed as one involving potentially solvable scientific problems, the overall impression given in the media was that for the time being value-free and objective science was not readily available—or worse still was even being suppressed. For example, coverage was given to the government cutting funding to a unit researching salmonella in eggs; and there were allegations that the Ministry of Agriculture, Fisheries and Food had become too closely tied to the interests of the agriculture and food industries at the expense of protecting consumers. In particular, the media voiced complaints from consumers and consumer organizations about the tardiness of the government in issuing health warnings. Not only did the resolution of the controversy look distant in 1989, but the content of the controversy also changed as listeria, botulism and BSE became part of the food poisoning crisis, and took their turns as front page news.

In this context, the task for the Food Team was highly problematic. They were dealing with a politically sensitive and fast-changing issue—for such is the nature of controversial subjects which maintain themselves as news by a constant addition of fresh facts and opinions.

In Food for Thought

How, then, was the controversial issue of food poisoning represented in Food for Thought? As can be seen from Figure 1, the food poisoning section of the gallery is fairly small. Located at the edge of the 'Food and the Body' area of the exhibition, it consists of five panels of text and illustrations and one interactive exhibit. Each panel in the section is headed with a yellow warning triangle bearing a skull and cross-bones
Figure 1. The layout for Food for Thought: The Sainsbury Gallery (adapted from the Science Museum's education resource pack).
and the words ‘Food Poisoning’, a graphic indicator of what was perhaps felt to be a dangerous subject (Figures 2–4).

The interactive exhibit (Figure 3) consists of cooking implements which show up ‘contaminated’ areas under ultra-violet light when a button is pressed. The purpose of this exhibit is to illustrate the idea that apparently clean cooking implements may in fact be contaminated with bacteria. Its title is ‘Hidden Menace’, and the accompanying text contains both descriptive information, such as ‘food poisoning germs are much too small to see’, and also prescriptions for avoiding food poisoning: ‘You should always wash your hands and kitchen equipment very well’. This mixture of ‘judgement-free fact’—something which the Food Team generally claimed they aspired to while acknowledging that it might be unattainable—and prescription characterizes much of the presentation in this part of the exhibition.

The panels deal in turn with the following questions. The first, ‘What is food poisoning?’, begins with the question: ‘Have you ever had an upset tummy—or the
runs?" It goes on to give the number of recorded cases in 1989, followed by a calculation that the chances of getting food poisoning are 'about the same as getting an electric shock' (Figure 2). The text seems to move between a representation of the issue as serious and as fairly low risk, a strategy that is continued in the rest of the text, which reads: 'Food poisoning can be very serious. Some forms kill or cause miscarriages. Most cases are less serious'. The panel carries two black and white illustrations of magnified food poisoning bacteria, labelled with their Latin names, markers clearly of the world of science. Juxtaposed with this is a cartoon presentation.

Figure 3. The display panel 'How do germs get onto food?' and the interactive exhibit 'The hidden menace'. (© The Trustees of the Science Museum)
of the panel 'What causes food poisoning?', a description of the symptoms of food poisoning and of 'the two main ways bacteria affect the gut', together with a prescription: 'If you think you have food poisoning, see your doctor'. The next panel, 'How do germs get onto food?' (Figure 3) lists 'the most common sources' of food poisoning germs, and includes the statement: 'If we store or prepare food carelessly, at home or in a factory we spread germs from these sources onto cooked or clean food'. This is one of the few mentions of factory contamination, but it is not continued into

Figure 4. The display panels 'Why is food poisoning increasing?' and 'Golden rules for avoiding food poisoning'. (© The Trustees of the Science Museum)
the illustrations which show a contrasted clean and dirty kitchen. Another panel asks 'Why is poisoning increasing?', gives figures on the number of reported cases and goes on to cover the food poisoning controversies (Figure 4). The fifth panel is a list of 'Golden rules for avoiding food poisoning', a set of prescriptions for ways in which consumers can protect themselves at home (Figure 4).

Only one panel, the one entitled 'Why is poisoning increasing?', addresses the food poisoning controversies themselves (Figure 4). The rest give public health advice and foreground what in most representations of scientific controversy is called background science: they explain in simple terms how bacteria cause food poisoning, the symptoms of food poisoning, and what can be done at home to prevent it. This putting of the controversy into the background of the representation is interesting both because it was the controversy which provided the impetus for the inclusion of the subject in the gallery and also because it is the inverse strategy of that typical of the other media where the controversy itself is foregrounded. The panel which does mention the controversies does so very briefly. Two alternative explanations are given for the question 'Why is food poisoning increasing?', each expressed in a sentence of almost identical numbers of words: one sentence putting the consumer case, the other that of the producer:

Food poisoning cases are up—22 000 reported in 1987, over 44 000 in 1988.

Scientists are convinced that the increase is real but argue about the reason. Some say that new ways of raising animals, preparing or cooking food produce infected food. Others say that we ignore basic hygiene at home and do not treat our food properly. (Our emphasis)

Unlike the surrounding panels, this panel is clearly dated and science itself is represented not as a collection of facts but as something human and negotiable: food poisoning cases are 'reported', scientists are 'convinced'; they 'argue' and 'say'. The science here is unlike that represented in the rest of this area of the exhibition, and in this way controversy is marked off as different from other scientific knowledge. This is reinforced by the images on the panel which indicate the possibly ephemeral nature of the subject (see Figure 4). One, a collage of newspaper-type images including an egg-seller's placard for 'salmonella free eggs', is captioned 'Eggs and chickens were at the centre of food poisoning cases in 1989'; while the other, a colour photograph of cattle, acts as a signpost to what might during the lifetime of the gallery become a big issue by highlighting 'concern about a new disease, bovine spongiform encephalopathy' (something which has, of course, proved to be the case).

Although the controversy itself is formally represented as an equally weighted argument, much of the rest of the display focuses on the individual consumer's role. The interactive display of dirty kitchen implements, the contrast between images of clean and dirty kitchens, and, most of all, the list of 'Golden rules to avoid food poisoning'—all of which are precautions to be taken at home—can be seen to compromise the formal notion of 'balance'. As far as the two sides of the controversy presented in the panel above are concerned, it is only the ignoring of 'basic hygiene at home' that is mentioned. The other side—'new ways of raising animals, preparing or cooking food'—receives no further elaboration at all.

Thus, while aspiring to 'balance' in its direct representation of the controversy, the final presentation of the controversial subject of food poisoning represents the subject in the main part of the display as one in which the consumer bears prime responsibility.
This emphasis on consumer responsibility, together with the fact that food poisoning is not covered in the areas of the gallery dealing with food production—'Food in the Factory' (Figure 1)—contributed to the fact that some reviewers claimed the gallery represented a vision in line with that preferred by the food industry. Food for Thought did indeed receive considerable sponsorship from the food industry. However, it would be inaccurate to attribute the end-product simply to the sponsors' wishes. On the contrary, neither the original intention to cover controversial subjects nor the effort that was made to include this particular controversial issue testifies to sponsor involvement. After all, the easiest course of action would have been to simply ignore food poisoning altogether; at least one of the food industry sponsors, commenting on plans to include the topic, said this would have been preferable to even such coverage as there was. So how did this particular representation of the controversy come about?

The making of the representation

At the time when food poisoning became a front-page controversy, preparations for the gallery were well under way and the space—conceptual and physical—in which to fit the subject was already limited. By the end of 1988, with the opening date some ten months away, the exhibition was at a stage that the Team referred to as 'concretizing'. This metaphor is itself suggestive of a sense of gathering immutability in the exhibition's momentum. Creating such a large new gallery as Food for Thought—810 m² in area and costing some £1.2 million—in less than two years is regarded as rapid in the museum world. By the end of 1988, when including something on food poisoning was felt to be imperative, 'story lines'—outline accounts of the content of each area of the exhibition—had been written, and the actual physical space in which these were to fit had been allocated. Some of the objects to be included in the exhibition had been acquired, and many others had been identified. The making of some interactive exhibits and computer games had begun. If the gallery was to open on time (and it was important for a number of reasons that it should), then it was crucial that there be no major changes to cause delays in the gallery's progress.

So where could the food poisoning controversies fit within the already solidifying story-lines of the exhibition? The decision reached—a decision which, as we see below, in many ways evolved as a consequence of prior decisions rather than as an isolated outcome of discussion—was that it should be included in an area of the gallery entitled 'Food and the Body'. Although in the finished gallery the food poisoning panels no longer carry the area title of 'Food and the Body', the fact that the section's contents were conceptualized within this individual- and consumer-centred area very much shapes the way in which the controversy is represented. In fact, the story of the construction of the gallery and of its consequences for the representation of the food poisoning controversy begins very early on in the gallery's planning process.

By the time the food poisoning controversy became news, the exhibition's display philosophy had already been defined. A number of key public understanding of science principles had already been put into practice: the scientific and technological were to be introduced via the familiar and everyday; text was to be easily comprehensible; and there were to be many interactives and other visitor-involving display media. The limits of the subject had also been drawn, and of particular significance for the later representation of food poisoning was a decision not to cover agriculture or anything...
on food before the factory. Various pragmatic reasons were given for this decision, including the Museum’s urban site and the existence of proposals to establish a new rurally located Museum of Food and Farming as an outstation of the Science Museum. However, the absence of primary food production processes (agriculture) in the gallery, reinforced later by an identification of secondary production processes (factory processing) more or less exclusively with technical rather than with economic or social issues, made for an attenuation of the relationship between production and consumption and for an overall downplaying of production. This in turn reinforced the emphasis on consumption in the exhibition, which was a consequence of the exhibition strategy to begin with the familiar and the everyday.

The emphasis on the technical rather than the economic, the social or even the political aspects in the display of food production technologies had another consequence, namely the absence of any consideration of the possible role of particular factory processes (the production of frozen cooked dishes, for example) in contributing to the increase of food poisoning. Food poisoning could have been included in the production section of the gallery—and at one stage the plan was that it should be. So why wasn’t it?

Food poisoning first makes its appearance in the gallery plans while the issue is still a relatively low profile public concern (July 1988), and it does so under the rubric of ‘food safety’ in an area of the gallery which was later to become identified as ‘Food and the Body’. The motivating question for this whole area was: what do you need from food? The implicit answer was: as well as nutrients and energy you need enjoyment and safety. Food safety, then, being located within an area dealing with individual food consumption—the contact between food and the body—was very much about the contamination of food at home. A note added to scripts written in July 1988 states that food safety during manufacture is to be covered ‘in relevant sections’—that is, in the sections of the gallery dealing with food processing.

Once again, however, this was not to be; and it was not to be because of the emergence, midway during the period of the gallery’s design, of a new ‘conceptual framework’ which resulted from a significant meeting between the Food Team and the Museum’s Director. At this meeting in November 1988, some ten months before the gallery was due to open, it was agreed that the Team should create what was referred to as a particularly ‘rigorous’ conceptual framework as an aid to the public’s understanding of the exhibition. Although the outline of the new conceptual framework was devised in less than a month, the detailed process of ‘rethinking’ the exhibition took until February 1989, and therefore occurred, coincidentally, at the same time as the food poisoning controversy was raging in the mass media. The ‘rigorous’ conceptual framework used an aim—question format to define the content of each area and section of the exhibition, and it operated with a vertical, pyramidal or taxonomic type of logic rather than a sequential, narrative or collage system. In other words, for each level of the exhibition’s organization—from that of the exhibition as a whole, through the areas and sections, down to the individual exhibits—an aim (the ‘message’ to be conveyed to the visitor) and a question (which the content of the exhibition would address) were set (see Figure 5). Wider aims and questions were to subsume smaller ones in such a way that every exhibit could be justified by reference up the taxonomy to, ultimately, the overall aim and question of the exhibition as a whole. During the process of ‘rethinking’ the exhibition, the overall aim became: ‘to help people understand the impact of science and technology on our food’; and its linked question was: ‘how does science and technology affect what you eat?’. Within
Aim. To help people understand the impact of science and technology on our food

Question. How does science and technology affect what you eat?

Food and the body
- Aim. To explain what the body needs from food
- Question. What do you need from food?

Preparing and preserving food
- Aim. To show the historical development of food preparation and preservation in industry and in the home
- Question. What happens to your food before you eat it?

Food and society
- Aim. To show influences on food choice
- Question. Why do we eat what we eat?

Trading food
- Aim. To show how the development of trade and distribution systems have affected the availability of foods
- Question. How is food availability affected by trade and distribution?

Food in the future
- Aim. To show how science and technology may affect your food in the future
- Question. What will happen in the future?
(b) Aim. To explain what the body needs from food
Question. What do you need from food?

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Energy

Aim. To explain that food provides the energy we expend in daily living
Question. What does the body use energy for?

Nutrients

Aim. To explain the nutrients we need from food
Question. What are nutrients?

Satisfaction of the senses

Aim. To explain that all the senses are involved when we eat food
Question. What makes you enjoy your food?

Safety

Aim. To explain that our bodies need safe food
Question. What is food poisoning?

Figure 5. The conceptual framework of the gallery, showing (a) the overall structure, and (b) the question and aims of 'Food and the Body'.
such a framework, of course, factory sources of food poisoning would have been an appropriate subject, but an emphasis on 'single, unambiguous messages' at each level of the exhibition's making meant that the 'Food in the Factory' section did not deal with the possibly negative effects of food processing. Useful though this exhibition strategy of single, unambiguous aims and questions may have been for aiding the clarity of communication, then, it was not necessarily well suited to dealing with controversy, which is essentially a matter of antagonistic or clashing information. Nor was this strategy well suited to the late addition of new and contrasting elements, such as would be required to keep up with a fast shifting issue.

It was during the process of devising the unambiguous messages of the conceptual framework that the sections of the exhibition which included information on food processing became focused on concerns with how certain familiar foodstuffs are made in the factory. The earlier intention to include a much wider assortment of loosely connected information on the chosen foods was dropped in favour of a tighter rationalization, though not without certain misgivings. Although one Team member quietly voiced the worry that a pristine presentation of the production area of the exhibition could 'become a hymn to the food processing industry', these fears were not pursued in discussion. Instead, the public understanding of science strategy of clarity was the dominant concern at this time. Significantly, it was under the pressure of rethinking the exhibition into its new conceptual framework that social and contextual issues lost out to more traditional definitions of science. This shift was often justified in terms of 'we are the Science Museum after all'. In Food for Thought this shift was particularly evident in the area of the exhibition which became 'Food in the Factory'.

Despite the emphasis on rationalizing, clarifying and finalizing the content of the gallery, the Team did not wholly jettison one of their other public-oriented aims, that of dealing with matters of public concern. In deciding what to include, however, they had to make judgments about whether an issue would remain one of public concern until, and after, the opening of the gallery. Discussions amongst the Food Team during the period of refining the conceptual framework show a resistance to including a subject which might no longer be controversial by the time of the gallery's opening just less than a year ahead. For example, in a presentation to the Museum's Director of the reworked intellectual structure in December, shortly after Edwina Currie's controversial claim, the Team claimed that they would not deal with the salmonella in eggs scare because 'it will be a dead issue by the time the gallery is open'. The salmonella in eggs controversy, they suggested, would have reached closure: 'all the infected flocks will have been disposed of or something'. On the other hand, they judged that the more general food poisoning issue was 'not going to go away' and that BSE in particular was going to become a major scare.

As the messages for the gallery as a whole were refined, those of the 'Food Safety' section became more pointedly directed towards food poisoning. The message of the section was changed from 'Most food we buy is safe. The way that we treat food at home can make it unsafe' ('The Food Exhibition—Outline Story', November 1988), to: 'our bodies need safe food. What is food poisoning?' In keeping with the section's rationale in the conceptual framework, the title remained 'Food Safety' until the following Summer, by which time the public controversy prevailed and it was changed to 'Food Poisoning'. As the Team member responsible for the area put it: 'Safety is now being called Food Poisoning because, quite frankly, there doesn't seem to be any point in calling it anything else now'.

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Deciding on which scientists to contact to check the scripts produced by the exhibition makers was a difficult matter. As we have said, the controversy had been constructed in the public arena as one in which disinterested parties were absent: such is the construction of a public controversy. So who were the makers of *Food for Thought* to consult? The answer to this question depended to some extent on what they wanted from their scientific contacts. In news-focused media it is standard practice to depend on relatively few scientific sources, and to seek out spokespersons willing to articulate counterposed perspectives. This is not, however, the form of relationship that science museums typically have with the scientific community. During the research undertaken as part of an exhibition's making, a wide range of scientific contacts will be made. This of itself—in contrast to the polarized selection method of the news media—tends to diffuse controversy. Very often, in making a wide range of scientific contacts, a gradation of opinions emerges, rather than the traditional two sides. Science museums tend to consult academic scientists for legitimacy and authority; and industrial scientists for objects and technical assistance, and perhaps as part of a sponsorship relationship. *Food for Thought* had links with both these types of scientists and, on a more ‘one-off’ basis, with others such as government scientists and scientists working for consumer organizations.

At the time when it was devised, the ‘Food Safety’ section of the gallery was not one which had forged links with any particular set of scientists. Significantly, however, there had been an intention to use industrial contacts for advice on this and more general nutritional matters as well as on the more specific industrial features of the gallery. However, the Food Team found that scientists employed by the food industry were unwilling to proffer information which might be detrimental to the food industry in any way, even if their own company’s product was not involved. The different types of scientific contacts which the exhibition makers used had their own interests and visions with regard to both science and to the museum itself. The role of a museum, and particularly of a national museum like the Science Museum, is that of legitimating as well as of representing science. As such, the exhibition makers feel a responsibility not only to their visitors but also to the world of science. In the case of *Food for Thought* this dual responsibility lead to some dilemmas over the representation of the science within the ‘Food Poisoning’ section of the gallery.

Although the ‘Food Poisoning’ section of the gallery was written in draft without substantial direct scientific contacts (though literary sources were used of course), the resulting text was discussed in detail with the Department of Health and, like the majority of the text in the gallery, was sent to the academic advisers and the industrial sponsors for what the covering letter described as ‘checking for factual accuracy’. The choice of Department of Health scientists as the main contacts was itself indicative of the direction that the representation of food poisoning in the gallery had taken. Perceived as somewhere between the Ministry of Agriculture, Fisheries and Food (pro-agriculture) and consumer pressure groups like the London Food Commission, they were a moderate choice. What is more, the Department of Health scientists had an educational role. The meeting with them generated an interesting discussion of two rather different framings of the relevant science: the science that was ‘scientifically known’; and the science that could be communicated to a public who were to be encouraged, for public health reasons, to take responsibility for themselves. For example, while it might have been advisable to caution pregnant women against eating...
soft cheese, scientists were uncertain as to the significance of the risks in statistical terms. The Food Team decided, finally, having already made the decision to include prescription in this section of the exhibition, to give the advice in any case (‘Pregnant women should not eat soft cheeses or pâté’—see Figure 4).

The meeting with the Department of Health scientists also highlighted a tension between what was ‘scientifically known’ and what was comprehensible to a lay public (a tension which the Food Team experienced in a number of instances during the making of the exhibition). For example, the story-line of the exhibition described salmonella releasing toxins which cause food poisoning. Although this is an account which school children and even university students may be taught as established scientific knowledge, it was said by one of the Department of Health scientists to be ‘the story a St John’s ambulance man [non-professional paramedic] would know’.17 In other words, it was deemed to be useful but not strictly accurate. In fact, the scientist claimed, the way in which salmonella operates in the body is not well understood. Contact with scientists, then, can make even the presentation of ‘background’ science problematic, because scientific ‘facts’ may disappear with more refined scientific knowledge.

None of the scientific contacts, however, made any notable changes to the representation of the controversy itself, though some of the industrial commentators complained that including food poisoning in the exhibition was inappropriate. As one industrialist remarked: ‘I didn’t think the point of the gallery was to turn people off food’. However, none of the complaints were vehement, and this may reflect the moderate line taken by the exhibition as a whole.

Conclusions

The representation of scientific controversy in an exhibition is the outcome of a complex series of negotiations involving both particular exhibition strategies and particular physical and chronological constraints. We have argued that by the time the food poisoning controversy was included in Food for Thought it had been substantially defined by parameters that had already been set. Spatially, there was the fact that the section of the gallery into which it was to fit was already identified as an area to do with food consumption and bodily processes. This had the consequence that the controversial subject was separate, both physically and logically, from both agricultural and food industrial production. Temporally, the controversy was to be dealt with in a manner that would not become too rapidly outdated. Institutionally, the museum’s status as a provider and legitimator of authoritative and unbiased science was to be upheld and the perceived wants and needs of visitors were to be addressed.

More specifically, the representation of food poisoning was shaped by a set of strategies which could all be characterized as being in line with the Science Museum’s wider aim of promoting public understanding of science, but which in practice sometimes came into conflict with one another. The representation of food poisoning is configured by the attempt to present accessible, objective, value-free science on the one hand; and on the other—a rather different conception of what public understanding of science should entail—the attempt to provide the public with scientific information which should be useful to them in their everyday lives. However, the latter is oriented to the consumer and domestic contamination of food, and this may skew the overall picture or balance of the representation of this controversial issue.
Other potential conflicts between different public understanding of science strategies are illustrated in the case-study. In particular, as we saw in the Food Team’s experience with their scientific contacts, the aim of providing ‘good’ and ‘accurate’ science, or of giving the public a better vision of the processes of science, may not fit readily with an aim of providing easily accessible and comprehensible science. The choice of representational strategies and styles shapes not just the content of a particular controversy, but also the nature of the science on display. Whether science is represented as something related to or distant from everyday life; as a negotiated, human matter or as objective, permanent knowledge; as useful or arcane: these options are built into different representational philosophies, politics and practices.

The representation of scientific controversy in museum exhibitions is not simply a matter of putting controversy on show, nor does it necessarily involve following the techniques used by other media. Our argument is not that the representation of scientific controversy is impossible but that there are certain features of the museum exhibition medium, and the institutional and organizational imperatives in which it operates, which make the representation of ongoing controversy problematic. The example which we have described here is certainly not intended as indicative of the only way that museums might address controversial subjects. Its point is to highlight some of the specificities of the medium which come to bear when exhibition makers attempt to deal with controversy. And although we have used an example here which arrived late relative to the making of the gallery itself, many of the same issues apply to any controversial subject and we could illustrate them with other examples from our case-study. In particular, the long construction period of a major exhibition, and even more its long lifetime, are disincentives to the display of controversy. By its very nature, controversy is a shifting, ongoing process until closure is reached; and once closure is reached it is no longer interesting. Controversy, as we have said, is by definition public, and it is inevitably shaped, sustained or allowed to wither away by the mass media. In taking on controversy, the museum has to negotiate a route through two rather different relationships to science: that of the mass media, and that of its own established tradition. That the treatment of controversy in a museum exhibition may in the end be neither as dramatic nor as balanced as its makers may have intended is in part a function of the meeting of these two different relationships.

Although there is much change afoot in museums and science centres, and although shifts such as the emphasis on public understanding inevitably alter the nature of science on display, the museum is still a distinctive institution and medium with its own distinctive problems and contribution. This is not to say, of course, that its displays are wholly uniform; just like television and the press, it is capable of encompassing a good deal of diversity of approach. However, the parameters in which that diversity exists are not infinitely malleable. Time, space, relationships with science and industry, the status and expectations of the museum, objects, collections, and relationships to the public all create an impetus towards particular types of representation.

Of course, our discussion has left an important piece of the puzzle out of place. This piece is the visitor: the Food Gallery’s consumer-visitor. Here a number of questions remain to be answered. Early indications from our research on visitors to Food for Thought suggest that while they do bring to the exhibition their own agendas and do approach it through a frame of their own—a frame defined by biography and personal interest as well as certain cultural understandings—they do not often seem able or willing, even at their most committed, to challenge the kind of textually defined
framing of controversy, as we have identified it in our discussion. We conclude with a final point and a modest suggestion. We have argued that the representation of scientific controversy—an important element in any attempt to involve the various publics in science in an informed and critical way—is particularly problematic, both for museums in general and for the Food for Thought gallery in particular. One crucial sui generis factor is the space–time character of the museum as medium. But equally we pointed to the museum's dependence on other media for the definition of the terms of reference for the controversy and, in significant degree, also for information about the controversy. Given these two sets of factors it might be suggested that the museum is in a unique position not necessarily to represent the controversy, but to create space and time in which to represent the representation of controversy in the other media by creating a display of that representation. In other words, museums might incorporate into their displays reports and analysis of other media coverage of controversy. By engaging in this way with parallel attempts to represent scientific controversy, museums could offer an important commentary on the processes of public understanding as they relate both to the public and to the relevant science.

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References

References given as 'Notes' are to the notes and transcripts of recordings made during the research. Unless specified otherwise, the quotations are of statements made by the members of Science Museum staff responsible for defining the content of the exhibition.

5 Notes, 13 November 1988.
6 Notes, 30 June 1989.

Notes, 13 December 1988.


Notes, 16 December 1988.

Notes, for example 16 December 1988.

Notes, 13 December 1988.

Notes, 30 June 1989.


Notes, 24 August 1989.

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