Mad Cows and Politicians, a National Catastrophe

The Problem

Bovine Spongiform Encephalopathy (BSE) is an example of a policy disaster. A study of BSE points to a series of mistakes, delays, and subsequent attempts at concealment. The net result of the crisis can be measured in cash terms at a cost of around £4.5 billion to the Treasury. Less quantifiable is the cost of human and animal suffering.

There is no doubt that a regulatory failure occurred, but what matters is whether the failure was, or should have been, foreseeable. If it is shown to be unforeseeable then there would have been little that could have been done to prevent it. The Public Inquiry, conducted by Sir Nicholas Phillips, officially opened on Monday, 9 March 1998, should provide an answer. The purpose of the Inquiry was, in the words of Sir Nicholas,

“to look at the evidence afresh and form our own views and to do so without any preconceptions or prejudice. If we are confronted with a conflict of scientific opinion, we may well conclude that we are not in the position to resolve that conflict. We shall, however, be able to identify what was known about BSE and CJD (Creutzfeldt Jacob Disease) at the various stages of the story, and to form views of the adequacy of response in the light of that knowledge. The Government has set up this Inquiry so that the facts can be fully investigated and a fair and considered judgement formed of the adequacy of response in the light of what was known at the time.”
These opening remarks point to a crucial aspect of the Public Inquiry; the obvious attempt to remove hindsight, by adopting a contemporaneous position when examining issues. The problem that faces the Inquiry is where to begin, and indeed that problem is critical to all researchers into BSE and similar diseases, from both scientific and social research positions. The opening remarks also point to an aspect of the problem that has confounded the politicians and civil servants involved in the BSE crisis, the inability to resolve scientific conflict. This is of crucial importance when, as is the case with BSE, government policy is entirely determined by the scientific advice it is given. This problem is not unique to BSE, indeed one of the better documented examples concerns the first test explosion of an atomic bomb, where the scientists working on the project were split as to whether it would catalyse an uncontrollable chain reaction.

BSE was officially recognised by the Central Veterinary Laboratory in November 1986\(^4\). However, on 22 December 1984 at Pitsham Farm in Midhurst, West Sussex, veterinary David Bee was called to examine a cow behaving oddly. His initial diagnosis proposed a connection between the symptoms of the cow and the close proximity of imported Argentinean ponies. A kidney biopsy confirmed the presence of a nematode, however subsequent events showed this was not the cause of the disease. Over the next few months other members of the herd showed symptoms of the disease, and by now the first cow had lost co-ordination. Bee decided to send a brain sample to the Central Veterinary Laboratory in Weybridge. However, when the animal was loaded for transport to a nearby slaughterhouse it went mad when it saw a sheep on the trailer, and had to be shot rendering the brain useless for investigation\(^5\). When the tenth case emerged, nine cows had already been destroyed, Peter Stent, the
farmer, drove the affected animal to the ministry vet. Carol Richardson, a junior pathologist, at the Central Veterinary Laboratory, diagnosed a spongiform disease. She had seen many cases of scrapie in sheep and goats, and the similarity was startling, indeed a colleague confirmed bovine scrapie. This diagnosis, officially archived as Pitsham Farm Syndrome, took place on 19 September 1985, just over a year before BSE was officially recognised. Gerald Wells, Carol Richardson’s immediate boss, was away at the time of initial diagnosis. In the case notes were two crucial omissions, firstly the previous nine suspected cases were not mentioned, and secondly the reference to scrapie was omitted. This led Wells to confirm her post mortem, but he assumed that the results were attributed to poisoning of unknown origin. This might not have mattered at this point had Richardson not taken maternity leave, going with the mistaken assumption that this new scrapie disease was under investigation. It is almost certain that Pitsham Farm Syndrome was really BSE, and it is impossible to evaluate the effect of failure to recognise BSE at this stage. A communication breakdown clearly occurred. Whilst words like pure chance, bad luck, or serendipity have little place in an academic investigation, the coincidences leading to the failure to identify BSE at an earlier phase in its development are difficult to quantify in any other way. In addition, the way the disease started could be consequential upon an event that took place over twenty-five years ago.

The Flixborough explosion in 1974, where 28 people were killed, is thought likely to have played a major role in the BSE disaster. It is probable that had Flixborough not happened the BSE outbreak would never have occurred. The aftermath of this explosion was that certain chemicals were banned and, coincidentally, some of those chemicals were used in the rendering trade. Removing
those chemicals from use meant that the heat used in the rendering process could be
reduced, saving the renderers cash, and probably allowing the BSE pathogen to enter
the food chain. Changes to the rendering procedures simply went ahead and there
were no questions raised concerning the safety of the changes. Whether this provides
evidence of a much earlier regulatory failure, or that the consequences were simply
unforeseeable is impossible to quantify, but the seemingly unrelated Flixborough
tragedy led to changes in procedure in a totally unrelated area.

Therefore the events leading to the disastrous consequences of BSE, can be seen as a
series of unfortunate coincidences, rather than a simple failure for regulatory bodies
or their servants. Although coincidences did occur, they cannot disguise or excuse the
failure of all sections of government. From the point where suspicion was aroused,
and the consequences showed signs of becoming more serious, lack of understanding
by politicians, compounded by the inability of the existing regulatory architecture to
get to grips with the rapidly evolving problem, combined to produce an end result
which ruined many lives and cost billions. Ruin in two senses, either their livelihood
was destroyed, or worse the unfortunate few who may have died from nvCJD (New
Variant Creutzfeldt-Jakob Disease) or had their lives blighted through fear of the
disease. Peripheral to the issue, but of crucial relevance, is the spin-off effect of
increasing distrust by the public to governmental food safety architecture. For
example, there are strong reasons to believe that BSE led directly to the raging debate
about the safety of genetically modified organisms associated with the human food
chain.
The safety of the food we eat is based upon scientific testing, and indeed the European Union (EU) has in place a rigorous scientific testing programme before agricultural products can be marketed. The scientific assessment is about ‘probabilities and not certainties’. Lack of certainty manifests itself in two distinct ways, firstly, risk which carries a known probability, such as mortality rates for diseases, and secondly, a genuine uncertainty, where there is no known probability. The latter is true of many food safety issues, as there is frequently not sufficient experience or data by which to assess the ability of the product to cause damage to health. ‘Risk assessment’ is the conventional process used by policy makers in determining the efficacy of a product where probability is determined by experience. In cases of true uncertainty such an approach would be useless and ineffective as it would simply be based on guesswork. True uncertainty has seen the precautionary principle develop to deal with such problems. The 1992 Treaty of the European Union explicitly includes the objective of protecting human health. The attitude of government and regulators about quantifying risk raises questions about freedom of choice for the individual. The ban on ‘bone in beef’ is a classic example where the risk is minimal to the individual. The ban raised the obvious debating point about freedom of choice in a liberal society, government had to choose between provision of information or the imposition of a ban, or doing nothing.

A major aspect of the BSE problem concerns the question about why it became such an enormously high profile issue. The profile of food safety issues prior to BSE, even where serious food poisoning was involved and people died as a result, demonstrates that concerns raised are short lived, and are rarely repercussive. When new media coverage occurred it coincided with new outbreaks. This is exemplified by examining
bacterial food poisoning. Cases are reported where they occur, are rarely fatal, and as the outbreak dies out public awareness and media interest disappear.

The reason why BSE has remained such a high profile issue is elusive. The difference between BSE and other food scares is that the cause is unknown and the future uncertain. The equivalent of a scientific brawl about the causative agent of Transmissible Spongiform Encephalopathy (TSE) has taken place from the mid 1960’s onwards. The uncertain future concerns the extent to which BSE is a zoonosis, a disease that passes from animals to humans.

After a long delay the BSE file was passed from the Ministry of Agriculture, Fisheries and Food (MAFF) to the Department of Health (DoH) on March 3 1988, and upon receiving it, the Chief Medical Officer, Sir Donald Acheson, recorded in his diary the what are hopefully not prophetic words, “We have another plague in Egypt.”. Although it was not clear whether and to what extent there was likely to be an outbreak of New Variant Creutzfeldt-Jacobs disease, nor whether BSE in the beef supply will be responsible.

As far as veterinary medicine is concerned, BSE claimed plague status. Plague is defined in the Oxford English Dictionary as a deadly contagious disease spreading rapidly over a large area. However this definition is too narrow, and hides a deeper and more terrifying populist conception. When the Black Death devastated Europe in the 14th century, between a third and half of the entire population died. The origins and dissemination of the disease remained a mystery until the latter part of the 20th century. These two factors, devastation and mystery, led to the term plague being
embellished to include scourge, divine retribution, evil, and calamity. The medical community refers to the influenza outbreak following the Great War as a pandemic; it was popularly called a plague. AIDS (Autoimmune Deficiency Syndrome) is a more recent illness to achieve plague status. The Black Death, the influenza pandemic after the Great War, and AIDS share a common theme, devastation and mystery. Whilst a much better understanding of bubonic/pneumonic plague responsible for the Black Death has emerged, it took nearly seven hundred years. The origins of the influenza pandemic after the First World War are still not known, and AIDS is the subject of much debate as to why it occurred, and indeed this provided a basis for all sorts of unfounded speculation.

Epizootics can also achieve plague status, indeed the term ‘rinderpest’ is German for cattle plague, and plague status is exemplified by the panzootics of rinderpest which were responsible for an estimated 200 million cattle deaths in 18th century Europe. At the end of the last century rinderpest devastated societies in the southern part of Africa where cattle were the major determinant of wealth. In Britain between 1865 and 1867, rinderpest was responsible for the most dramatic episode in agriculture until the BSE disaster. BSE, or bovine spongiform encephalopathy, has led to the slaughter of about 2.6 million cattle in the UK. Remarkably, the plague status of BSE was established by 1996, when only 160,000 cases were officially recognised. This was only half of the mortality rate associated with rinderpest between 1865-7, when the British herd was approximately six million strong, compared with an estimated 11.8 million today. This assertion is bolstered by Professor Richard Lacey, who claims that, “BSE had become a major veterinary plague” as early as 1989.
when government figures were predicting a death rate of between 17,000 and 20,000, although within months this was exposed as a gross under estimate.\textsuperscript{20}

The final aspect of the BSE problem concerns scale. Lord Justice Phillips in his opening remarks of the Public Inquiry expands upon this issue. There was a preliminary meeting on 27 January 1998, after which The Committee and senior members of the Inquiry team pursued a course of education in order to acquire the background knowledge necessary to follow some of the evidence that will be given. Professor Tony Minson of the Department of Pathology gave instruction in elements of microbiology. Professor Ian McConnell of the Department of Clinical Veterinary Medicine talked about animal feed, food hygiene and the working of the lymphoid system. Professor Nick Day talked on epidemiology and risk assessment. A lecture on toxicology was given by Professor Tony Dayan of St Bartholomew’s Hospital. The Inquiry faces a task of enormous difficulty and the sheer scope is a major problem. Five Government departments, with the Ministry of Agriculture and the Department of Health at the forefront, were involved with BSE over a period of about ten years, and the inquiry ‘\textbf{intends to give detailed consideration to what was done in those departments during that period}’\textsuperscript{21}. During that period, about 150 Ministers served in the relevant departments, and all have been written to\textsuperscript{22}. The number of Government and consultant scientists and civil service administrators involved is, of course, greater, and all need to be identified and questioned. Over a hundred scientists and over 300 civil servants and \url{http://www.bse.org} Ministers had been contacted before the official opening\textsuperscript{23}. Sir Nicholas commented that “\textbf{It is obvious there is little point in asking witnesses about events that happened ten years ago or even two years ago, without referring them to the relevant}
contemporary documents”24. The documentary evidence is formidable. The significant documents have to be tracked down in a number of different locations, identified, evaluated logged and filed.
**The Science**

In the early 1920’s doctors Creutzfeldt and Jakob were the first to recognise the rare disease that now bears their name, its victims were usually between 50 and 70, and its incidence was about one per million of population. Their research led them to dissect the brains of victims, and they found the tissue full of tiny holes resembling a sponge, hence the name spongiform is now used to describe these distinctive transmissible encephalopathies\textsuperscript{25}.

Chronologically the next phase in the study of spongiform disease was an examination of scrapie, a disease of sheep, and so called because affected animals try to scrape of their fleece. Despite scrapie being endemic within the national flock in the UK little, if any, research was carried out. In Australia and New Zealand the disease was also endemic, and the governments of both countries resorted to mass slaughter of all affected flocks. The economy of both countries was heavily reliant upon exports of meat and wool. The result of the cull is that scrapie is no longer endemic. However, when Iceland attempted to deal with its scrapie problem in the same way, and replaced stock with scrapie free Australasian stock, a different picture emerged. For several years scrapie seemed to have disappeared, but then began to gradually return. The only conclusion that could be drawn was that the infectious agent was present within the sparse Icelandic pastures. Furthermore, it meant that the infectious agent was able to survive some of the harshest climactic conditions anywhere on Earth.
From Iceland, the story moves to the tropical rainforest of New Guinea. Anthropologists, explorers and missionaries were making contact with primitive tribes for the first time. They were hunter-gatherers, some were head-hunters, and most indulged in cannibalism. A partial exception was the Fore (pronounced 4A) tribe. The men and boys did not practise cannibalism, but hunted their food. The women were left behind, and not having sufficient food, ate parts of the dead, and handled the brains in a funeral rite. Kuru, a word that meant shaking in the tribal language, was a disease that affected mainly woman and young children. It ran a very unpleasant course and the inevitable outcome was death. Only 5% of adult men were affected.

A missionary noticing the illness contacted Dr Carleton Gajdusek, a medical research scientist. Gajdusek flew to New Guinea and began work on the disease, together with the assistance of Dr Zigas who remained in the USA. Gajdusek discovered that the neurons that were responsible for balance and co-ordination had been destroyed. He was unable to prove that the damage was caused by an infection. This is the fundamental problem with spongiform disease. Bacteria and viruses cause antibody response, and although in the 1950’s microbiology was not as advanced as it is today, identifying a disease through the antibody response was not difficult. He recorded that, “If the degeneration of Kuru is a post infectious phenomenon the antecedent illness must be so mild or subtle as to escape detection by the natives and ourselves.” When he arrived back in the USA, he performed the standard challenge test, injecting brain tissue from Kuru victims in to laboratory animals. By this method he was able to transfer the disease to several monkey species, and gibbons. He had shown the disease to be infectious, but the cause remained a mystery. The Nobel
Assembly awarded a Nobel Prize to Dr Gajdusek in 1976, twenty years after his initial research.

Little research was carried out on TSEs; they were fascinating to many scientists, yet research money was not forthcoming because the incidence rate in humans was very small. They were therefore of no interest to governments, the public, or the media. This situation changed in the mid 1960’s when the multi-million dollar American mink industry was threatened by a scrapie type disease, later to become known as transmissible mink encephalopathy. Research showed that many of the mink had been fed on a diet of cattle offal and other remains from abattoirs. As with Kuru, no antibody reaction could be found. The dead mink showed no antibodies, nor protein as a by-product of viral replication within the host. Yet as with Kuru, brain matter from the dead mink was used to infect laboratory animals. Further experimentation took place where solutions containing brain matter from dead mink were subjected to extreme conditions before transplantation into laboratory animals. The solution was heated to 360° C; 70° C is sufficient to kill most bacteria. It was subjected to x-rays and gamma rays, dissolved in sulphuric acid, and strong alkaline solutions, and the brain matter was burnt until all that was left was ashes. Despite this extreme treatment, in all cases laboratory animals were infected.

Since this research, the scientific community has fractured into three distinct schools. Researchers at Yale proposed that an unknown virus caused the disease. Other researchers proposed a virino, an incomplete virus composed of naked nucleic acid and protected by proteins found in the host. The third proposal was put forward by
Stanley Prusiner, who suggested an abnormal K-resistant protein, later to become known as a prion. Beyond the main theories are many others, some obviously the work of unqualified cranks, but others seriously worked propositions. These include:

- BSE derived from scrapie
- BSE is a rare sporadic disease of cattle
- BSE derived from CJD
- Organophosphorus insecticides involved
- Knackers yard greaves involved in transmission
- Bacterial toxicosis causes BSE
- BSE is a lysosomal storage disease
- Horizontal BSE transmission through the eye
- A list of feed changes that may be involved
- BSE is an autoimmune disease
- BSE transmission is via a campylobacter -like organism
- Alkaloidal glycosidase inhibitors cause PrPc structure change
- Smarden spill caused toxic induction of initial BSE outbreak
- Thioldisulphide interchange chemistry caused PrP configuration changes
- Bovine pituitary hormone use caused initial spread of disease
- Oligonucleotide involvement in transmission agent
- BSE cases seen are vertically transmitted but a much higher proportion of herd is asymptomatic. 27

Of the above hypotheses, all have pros and cons. A couple require a little more explanation. Knackers yards, as a by-product melt down tissue and sell greaves, often
with a high fat content to renderers. This has taken place for many years and the output from knackers yards does not seem to have been fully investigated. Thus, the practice must be considered a likely candidate for introducing the causative agent for BSE into the cattle food chain. An explanation of the Smarden Spill also is necessary, methyl bromide and fluoracetemide were released from the Rentokil factory at Smarden in Kent. Groundwater contamination reached a peak in 1963, and the cattle that died as a result of chemical poisoning were sent to knackers and renderers in the 1960s. The BSE epidemic first appeared 5 miles from this site. The rest have varying plus and minus factors, but these are based on complex science, and it would be inappropriate to consider the science within this case study. This illustrates that the science is far more demanding and complex than exercising a choice between just three hypotheses.

There is one curious point that requires further mention. It concerns the fact that sheep exported from the UK did not develop scrapie in New Zealand and Australia, although they were genetically the same range as the ones that developed the disease in the UK. However no further sheep, including the offspring of the infected sheep developed the disease. This suggests that an environmental factor is involved and the possibility must be considered that a similar factor is also involved in BSE in Europe.

The subsequent award of a Nobel Prize to Prusiner is controversial. Prusiner’s lab technician, David Bolton, first isolated the protein, and Leroy Hood, previously of the California Institute of Technology, together with Charles Weissmann, of the University of Zurich, was responsible for the molecular characterisation. Pat Merz, an unqualified New York housewife, announced that she had spotted particles unique
to the brains of laboratory animals deliberately infected with scrapie for experimental purposes. This was almost a full year before Prusiner made his announcement about his prion. She made this discovery in 1981 largely because of her expertise in the use of the electron microscope, and she called the particles “scrapie associated fibrils”. Prusiner may have been ignorant of her finding when he subsequently announced the same discovery, calling the particles “prion rods”, but the time gap caused controversy. He claimed that these prion rods contained the deadly prions, and yet the postulation remains unsupported by any scientific measure to the present day.

Many scientists believe that the popular acceptance of Prusiner’s hypothesis, for it is yet still to be proven, is extremely premature. The award of a Nobel Prize for an unproven hypothesis, especially one, which challenges conventional biology, can be as seen the triumph of conjecture over fact, something which by scientific standards is almost unheard of. The scientific journals New Scientist and Scientific American use quotation marks when prions are mentioned. Quotation marks simply signify uncertainty. This view is perhaps best explained by the following comment by Hugh Fraser. Fraser, formerly director of the Neuropathogenesis Unit at the Institute for Animal Health in Edinburgh, and an opponent of the prion hypothesis, commented, “I’ve always said that if the prion hypothesis were proven, then he would deserve the Nobel Prize. But all that the genetics proves is the need for a protein.” Breaking his usual rule of not speaking to the press, Prusiner acknowledged the continuing controversy surrounding his work. “Awards do not vindicate a piece of science,” he told the small band of reporters who tracked him down to a meeting near Washington DC. “Only data does that.” The fact is that whilst Prusiner’s theory is
a front runner, there is still no empirical evidence to confirm his hypothesis. The causative agent and method of transmission are still unknown.

The major theme of BSE in scientific terms is one of best guesses. Until BSE, transmissible mink encephalopathy (TME), chronic wasting disease of mule deer and elk (CWD), and scrapie in sheep, were the only known forms of spongiform disease in animals (excluding humans). Whilst scrapie was first clinically recognised in the mid 18th century, although it may have been introduced in the 15th century with the importation of Merino sheep\(^3\), the other animal spongiform diseases were only discovered in the last thirty years. TME and CWD are not natural diseases but the consequences of animal husbandry practices\(^3\). The known human spongiform diseases are:

1. Creutzfeldt-Jacob disease (CJD), described by Creutzfeldt in 1920 and also identified by Jacob in 1921;
2. Gerstmann in 1928 and Gerstmann Straussler and Scheinker in 1936 identified a disease known as GSS;
3. Kuru a disease found in the Fore tribe of New Guinea was first described in the late 1950’s;
4. Iatrogenic CJD cases have been identified over the last three decades and are associated with contaminated surgical implements, corneal and duramata grafts, and pituitary growth hormone and pituitary gonadotrophin obtained from cadavers;
5. Fatal familial insomnia (FFI) was first discovered in 1986;
6. and finally new variant CJD (nvCJD) was described in 1996.\(^3\)
Little is known about the human spongiform diseases, except that CJD is sporadic and the mechanism of transmission is unknown, GSS is familial caused by an as yet unidentified gene, but is autosomal and dominant, CJD and GSS have been shown to be transmissible in the laboratory. Kuru is a naturally infectious disease, although the infectious agent is unknown. It is transmitted by eating brain matter of the dead in a funeral rite practised by the Fore tribe.

All TSEs, both human and animal, cause neuronal cell death, spongiform changes in many regions of the brain, and amyloid plaques are produced. The plaques produce a cellular protein called PrP. The infectious agent is very heat stable, normal cooking temperatures do not destroy it, it is resistant to radiation -normally fatal to viruses and viroids, and finally it is sensitive to protein modification agents. Little is known about PrP, but it does appear to be an essential ingredient for spongiform disease. Experiments in mice have shown that over expression of PrP results in spongiform disease, and that mice not expressing PrP are not susceptible and are unable to propagate spongiform diseases.

In a paper published in Nature, Collinge et al, describe how it is very likely that BSE jumped the species barrier and infected humans. Their view is best summed up with this quote, “The spontaneous occurrence of a novel prion strain that is the same in 22 individuals in the UK over the last two years seems extraordinarily unlikely as an explanation for nv-CJD. The alternative conclusion is that these cases have arisen from a common source of exposure to a new prion strain, the lack of any history of common iatrogenic exposure indicates that this is a new animal
strain."\(^{36}\) Confirmation of this can be found in the October 1997 edition of Nature, in an article about strain typing experiments undertaken by DR M Bruce. This seems to confirm that humans have been infected with BSE, making the disease a zoonosis. Two factors remain to be decided if this evidence is correct, what constitutes an infectious dose, and how strong is the species barrier. These two factors will determine the extent of severity of a possible future epidemic of nv CJD.

Research into BSE obviously could not happen until it became a recognised disease, and when it first appeared MAFF took the view that it was similar to scrapie. Because scrapie was not thought to present a danger to humans little action was taken by MAFF. This position changed in 1987 when Wells et al published data showing that a cow had developed a spongiform encephalopathy. This data radically challenged the position of MAFF, and they set up the Southwood Committee to advise them on what action should be taken to avoid any risk to humans and cattle. By this time, it was clear that the disease was appearing all over the country. The need for a firm scientific basis for decisions relating to the protection of public health and the control of the disease has been recognised by the UK Government since the early stages of the epidemic. Since BSE was first diagnosed, the British Government have spent over £117.4 million (projected Government spend to 1997/1998) on research into BSE and the other TSEs. The two principle funding bodies are the Ministry of Agriculture Fisheries and Food (MAFF) and the Biotechnology and Biological Sciences Research Council (BBSRC).
1990 saw the establishment of the CJD surveillance unit in Edinburgh to find out if BSE was giving rise to extra cases of CJD. It is reasonable to conclude that research into BSE is driven purely because of its potential as a zoonosis.

There is much innovative research into human spongiform disease, perhaps none more so than elements of the Human Genome Project. Research into intron DNA is beginning to show the presence of pseudogenes or ghost genes, and the sequencing of chromosome 20 is of particular interest. On 8 Sep 99 the GenBank entry was updated and an article published called, Ataxia in Prion Protein (PrP) Deficient Mice is Associated with Upregulation of the Novel PrP-like Protein Doppel. The article is based upon extremely complex genetic research, but it seems like sporadic CJD, nvCJD, scrapie, and BSE will all have to be re-examined for ghost prion alleles and mutations, including those of regulatory type. Research into intron DNA, sometimes called junk DNA, is at the leading edge of genetic science, and appears to confirm the existence of the prion protein. This research is in its infancy and it will take some time before it achieves general scientific acceptance.

Scientific research into spongiform disease has been sparse and controversial, and most research into BSE is to try to find a test that discovers the infection in a live beast. Even post mortem testing is controversial. Tests that could identify cattle infected with bovine spongiform encephalopathy after slaughter are being ignored by MAFF. The EC carried out an experiment last year in which four companies with tests were sent unidentified samples, some from animals showing BSE and others from New Zealand-born animals free of BSE. The results, published in July 1999, showed that three of the companies - Enfer of Ireland, Prionics of Switzerland and
CEA of France - scored 100 per cent in identifying both groups. Further tests with diluted solutions from the two groups were also carried out, with similar results. The Enfer test, which uses a system developed by Proteus International of Macclesfield, can be carried out in four hours, and scored perfect marks with a solution diluted by a factor of thirty\textsuperscript{39}. The question that remains unanswered is why these tests are not being used. The tests would be used to identify cattle in slaughterhouses that have BSE but no symptoms. According to the report in the Independent, an analysis in 1996 showed that for every BSE case reported, there were about 40 sub-clinical cases that would go undetected into food. Whether the last claim is authentic or not, the test could be used in slaughterhouses to identify infected cattle with no BSE symptoms.

In conclusion, it is obvious that the scientific community is divided about the cause of BSE, and the degree to which BSE is able to jump the species barrier to infect humans, albeit that challenge tests clearly confirm this ability in laboratory conditions. It should be noted however that direct injection into the brain of a laboratory animal of infected material in no way mirrors the method of transmission outside of the laboratory, should it prove that the disease is transmitted to humans\textsuperscript{40}. It is understandable that government is unwilling to provide the amount of money necessary for a large-scale investigation, at least until it is known whether, and to what extent, an epidemic of nvCJD might happen. The major pharmaceutical companies will not fund such research for commercial reasons, for if the number of cases remains at current levels there is no profit in tackling the problem. The unravelling of the human genome is currently throwing new light upon the issue, and as the results from such research gains acceptance, human understanding of spongiform disease will be advanced.
The Regulatory Structure

The last section looked the scientific position concerning BSE and other TSEs, and this section will look at the regulatory structure within the UK. The position of regulation about BSE is complex, and indeed, has become more complex since devolution. Devolution has granted a large measure of autonomy to the Scottish and Welsh Assemblies, and each has an agricultural spokesperson. Since the result of the Mitchell talks in Northern Ireland has reached an accord, the position in the province is similar to Wales and Scotland. As the precise nature of the relationship between the new assembles and central government is, as yet, unclear; and because the vast bulk of the BSE disaster took place prior to devolution, this case study will not include an overview of this new position.

MAFF, the lead ministry in the BSE catastrophe, relies heavily upon scientific advice in order to legislate and to deal with emerging and existing problems. Currently the lead scientific committee concerning BSE is SEAC (The Spongiform Encephalopathy Advisory Committee). The SEAC’s two predecessor committees, the Working Party on Bovine Spongiform Encephalopathy (the Southwood Committee) and the Consultative Committee on Research into Spongiform Encephalopathies (the Tyrrell Committee) both published reports of their findings (in 1989 and 1990 respectively). The Tyrrell Committee was reconstituted in May 1990 as the Spongiform Encephalopathy Advisory Committee with a wider, open-ended remit.

The Southwood Committee, established in April 1988 to examine the impact of BSE on both animal and human health, issued its report in February 1989. The timing for
Southwood was unfortunate because he was asked to report amid an economic crisis, unemployment was rising very quickly, and negative equity was entering the housing market. The obvious question for the Public Inquiry was how willing the government would have been to consider a mass slaughter of herds, when they had to face a greatly increased social security budget. Secondary to that point is whether the Southwood Committee were influenced by the economic situation to avoid a mass slaughter recommendation. The documentary programme *Mad Cows and Englishmen* gives ample evidence to doubt the sincerity of the final report. The programme claims to have confidential documents from as early as 1988 in which scientists warn that ‘millions’ of people might be affected with the human equivalent of BSE. Despite these warnings by scientists the conclusion of the Southwood Report read:

“From the present evidence, it is likely that cattle will prove to be a ‘dead end host’ for the disease agent and most unlikely that BSE will have any implications for human health. Nevertheless, if our assessment of these likelihoods is incorrect, the implications would be extremely serious.”

The two words that betray doubt are ‘likely’ and ‘unlikely’, meaning that there was no scientific evidence to back this assertion. As if to further underline the doubts the final sentence merely expresses an unfounded hope that the conclusions drawn would be right. It is truly amazing that the Committee could have emerged with the ‘dead end host’ statement when earlier in the report evidence was given that mice had been infected with the BSE agent, albeit under laboratory conditions. Professor Lacey further underlines the dubious nature of the report’s conclusion. He makes the point that earlier in the report, “Detailed Efforts were being made by the Health and Safety Executive to alert farmers, slaughtermen, and other workers regularly in contact with
cattle, against the dangers of handling the placenta of new born calves if BSE had
infected their mothers.” If no danger to human health existed then such a warning,
apart from being unnecessary, was also likely to engender panic. The certainty is that
the ‘dead end host’ conclusion allowed for minimal government action, a position that
owing to the economic crisis suited government. Perhaps the most extraordinary
feature of the Southwood Committee structure was that it had no experts on TSEs,
and, more surprisingly, none were consulted. Although experts in their own areas,
none of the members of the Southwood Committee had done any research into
spongiform diseases. Southwood recommended to government that all infected cattle
should be compulsorily slaughtered and the carcasses destroyed. Although the
government acted on this advice it was a month after the first meeting of the
Southwood Committee, in June 1988, nearly two years after BSE was first recognised
officially, and infected cattle had already entered the food chain. The action taken
was ineffective as it consisted of awarding half the normal value of the carcass in
compensation, a clear disincentive for farmers to be honest. The next
recommendation of the Southwood Committee was that a new committee be
established to do more research, an admission that the problem was simply too big for
the Southwood Committee, and that it lacked the expertise in the area of research
needed. Finally, Southwood admitted that TSEs were a danger to humans, but listed
eating beef contaminated with BSE as being a very unlikely mode of transmission. At
the same time the committee believed that cows had contracted the disease through
eating infected feed. This leaves the ludicrous position that while cows probably got
the disease via eating contaminated feed, humans are thought not to get the disease
that way.
In order to see whether government placed much faith in the Southwood Committee it is only necessary to examine some of Margaret Thatcher’s evidence to the Public Inquiry. She told the Inquiry:

“\textit{I considered the Southwood Working Party report was a reliable basis for future Government policy. I thought that the Government should act on the advice that it had received in the report: it had been prepared by eminent scientists and the reported view of the CMO himself was that it would not be right for him to do other than accept the working party's findings. The report contributed significantly to the formulation of the Government's policy at that time but it should be remembered that policy was continually evolving, as was scientific knowledge of the disease.}”

The evidence given by the then prime minister shows the amount of importance that her government placed upon the Southwood Committee. A position that failed to address the many contradictions contained within the Southwood Report.

In February 1989, a consultative committee on research (CCR) into Spongiform Encephalopathies was formed by the Ministry of Agriculture Fisheries and Food (MAFF), a recommendation made by Professor Southwood’s Working Party. Its remit was to advise MAFF and the Department of Health (DoH) about research on TSEs, including work in progress or proposed, whether additional research was required, and to establish the priorities. An interim report (\textit{The Tyrrell Report}) concentrating on BSE was prepared in June 1989 and subsequently published. Tyrell recommended that the brains of cattle normally sent for slaughter should be checked to see if some animals had BSE and were not yet ill with it. This would have shown how big the problem really was. This has never been done. The report finished by
saying that more research was needed and that the controls at that time to prevent the
disease spreading were not enough. This report, dated June 1989, was not released
until January 9 1990. The Tyrell Report was much better in its analysis compared
with the Southwood Report, more critical of the current position, and recommended
an expensive procedure to uncover the true extent of BSE. There is no determinable
reason for delay in publication of the Tyrell report, and unless the Public Inquiry
establishes a reason, all that is left is conjecture.

A new body, the Spongiform Encephalopathy Advisory Committee (SEAC), was
established that would spend time going in depth into issues of diseases in various
species and evaluate specialised work such as epidemic modelling or molecular
biology. It would also receive data from the monitoring of disease in animals and
man and give its views. In addition, SEAC was expected to give rapid opinions on
questions which concerned government and which arose with little or no advance
notice. In April 1990 the CCR was re-established as SEAC and had a wider remit to
advise MAFF and the DoH on matters related to the TSEs. The new committee
effectively assumed the role of the Southwood Working Party and the CCR. A
second interim report published in April 1992, this time prepared by SEAC, indicated
that the funding agencies and the scientific community had responded to the first
report by launching a substantial number of new research projects.

The Spongiform Encephalopathy Advisory Committee is an advisory non-
departmental public body appointed by Ministers and sponsored jointly by the MAFF
and Department of Health. Its terms of reference is "To provide scientifically based
advice to the Ministry of Agriculture, Fisheries and Food (MAFF) the Department of
Health (DH) and territorial departments on matters relating to spongiform encephalopathies, taking account of the remit of other bodies with related responsibilities. SEAC was a vast improvement compared with the Southwood Committee, and yet in evidence to the Public Inquiry two crucial points emerged, firstly,

“As new scientific findings emerged, we would assess and interpret them but we had no power to commission research though we could suggest what needed to be done and comment on proposals.” Secondly, the Committee, “knew little of the details of animal husbandry and modern abattoir practice, nor did we know about the regulations and control and management systems in place.”

It is odd that the main conduit for advice about BSE and related TSEs should have no automatic right to commission research, at least within approved financial constraints. However, to have no experts in animal husbandry, and slaughterhouse practice, or relevant regulation, calls into account both the credibility and competence of the committee.

FINALLY, SEAC showed extraordinary arrogance in the way they dealt with two of the leading experts in the field, “We also had communications from Professor Lacey and Dr Dealler. We read and commented on some of their papers but could not agree with some of their approaches, such as taking a series of worst case assumptions to build up their hypotheses.”

One of the leading authorities on spongiform disease in the UK is Dr Dealler. He has spent some twenty years researching and reviewing evidence concerning BSE and other TSEs, and yet a Committee with little, if any, expertise in his field of research,
dismisses his research in a single sentence. Similarly, Professor Lacey, with a distinguished record in the area of food safety, who challenged the findings of the Southwood Committee, is dismissed in the same sentence. As part of the review of the science in this case study, a substantial list of alternative hypotheses, aside from the unconventional virus, virino, and prion models is detailed. Any one of these hypotheses could eventually be shown to be correct, or indeed more than one. Yet the committee representing government dismisses them, or, perhaps worse, does not even consider they should examine them.

A major problem with advisory committees in the UK, and also in supranational organisations, is that members of such committees have their main employment elsewhere. Like ministers of state, members of such committees need to be able to call upon expertise outside of the committee structure, and there are numerous sources for such information. These include private contacts, published works, civil servants and also members and employees of non-governmental agencies. They may also have the power to seek advice from foreign sources of expertise. All of the committees established to deal with BSE and associated problems suffered from lack of continuity and consistency. A major factor was that members could only give a limited amount of time. For a matter as damaging and costly as BSE it is astonishing that a full time expert advisory body was not established, especially at the time when the scale of the problem was first recognised. Between 1989 and 1995 the committee met just 21 times, and as the lead scientific advisory committee, this can scarcely be deemed adequate.
The importance of these three committees should not be underestimated in relation to legislation enacted to deal with BSE. All recommendations were accepted and acted upon under the premiership of Margaret Thatcher. Indeed in her evidence to the Inquiry she stated,

“In one instance, the Government went even further than the recommendations of one of its committees of experts: acting on scientific advice, including that from the Department of Health, it introduced a ban on the use of certain bovine offals for human consumption in November 1989, although the Southwood Committee had not seen a need to recommend this step.”

In his evidence to the Inquiry, John Major reiterated the government’s commitment to following scientific advice. Additionally he expanded upon the way in which policy, and ipso facto legislation was decided. He stated,

“The policy of the Government, consistently applied, was to act upon the advice that the expert scientists it had commissioned provided to it, to ensure that all appropriate steps were taken to protect the health of the public, prevent the spread of the disease, and eradicate the disease. Beyond this, the Government had three further important tasks: (1) to provide information to the public concerning the risks and incidence of the disease; (2) to secure that the beef industry did not suffer disproportionately as a result of the disease; and (3) to make sure that the expenditure applied was justifiable and not an undue burden on the taxpayer.”

It is important to state again that only twice did government go beyond the advice of a scientific committee. Firstly the ban on the use of certain bovine offals for human
consumption in 1989, and secondly the decision in 1995 to suspend the use of all bovine vertebrae in the manufacture of mechanically recovered meat (MRM). Thus, it is quite clear that the power of SEAC goes beyond that of mere advice, as the government inevitably has taken its advice.

It would be both tedious and pointless to list the various legally enforceable measures taken to deal with BSE, and those orders can be found in the appendix to this case study. However, this section would be incomplete without examining the role of the Meat and Livestock Commission.

1. The MLC was established under, and is governed by, the Agriculture Act 1967 (“the Act”). Section 1(1) of the Act provides that the MLC has:

   “… the general duty of promoting greater efficiency in the livestock industry and the livestock products industry, and the particular functions specified in Part I of Schedule 1 to this Act, as well as the other functions conferred by this Part of this Act.”

Section 1(1) sets out the overall objective, which is to guide the MLC in all its activities. Other provisions of the Act describe the other matters that must be borne in mind.

2. Thus, section 1(2) provides that:

   “In carrying out their functions the Commission shall have regard to the interests of consumers as well as to the interests of the various sections of the industry and the livestock products industry”
It is, therefore, important to appreciate that the MLC’s paramount duty is to promote
greater efficiency in the livestock industry and the livestock products industry. This
duty sets the MLC apart from the other governmental agencies concerned with BSE.
The MLC expressed the view that promoting greater efficiency was in the direct
interest of consumers, and has no statutory responsibility for scientific research, food
safety, and public health or animal health. An example of the work of the MLC
occurred following the Chernobyl crisis in the 1980s, when MLC staff were involved
in checking that sheep marked with blue dye were not slaughtered. This followed a
request from MAFF asking that the MLC should monitor the situation. The major
role of the MLC concerning BSE is about slaughtering. The MLC’s functions as
regards abattoirs are set out in paragraph 10 of Schedule 1 to the Act as follows:

10(1) Giving advice and information to those owning, conducting or using
slaughterhouses-

(a) on the efficient lay-out, design and operation of slaughterhouses and premises
   and appliances used in connection with slaughterhouses, and

(b) on efficient techniques of slaughtering of livestock and of dressing carcasses,
   and generally on matters conducive to efficiency.

(2) Giving to Ministers advice and information on any matters connected with
slaughterhouses for the purpose of assisting the Ministers to discharge any of
their functions, and in particular their functions relating to the licensing of
slaughterhouses and to slaughtering charges made at public slaughterhouses.

The MLC’s duties and functions did not extend to regulating, controlling or
supervising abattoir practice. This was the responsibility of other bodies, specifically
local authorities, the State Veterinary Service (SVS)\textsuperscript{47} field staff, the Meat Hygiene
Division of MAFF and more recently the Meat Hygiene Service. In its evidence to the Inquiry the MLC made the following highly relevant submission, “Any attempt, however, by the MLC to become directly involved in safeguarding public health and regulating abattoir practice would have been inappropriate and, indeed, *ultra vires*.”

In this purely advisory capacity it does seem extraordinary that the MLC were not represented on SEAC, as their experience of slaughtering practice would surely have been invaluable. It would not have been outside their remit as efficient slaughtering was, and indeed still is, essential in dealing with BSE infected animals.

The final segment in the regulatory structure concerns the role of the Meat Hygiene Service (MHS). Until April 1995, the enforcement of hygiene, welfare and inspection regulations in abattoirs, cutting plants and cold stores in Great Britain, was the responsibility of approximately 300 local authorities, mainly district councils. They had a statutory duty to provide meat inspection services, the costs of which were charged to the industry. The licensing of premises was also carried out by some local authorities. The differing reactions of local authorities to BSE and inspection duties clearly created difficulties. Because individual local authorities had different spending priorities, there was a very unlevel response to regulation and inspection. Unless there were sufficient inspectors to carry out new regulations, those regulations would prove to be ineffective. The establishment of the Meat Hygiene Service was in response to this situation.
The MHS was established on 1 April 1995, and took over from local authorities the responsibility for enforcing hygiene, inspection and welfare requirements in licensed meat premises in Great Britain. Its aim is to safeguard public health and animal welfare through fair, consistent and effective enforcement of hygiene, inspection and welfare regulations. Accordingly, the MHS’s principal objectives are to:

- provide supervision, inspection and health marking in all licensed meat establishments;  
- deliver value for money in the provision of efficient and high quality services;  
- promote best practice in hygienic operation and animal welfare;  
- apply the principles of the Citizens Charter, in particular to maintain or improve the quality of services to its customers;  
- achieve the financial and performance targets set by Ministers

Very laudable aims but only as good as the resources available to achieve the objectives. The MHS discharges the responsibilities of Ministers for supervision, inspection and enforcement of meat hygiene and animal welfare in over 1,500 meat establishments licensed by the Agriculture Departments. The principal functions of the MHS are:

- the enforcement of hygiene rules in licensed meat premises;  
- meat inspection and health marking in licensed meat premises;  
- the enforcement of hygiene controls in certain minced meat and meat products plants;  
- the enforcement in licensed slaughterhouses of rules on welfare at slaughter;  
- the enforcement in licensed meat premises of controls over SBM and other animal by-products;
to provide export certification when required either by the importing country or by Community rules.

The meat industry is charged for the cost of meat inspection services. In 1995/96 the full economic cost was some £35m, and was fully recovered from the industry. Separately, additional Government funding of £39m has been made available in 1996/97 to MHS to ensure 100% compliance with the SBM controls.

There is little doubt that by taking central control of meat hygiene services that a more level service has been created, but there are insufficient staff to ensure total compliance with the regulations. Some foreign vets have been employed to make up the shortfall, but more significantly there is a need for an intermediate tier of enforcement. Training as a vet is a lengthy business and requires a large commitment from the trainee, and it is understandable that fully trained vets show little desire to oversee slaughtering practice. The failure to consider training less qualified personnel is the reason why the service is unable to be as effective as it should be.

Obviously MAFF and the DoH are the lead ministries for dealing BSE, although in addition, their counterparts in Scotland, Wales and Northern Ireland must be included. However in the case of the latter, at least until the new devolved assemblies were established, the relevant secretaries of state were happy to accede to the direction of MAFF and the DoH. Since devolution this relationship has radically altered and it is not part of this case study to consider how new structures are evolving. The relationship between MAFF and the DoH, and the interaction of civil servants under the umbrella of the two separate ministries is clearly important. There is evidence to suggest territorial battles have taken place. For example the BBC documentary Mad Cows and Englishmen\(^1\) shows quite clearly that a DoH mandarin delivered the final
draft of the Southwood Committee Report on Christmas Eve, 1989. She knew that by so doing it would stop MAFF from influencing the conclusions of the report.

This section has examined the domestic regulatory structure, but there is a wider agenda for regulation based upon the UK membership of the European Union, and indirectly the World Trade Organisation (WTO), the Farming and Agriculture Organisation (FAO), and the Office International des Epizooties (OIE). The European Union represents member states on these bodies.
International Dimensions

EU involvement with BSE started on 1 March 1990 when it restricted exports of cattle to those slaughtered before the age of six months (Decision 90/59/EEC made 7 February 1990). This was followed by BSE being made notifiable to the European Commission on 1 April 1990 (Decision 90/134/EEC made 6 March 1990). Then the decision to ban exports of specified bovine offal (SBO) and other tissues on 9 April 1990 (90/200/EEC) – a decision which formalised the administrative ban imposed on 30 March. On 12 June, the Council of Ministers agreed arrangements for trade in beef and calves from the UK (Decision 90/261/EEC made 8 June). This Decision required bone in beef for export to come from holdings where BSE had not been confirmed in the previous two years. Since 1990, the EU involvement has been sporadic, details can be found in an appended chronology of events. The seminal event for EU involvement was the world wide beef export ban imposed on the UK by the EU on 27 March 1996.

Apart from an unsuccessful challenge against the ban by the UK government initiated on 24 May 1996, the next significant event was an agreed framework for lifting the ban. The Florence framework was agreed on 21 June 1996 by the Florence European Council. The Agreement permits the progressive resumption of exports on fulfilment of five pre-conditions:

- a selective slaughter programme of ‘at risk’ animals to speed up the eradication of BSE in the UK;
- improved systems of animal identification and tracing;
- legislation for the removal of meat and bone meal from feed mills and farms;
- effective implementation of the over thirty months slaughter scheme; and
- vigorous and effective removal of specified risk materials from carcasses.

It is important to recognise the impact of these events upon domestic policy within the UK, and John Major, in his evidence to the Public Inquiry into BSE underlined its significance,

“While the reaction in Europe to the March 1996 announcement is well known and did indeed affect policy, prior to this we received support for our position from the Commission and its experts, as well as from the majority of Member States, and changes to our domestic policy for handling the disease were not needed in response to action taken by the European Union which was concerned with exports.”

This statement makes two distinct and crucial points, firstly the export ban affected policy, and secondly the EU’s reaction was not considered hostile to the UK position before the ban, indeed it was considered supportive.

The imposition of the ban had wider international implications, and indeed reaction was swift, a conference was convened in Geneva on 2-3 April 1996. Entitled the Consultation of Transmissible Encephalopathies (TSEs), the World Health Organisation (WHO), the Food and Agriculture Organisation (FAO), and the Office International des Epizooties (OIE), convened a meeting of international experts to review public health issues related to BSE. Particular notice was to be paid to the emergence of nvCJD as reported by the UK on 20 March 1996. The conference was of particular importance because its findings formed the basis of policy regarding
BSE for the WHO and the FAO, and crucially underscored the EU’s response to the crisis. The recommendations were:

1. No part or product of any animal which has showed signs of a TSE should enter any food chain (human or animal). In particular:

   All countries must ensure the killing and safe disposal of all parts or products of such animals so that the TSE infectivity cannot enter any food chain. All countries should review their rendering procedures to ensure that they effectively inactivate TSE agents. All countries should establish continuous surveillance of the *International Animal Health Code* of the OEI.

2. In the absence of surveillance data the status of the country with respect to the occurrence of BSE must be considered unknown.

3. Countries should not permit tissues that are likely to contain the BSE agent to enter any food chain (human or animal).

4. All countries should ban the use of ruminant tissues in feed.

5. With respect to specific products:

   Milk and milk products, even in countries with a high incidence of BSE, are considered safe. There is evidence from other animal and human spongiform encephalopathies to suggest that milk does not transmit these diseases.

   Gelatine in the food chain is considered to be safe if produced by a manufacturing process utilising production conditions which have been demonstrated to significantly inactivate any residual infectivity that may have been present in source tissues. Tallow is likewise considered safe if effective rendering procedures are in place.
6. The risk, if any, of exposure to the BSE agent other than in the UK is considered lower than in the UK. Exposure to the BSE agent in the UK was likely to be higher before the current BSE regulations. More studies are required to allow a full risk assessment. Incomplete risk assessment hinders accurate risk communication and perception. The risks associated with exposure to the BSE agent from beef and beef products will be minimised if the recommendations of the present group are implemented.

7. Risks from medicinal products and medical devices containing bovine tissues:
The importance is reiterated of obtaining bovine materials destined for the pharmaceutical industry only from countries which have a surveillance system in place and which report either no or only sporadic cases of BSE. Removal and inactivation procedures contribute to the reduction of risk of infection, but it must be recognised that BSE is remarkably resistant to physico-chemical procedures that destroy common micro-organisms. Measures recommended to national health authorities to minimise the risk of transmitting the agent causing BSE via medicinal products, in particular parenteral products, which were developed at the WHO Consultation in 1991 continue to be generally applicable. It is recommended that these procedures be reviewed and, if necessary, strengthened as more information becomes available.

8. Research on TSEs should be promoted, especially regarding rapid diagnosis, agent characterisation, and epidemiology of TSEs in humans and animals.

Apart from the above, the Consultation looked at the UK evidence for nvCJD and concluded that the link between it and BSE was not yet proven, although it remained the most likely hypothesis. The policy of the major international organs of food
safety and public health, the WTO, WHO and FAO, was based upon the conclusions of this consultation, although of course their policy would evolve as more became known. It is also important to understand that the conclusions of this consultation had a far greater validity than those of SEAC or its predecessors, because the participants were experts in TSEs.

Until this conference the role of the WTO and FAO had been of little significance to the UK government with regard to BSE. After the imposition of the beef ban, the WTO Committee on Sanitary and Phytosanitary Measures (SPS) requested details of the measures taken by the EU to protect human and animal health. The EU response was delivered in statement form on 29-30 May 1996. To list the EU response was repetitious, but one significant point that had not previously been publicly stated concerned the reliance that the Commission put in their own scientific committees. The EU reinforced this point by making it plain that the measures taken were almost certainly stricter than the minimum measures issued by international bodies such as the World Health Organisation (WHO) and the OIE\textsuperscript{55}.

The policy of the EU, the WTO, the WHO, and the FAO concerning BSE is a mirror of domestic policy within the UK. Whilst the problem was thought to be primarily one of animal health it was not given particularly high priority, but when it became evident that a threat to human health was possible, reaction was very rapid. Domestic policy and that of the international institutions was based upon scientific advice. Not all would agree that scientific advice was behind the world-wide ban on UK beef.

Bon Tyler, Chairman of the Technical Committee of the National Federation of Meat
and Food Traders, makes an effective point about the world wide ban on the export of British beef as initiated by the EU,

“The ban is largely a protection measure because BSE was undermining the Franco-German beef industry, but beyond that it was a guilt edged opportunity to inflict damage upon a competitor.”

It is certain that BSE has damaged the UK beef industry, however the FAO issued a report on 8 May 1996 concerning their assessment of the impact of BSE world-wide. The FAO made predictions based upon a model that simulated possible changes in EU agriculture policy and consumption behaviour, and linkages between food and feed commodities. This study predicted little impact from BSE upon the world meat economy in the medium term. Although implied in this was some short-term damage. The most striking aspect of the role of these international organisations was the speed with which they reacted when BSE was linked to a new form of CJD.

In conclusion this section has shown a reliance upon scientific committees to decide upon the policy for dealing with BSE. Perhaps the most striking feature was the speed of reaction by international bodies when a perceived threat to human health was postulated. The impression that the EU was hostile to the UK’s position is nullified by John Major’s statement to the Public Inquiry, where he clearly regarded the position taken by the EU as supportive. It is evident that the imposition of a ban on the export of UK beef was inevitable once the transmission of a potentially lethal human disease was thought possible through ingesting beef. Indeed had the EU not acted then the WTO almost certainly would have sanctioned a ban. When gauged against the UK governments handling of the BSE crisis, the response by the international regulatory bodies can only be seen as thoroughly professional. The
speed of response and the employment of international experts on TSEs is a measure of this. The problem with international regulation is the lack of openness concerning the decision making process. This secrecy leads to accusations of bias such as that delivered by Bob Tyler of the National Meat and Food Traders Federation.
The Public Arena

The public arena for BSE, for the purposes of this case study, includes those organisations and individuals that influence, or seek to influence, government policy concerning BSE. It will not be possible for this case study to include all such organisations and individuals, nor indeed is it even possible to identify all, simply because the diversity and scope is so large. A list of parties giving evidence to the current public inquiry will testify to the enormity of the task. However, some organisations have a higher profile than others, and are seminal to the understanding of the issue. These include the National Farmers Union (NFU), The National Federation of Meat and Food Traders, and consumers groups. An important actor in the public arena is the news media; they have acted as a conduit for information, and played a crucial role in the public perception and understanding of BSE as a major contemporary issue. An important part in the public arena is played by victim support groups in focussing attention on the plight of sufferers and their families from nvCJD. It is clear that, with the exception of the news media, these groupings have a partisan agenda, and therefore the points they make may not necessarily be totally objective. The news media are altogether more difficult to quantify in terms of their position towards BSE as an issue, it is difficult to know whether it is based upon a duty to inform the public, sell their product, other agenda, or a combination of factors. Ian Gardiner, Director of Policy for the NFU, believes that,

“people are naturally cautious and that the BSE disaster added to that caution.”  

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In his statement to the Public Inquiry John MacGregor makes the following point which helps to contextualise the impact of BSE on the public, he stated,

“However it should be borne in mind that it (BSE) was only one of a number of prominent food safety issues occurring at that time, such as salmonella, listeria, campylobacter, pesticides, additives, (e.g. preservatives), BST (bovine somatotropin), hormone and drug treatment of animals, irradiation, food storage standards (e.g. in retail outlets), food hygiene advice for consumers, food processing in industry, etc. Food safety itself was obviously only one of a number of major topics which occupied my time whilst Minister.”

Taking these comments together it is clear that a climate had been created where public concern about food safety was fuelled by the scale of problems that had arisen within a very short space of time. There must also have been a sense of bewilderment about why so many problems, or in the vernacular food scares, had arisen in such rapid succession. BSE had a far greater impact than any of the other problems, whether it was because it remained unsolved and constantly in the public arena, or because it was simply the culmination of a number of problems associated with food safety is unclear.

The NFU has undoubtedly changed as a result of BSE, Ian Gardiner makes this quite clear,

“In terms of government the NFU is an insider, or more accurately part of a set of insiders. We know the people and the science as it affects agriculture. The system is a closed system, although prior to BSE there were signs of it becoming more open. Also the science needed to be less aloof and more user friendly, for which it needed a more open system. BSE forced the NFU to
become more open and the NFU now needs the system to open up. The NFU sees the role of government to obtain a proper business footing for agriculture.”

Two significant points emerge from this statement, firstly the need for more open government in the area of food and food safety, and secondly that BSE catalysed change within the NFU, albeit that some signs of a more open environment existed before BSE. In addition, it is apparent that there was a position within the MAFF culture which allowed a ‘set of insiders’ to control policy.

A factor that emerged from interviews with Ian Gardiner, Director of Policy for the NFU, and Bob Tyler, Chairman of the Legislation and Technical Committee of the National Federation of Meat and Food Traders, concerns the way in which risk is assessed. Ian Gardiner suggested that,

“The public have no understanding of risk factors. The government shows ambivalence when it comes to assessing risk. For example the beef on the bone ban was enforced despite any risk being so negligible as to be virtually non existent. Yet when evidence comes to light that there is a one in five million risk of contracting Chrohns Disease through regularly drinking milk there is no ban. Either there is no consistency or the beef on the bone ban had more to do with appeasing Europe than public safety. There is no justification for a ban in either case. A person may quantify risk in different ways, for example they may compare driving a car with eating a T-bone steak. The former is a high risk activity and the latter a very low risk activity. The individual may decide that driving a car is an essential lifestyle ingredient, whereas they can live perfectly well without eating a T-bone steak.”
Bob Tyler agrees that the beef on the bone ban is unjustified, but makes a further point that points to a paradox,

“SEAC gave the government the option of publicising the problem and leaving the individual to decide upon the risk, and this option would have avoided a lot of unnecessary problems. The ban was imposed, and the Chief Medical Officer of Health advised the government that it should not be lifted until there was no possible risk to human health. Since there was no evidence to impose the ban in first place, how can evidence be found to lift it?”

Both of these statements point to an obvious implication for liberal society. The extent to which government acts to protect the public and the methods it chooses to employ are crucial in matters relating to health and lifestyle. Indeed Bob Tyler makes an overtly political point, but one that reinforces the nature of the beef on the bone ban. He states,

“The present government is rooted in the concept of the ‘nanny state’. MAFF asked Det Norske Veritas (DNV) to carry out a risk assessment, and they concluded that the risk to people eating beef on the bone was equivalent to one new case of nvCJD per billion years per person. Despite this virtually non-existent risk the ban was imposed. New Labour believe that the consumer is king, Rooker, the minister for food, frequently says that he has three priorities ‘consumer-consumer-consumer’. New Labour is protectionist, not informative, a position they take for political reasons. Government for consumers is politically very astute, as we are all consumers. We are now in a period where the consumer is enjoying the highest profile ever. Such an attitude bodes well for the governments re-election purposes, but avoids
responsibility to industry, and in the end will cause long term damage to the 
UK.”

It is curious that the ban on beef on the bone has attained a much more significant 
profile then the ban on the sale of UK beef imposed by the European Union. Sales of 
bone in beef accounted for a very small percentage of beef sales. It has become the 
focus of recent debate within the devolved assemblies of Wales and Scotland, and 
whether it should be lifted without reference to the whole of the UK. In the event 
both assemblies choose to listen to the advice of their chief medical officers. Both the 
NFU and the National Federation of Meat and Food Traders see the ban as 
unjustified, and both attempt to cast doubt upon government policy. The ban was 
finally lifted by the UK government, The Welsh Assembly, and the Scottish 
Parliament, on exactly the same date in December 1999.

The views of the National Consumer Council (NCC) represent an obvious source for 
defining the customers position. The NCC’s primary observation about BSE is that it 
highlights the “dangers of a policy which sidelines consumer’s interests in favour of a 
supply-led approach to agriculture.” The NCC cites the Economic and Social 
Committee of the EU, who refer to the UK Government’s “relaxed, if not negligent, 
attitude to the possible gravity of the public health implications of their approach.”
The same committee also pointed out that the absence of proof of risk was interpreted 
as proof that there was no risk. The NCC notes that Reimer Boge, Chairman of the 
European Parliament’s Independent Committee of Inquiry into BSE also accused the 
Commission, as well as the UK Government, of trying to minimise the problem. 
Again this evidence shows there is a clear need to define risk in a more appropriate 
fashion, and therefore the precautionary approach enters the equation. In particular
the misinterpretation of absence of proof shows how easily words can be manipulated for political ends.

The human tragedy of BSE lies in the likelihood that it jumped the species barrier, killing the victims of nvCJD, and causing emotional distress and financial problems for their families and friends. Dave and Dot Churchill lost their son to the disease in 1995, he was the first diagnosed victim, and they have established a foundation to fight for justice. The families of the first ten victims have issued writs against both the DoH and MAFF, and new writs are being issued as the three-year statute of limitation coincides. The litigation is being held in abeyance until after the Inquiry has reported. The government has refused to accept responsibility for the victims. However the Churchills certainly regard their pressure as being an important factor in establishing the current Inquiry.66 To some extent this type of pressure can be likened to the pressure that sufferers of AIDS brought to bear on the US government to make specialist care available and to expedite the availability of new drugs. This raises issues that are technically outside of the remit of this case study, but of critical importance is the extent to which the government is responsible for failures in regulation, that lead to tragic consequences. The BSE story will not end when the ban on beef exports is finally lifted, but when the extent of an epidemic of nvCJD is determined. That could take many years.

This section has highlighted the lack of consistency and cohesion of the government strategy. The farming industry, the meat traders, and consumers groups all agree that better risk assessment is essential. Implied within a critique of policy in the area of food safety is the extent to which the precautionary principle should be used. An
The need for open government in the area of food and food safety is obviously of considerable importance, although it is by no means clear that transparency would have prevented BSE.

**Government Response**

Rather than offer a chronological account of the decisions taken by government in response to BSE, this section will try to establish how response by government was decided. Seminal to government decisions was scientific advice, and nearly all ministers involved had little scientific knowledge. John MacGregor in his evidence to the Public Inquiry makes this clear,

“**I always took the view that wherever possible it was essential to base one's decisions on scientific advice**”

The brief for the lead minister at MAFF is particularly wide ranging, and during MacGregor’s time, he was not only involved in BSE, but as is made clear earlier in this case study, numerous other food safety issues were happening. He was also heavily involved in Common Agricultural Policy (CAP) negotiation, which entailed frequent trips abroad. Many of the day to day decisions were being dealt with by junior ministers. MacGregor first became aware of BSE in July 1987 and the submission he saw made it clear that the cause of the disorder was unknown, nor was it yet known whether it was transmissible but, the submission stated, there was no evidence that it was transmissible to humans. The problem was dealt with by setting
in place epidemiological studies, and MacGregor was advised against publicising the
disease. This very early response invites criticism, firstly because the first known
case of BSE occurred some three years earlier and it is surprising that it took so long
for it to be drawn to the attention of a government minister; and secondly, because of
the single statement that there was no evidence that it was transmissible to humans.
Implicit within this statement was that there was no evidence at all regarding
infectivity, and the novelty of the disease should have betokened that much more
cautions be taken with regard to human health. It is impossible not to sympathise with
a minister in this position as there is a need to balance duty towards consumers with
duty towards industry. There was also the added problem about how long science
would take to establish the epidemiological nature of BSE, and twelve years later the
cause, mechanism of spread, and the extent to which humans could become infected
is still unknown. This was for MacGregor the paradox, in order to know what steps to
take to eradicate BSE he needed to know what caused it. The absence of information
led inevitably to a compensation and slaughter scheme, and there was increasing
evidence to suggest that infected feed had been responsible for causing the disease.
With the benefit of hindsight a ban on feeding ruminants animal protein, and a
slaughter policy, would have been the right action. But the initial period was marked
by dithering, as, if should prove to be the feed that was the problem, the slaughter
policy might be unnecessary. It was not until 14 June 1988 that The Bovine
Spongiform Encephalopathy Order 1988 (SI 1988 No 1039) was made, prohibiting
the sale, supply and use of certain feedingstuff for feeding to ruminants. Only on 8
August did the Bovine Spongiform Encephalopathy (Amendment) Order 1988 (SI
1988 No 1345) and the Bovine Spongiform Encephalopathy Compensation Order
1988 (SI 1988 No 1346) come into effect. These orders provided for slaughter policy
and compensation to be paid at 50% value for confirmed cases, 100% for negative; both subject to a ceiling. The first real action had taken over a year. The compensation scheme was regarded by many as half hearted.

It would have been wise for the Minster and his officials to take an historical perspective over the matter of compensation levels. During the rinderpest plague in the 1860’s William Gladstone and John Stuart Mill showed concern over the level of compensation offered, too little meant inadequate compliance and too generous would lead to perverse effects and concern about who should bear the cost.\(^7\) John Fisher develops this reasoning further by showing that when compliance is poor, as was the case with the rinderpest outbreak in 1865 that policing is difficult and puts too much pressure on limited public resources.\(^7\) He continues by saying that throughout its history the state veterinary service has suffered the major problem of finding adequate resources to ensure effective compliance.\(^7\) He also noted that at the time of the first compensation scheme the government was burdened with ‘growing fiscal stringency in the public sector (a trend reinforced by ideologies of the laissez-faire dominant at the time of the cattle plague)\(^7\) (1865-1867 rinderpest epidemic). It is entirely possible that MAFF were more concerned in the early stages of the BSE epidemic to protect their credibility, than to over react to what was at best a theoretical and seemingly unlikely possibility of transmission to humans.

Contemporary criticism can be found in the evidence given to the Public Inquiry by Edwina Curry, former Parliamentary Under-Secretary for Health at the DHSS, a post she resigned on 16 December 1988. She was one of the few members of government
with a science degree. She certainly sheds some light upon the 50% compensation scheme,

“The NFU members I met in January 1989 expressed two anxieties: that, with half-a-ton of sick animal lumbering about in a pen, a stockman would get hurt or killed; and that the 50% compensation rate was an active incentive to unscrupulous farmers to offload suspect stock to the abattoirs as quickly as possible, so intensifying the chances of BSE-affected material entering the human food chain. Although the disease was notifiable, nobody in the industry would willingly shop a friend and colleague; the suggestion therefore that auctioneers would be an effective police force was laughable. All animals under auction are distressed; they sway, they stumble, and they are dispatched within a few seconds. My farmers warned that in these circumstances compensation must be the full 100%. I believe the NFU were encouraging other branches to approach their MPs in the same way. I supported their argument and wrote (on more than one occasion) to MAFF Ministers. I have not kept any of the correspondence. The rules were changed over a year later, on 14 February 1990. I consider this long delay totally reprehensible, avoidable and the direct cause of both the prolonged duration of the disease in cattle and a substantially increased risk to human consumers.”

She reinforced this argument by commenting that,

“We should as Ministers assume that laws are occasionally inefficiently administered, and that people ignore the law or seek to get round it when it is in their interests to do so. Our exposure as constituency members gives us ample evidence of such human failings at every weekly advice bureau.”
It is extraordinary that no official within MAFF, nor for that matter ministers and their parliamentary private secretaries, were sufficiently aware that what they were proposing could make a bad situation worse. Edwina Currie’s final remarks represent a devastating critique of MAFF,

“I consider that the entire approach of MAFF from the 1980’s onward to issues of public health linked to infection in the food chain was wrong: it was crass, incompetent, hostile, dangerous and compounded problems instead of eradicating them. The Ministry which should have been responsible for clean food instead supported and connived at the worst operations in farming and animal husbandry, derided accurate warnings and were blockheadedly ignorant of good practice elsewhere. The Ministry made fierce and intimidating attempts to put down criticism instead of considering it carefully and objectively. The poor contacts at ministerial level between MAFF and DoH, and the lack of respect for the overriding public health interest, led to a catastrophic outcome in more than one field. The Ministry had long set itself up as the trade union for producers. Unfortunately, it was not the counsel of wise producers which prevailed. This was an astonishing position for a Conservative administration to maintain, which elsewhere was keen to promote competition and put the needs of consumers first.”

The evidence from Edwina Currie is important as it comes from a government insider, and one with a scientific background, and points to the lack of co-operation between government departments as one of the reasons for the very slow reaction to the BSE disaster.
Perhaps a more sinister policy was operating than one of incompetence and neglect. During the period from the start of the 1970’s the number of rendering companies fell from 125 to just nineteen by the end of 1992. The Monopolies and Mergers Commission (MMC) carried investigations in 1985, 1991, and 1993, the last report confirming that Prosper de Mulder had acquired 64% of the red meat rendering trade and 81% of the poultry waste industry in England. Prosper de Mulder was condemned in the report as having used discriminatory pricing squeezes against smaller competitors and thereby restricted competition in England and Wales. The MMC also found evidence that Prosper de Mulder had depressed its reported profits and spied on competitors. The question that needs to be answered, and the current Public Inquiry is in the best position to find out, is who decided in government to take no action despite the obvious misgivings about Prosper de Mulder as expressed by the Monopolies and Mergers Commission. The position became more complex after the ban on meat and bone meal being used in cattle feed, simply because large numbers of cattle born after the ban was officially in place were still infected with BSE. Common sense would dictate that if meat and bone meal in ruminant feed was responsible for BSE then the ban should have seen an end to the disease. Two factors may have been responsible, firstly the ban only applied to cattle, pigs and poultry were still being fed meat and bone meal until 1996, and worse, meat and bone meal was permitted as a minority constituent of fishmeal, which could be quite legally incorporated into cattle feed. Why then did MAFF not simply ban the use of meat and bone meal as an animal feed altogether, a referral to the Monopolies and Mergers Commission’s report of 1991 which included the following statement,
Prosper de Mulder itself claims to have saved the industry from disaster by persuading the authorities and the food compounders that meat and bone meal should not be banned altogether as a source of protein in animal food.”

This presented clear evidence that a lobbying campaign had been in operation. Conservative MP, John Whitfield, was hired by Prosper de Mulder as its company solicitor and he is on the record as having arranged meetings between Prosper de Mulder and John MacGregor and John Gummer, each in turn agriculture ministers. This evidence is not used to suggest government was corrupt, such an assertion is entirely without foundation, although it would be an easy task to convict on such circumstantial evidence. The root of the problem is again lack of communication between government departments. The MMC reports would have been seen by the Department of Trade and Industry (DTI), and the decision to take no action was theirs. The real question concerns the reasons why these reports were not referred to MAFF before a decision was taken. This provides further evidence of departmental insularity. The lobbying of ministers by MPs with vested interests is not a matter for this case study, but underlines the need for caution when in a position of ministerial power.

The early phases of government policy were influenced by the need for industry to become more efficient, and Margaret Thatcher underlines this in her evidence to the Public Inquiry,

“Perhaps because of my own scientific training, or perhaps simply because it seemed the common sense way to proceed, I always believed that decisions in
the whole area of food safety should be based on the best scientific information available. Of course, in most of that area other considerations too were extremely important - for example, the need to avoid over-burdening business with regulation, though never at the cost of food safety. As the Inquiry will note from the account I have given of the government’s decisions, I always insisted on prompt action whenever a serious problem of food safety was revealed.78

The evidence is that part of government policy was to reduce the bureaucratic burden on business, but not at the cost of food safety. Regulations are only as good as the ability to police them. A backdoor route to deregulation is to fail to provide sufficient personnel to police food safety.

In his evidence to the Public Inquiry, Margaret Thatcher’s successor, John Major made the following submission,

“On 27 February 1992 Sir Robin Butler wrote to my office enclosing a paper which represented the outcome of the further work which I have referred to in paragraph 31 (exhibit 17) [YB 92/2.27/6.6 -6.26]. The paper stated that the current system of local authority responsibility was ill equipped to meet the new European Community rules, to provide effective veterinary supervision, or to satisfy the EC Commission. It highlighted the problems with the present system: deficiencies in accountability, management control and staff resources; variable plant standards; lack of consumer confidence; inconsistency in standards of enforcement; costs to the industry and international trade costs of certification. With regard to the issue of plant
standards, the paper said that 60% of red meat slaughter houses did not meet current standards and that in some cases, basic hygiene problems leading to extensive contamination had persisted after repeated written advice from the State Veterinary Service (SVS) to the local authority responsible for enforcement. The paper stated that most of the difficulties had been apparent for some time. It concluded that a national meat hygiene service should be established, as an agency of MAFF. Primary legislation would be required. The cost would be unlikely to vary significantly under any of the various options discussed: the decision must be made on other criteria such as potential to improve meat hygiene, standards of service, value for money, trade considerations and accountability.\textsuperscript{79}

Here is a clear indication that policy concerning food safety under the Thatcher government, with particular reference to BSE, was in a state of shambles. The Major government legislated to establish the Meat Hygiene Service (MHS). The primary purpose was to eradicate the uneven way in which local authorities responded to their legal obligations. The MHS was not as effective as it might have been because of staffing problems. Apart from this, the Major administration reacted to events as they unravelled, rather than take a more proactive role. Under Major, SEAC retained its lead role in advising the government, and at no time did the government do more or less than SEAC advised.

After New Labour were elected in May 1997 there was an expectation that food safety would be become the subject of lively and open debate, as they had flagged their intention with the promise to establish a food standards agency. The first sign that...
New Labour were less secretive was on 21 July 1997 when an updated BSE Internet site launched, as part of the MAFF website.

On 15 September 1997 MAFF and DoH published a review of SEAC, and this confirmed SEAC's key role. By this time there was certainly more reason to place more reliance on the advice of SEAC as it now had members with relevant expertise. These included Professor John Collinge - Professor of molecular Neurogenetics, Neurogenetics Unit, incorporating the Prion Disease Group, at Imperial College School of Medicine. Professor Adriano Aguzzi acting head of the Institute of Neuropathology at the University of Zurich, Professor Aguzzi specialises in neurodegenerative disease research, including prion diseases. Dr James Ironside - Neuropathologist at the CJD Surveillance Unit, Edinburgh. It was not until the 3 June 1999 that Dr Ironside was made a member of SEAC, he has worked in the CJD Unit since 1990 and has extensive experience in the neuropathology of human TSE, particularly CJD. The Committee also includes Professor Harriet Kimbell, Deputy Chairman of the Consumers Association, her role is to represent the public interest. Other members have related experience in veterinary medicine. It is reasonable to conclude that the expertise on this crucial committee has very gradually improved with the passage of time. But the central criticism of SEAC remains, why did so many years need to pass before this increase in expertise emerged. Dr Ironside was an expert on human TSEs and worked at the world renowned CJD unit in Edinburgh, it is nothing short of incredible that so much time elapsed before he became part of SEAC. The case of Dr Harash Narang affords evidence that MAFF were instrumental in seeking the appointment of people they wanted on the crucial SEAC committee. Dr Harash Narang, who had worked with Nobel Prize-winner, D Carleton Gajdusek,
and indeed they had published academic papers together, in 1990 showed how
electron microscopy could be used to identify BSE. The technique was already in use
to identify CJD, and it was far quicker than current methods used to identify BSE.

David Clark, from 1987 to 1992 a member of the Shadow Cabinet and was Labour’s
principal spokesperson on Food, Farming and Rural Affairs, makes a number of
points about DR Narang,

“I was always impressed by Dr Narang’s endeavours and his honesty. He was
the first person to draw to my attention the possibility of BSE being
manifested in humans in some form of CJD, a notion not generally accepted by
the MAFF scientific establishment. It seemed to me that they regarded Dr
Narang’s work to be in some way heretical and it was as if he were to be
successful in his diagnostic tests the whole of the British beef industry would
be put at threat.”

David Clark goes further by suggesting that MAFF was involved in securing the
suspension and subsequent dismissal of DR Narang from his job in the Public Health
Laboratory Service. Dr Narang succeeded in obtaining private funding to continue
his research and David Clark explains the difficulty he personally encountered in
trying to obtain the heads of cattle for Dr Narang to continue his research.

To avoid the problem that MAFF had in trying to represent both industry and the
consumer the Food Standards Agency is to be set up. BSE clearly played a part in the
thinking behind the need for such an organisation.

In summation the Government of the day was slow to react to the BSE outbreak. For
example it was not until 21 June 1988 that the disease was made notifiable, and it was
20 months before 100% compensation was agreed on 14 February 1990. The make up of relevant advisory committees was for far too long inappropriate. Appointments to government advisory committees are now made by Commissioner for Public Appointments. The Select Committee on Public Administration explain the role and reason for such a body.81,

“The appointment of Sir Leonard Peach as the first Commissioner for Public Appointments in December 1995 was supposed to dispel widespread fears of political patronage in the public appointments process. After sixteen years of government by one party many suspected that Ministers used the large number of appointments to public bodies (or ‘quangos’) at their disposal to reward political sympathisers; and to ensure that quangos operated in line with the Government’s policy, rather than in the best interests of the organisation concerned.”

It has simply not been possible to discover how appointments to committees such as SEAC were made prior to the establishment of the Commission for Public Appointments. What is certain is that the original make up of the Southwood Committee, the Tyrell Committee, and subsequently SEAC were not subject public scrutiny.
**Issue Profile**

BSE is an issue that has transcended any other issue in the area of food safety. Not just in pure cost terms, although an estimated cost to the Treasury is £4.5 billion, nor in terms of its impact on rural communities, or suffers from nvCJD, but the influence it has had upon the culture and institutions involved in the food supply chain. For example, the policy director for the NFU made it plain that BSE has changed the way the NFU operates. The launch of GM technology has been badly affected by BSE. And the creation of the Food Standards Agency has been greatly influenced by BSE.

BSE has seen the emergence of science as a major player in determining government policy. There have been and continue to be international disputes concerning whose science is better. Nothing encapsulates this better than the French continuing to maintain a ban on the import of British beef, in the teeth of opposition from not just the British, but also the European union. The issue has been played out in the political arena and is concerned with how to manage a significant issue where no scientific knowledge concerning the problem is available. Despite these concerns government has allowed a scientific committee to govern its entire strategy concerning BSE.

Another significant factor concerning the issue is lack of cohesion across government departments, the suspicion of ‘turf wars’. There is clear evidence of a rivalry between MAFF and the DoH. The failure of the DTI to pass on significant information to MAFF is altogether more difficult to understand.
BSE has seen the issue of food safety rise from relative obscurity to one of the major contemporary issues for government. The report of the Public Inquiry is unlikely to be complimentary about government handling of BSE, and the eventual scale of the tragedy is still in doubt. The final toll will depend upon whether or not a major epidemic of nvCJD takes place. One of the casualties of BSE appears to be the biotechnology industries efforts to get the public in the UK and Europe to accept their new technology. The extent to which consumer groups, environmental pressure groups such as Greenpeace, and the UK press combined against the technology was certainly without precedent. BSE provoked a new strategy by the Labour Party to take the sting out of food safety scares, the establishment of an independent food standards agency. It is perhaps best viewed as case study in how difficult it is to manage a problem in government where no knowledge about the problem is available, beyond the fact that a problem exists. Risk analysis is pointless as there is no quantifiable measurement available. The next indicator is the precautionary principle, but that has significant civil liberty dimensions. The duty to inform and allow individual choice, or take the decision to institute a ban are the only routes available.

BSE also saw the twin planks of British foreign policy of divide and rule reduced to a nonsense. When the ban on the export of British beef was instituted by the EU, for the first time ever the whole of Europe was united against the UK. Given the facts it was difficult for Europe to make any other decision, but BSE and the ban on beef exports did much to fuel a euro-sceptic climate. There have been few issues with such wide ranging consequences and implications.
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2. This is more of a guestimate based on figures produced by MAFF, available on their website (http://www.gov.uk), and they do not take into account the ramifications of a possible epidemic of New Variant Creutzfeldt-Jakob Disease.
4. MAFF BSE information (http://www.maff.gov.uk).
5. Mad Cows and Englishmen, Shutting the Stable Door 8 March 1998. BBC television programme
7. Mad Cows and Englishmen, Shutting the Stable Door 8 March 1998. BBC television programme.
10. Article 130r
12. Genetic modification technology in relation to food has the element of unknown risks associated with its use.
13. A full explanation will be given in the ‘science’ section of this case study.
23. [http://www.bse.org](http://www.bse.org)
25. Encarta 2000, Microsoft, CD ROM.
27. Dealler, S Dr. [www.airtime.co.uk/bse/hypoth.htm](http://www.airtime.co.uk/bse/hypoth.htm)
It is not difficult to find opposition to Prusiner’s theory, but Dr Geoff Brown of the School of Chemical and Life Sciences at the University of Greenwich and Dr Frank Manning a molecular biologist at Liverpool John Moores University have expressed misgivings about the award in personal conversation with me. I have read frequent criticism of the award in various scientific journals.


Dr S Heaphy, Prions and BSE, 12/11/97. Published at http:www.msb.le.ac.uk/BSE/SH.html

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Evidence given by SEAC to the Public Inquiry, Page 2. (http://www.bse.org).

Evidence given to the Public Inquiry and available at the Public Inquiry website http://www.bse.org.

http://www.bse.org

A part of MAFF.

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In this connection, Ministers made it clear that the highest priority must be given to the enforcement of measures to protect public health and, in particular, the SBM controls on cattle carcasses to deal with BSE.

Information available the MAFF website

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http://www.bse.org John Major’s evidence to the Public Inquiry.

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