

UNDERSTANDING LAY AND EXPERT RISK PERCEPTION IN THE LIGHT OF MORAL THEORY

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Introduction

It is well established that scientifically trained experts and those who lack such training, or lay people, tend to perceive risks differently, both in general (Slovic et al. 1985, Slovic 1987) and in connection with food-related risks (Fife-Schaw & Rowe 1996, Sparks & Shepherd 1994; see Hansen et al. 2003 for an overview). This expert-lay discrepancy can lead to real difficulty in setting agreed priorities in food risk management.

A case in point, and one that we shall discuss in this paper, is the present handling of Bovine Spongiform Encephalopathy (BSE) and variant Creutzfeldt-Jakob disease (vCJD) in Denmark. Many scientifically trained experts believe that food hazards exist that are considerably more serious than BSE/vCJD on which money for precautionary measures would be better spent. They often imply that the present spending on BSE/vCJD only serves the political purpose of pandering to a disproportionate level of fear among lay people. On the other hand, findings on lay risk perception give us good reason to believe that the majority of people support strict regulatory measures against BSE/vCJD.

Disagreements of this sort tend to result in deadlock. Commonly, that is, experts continue to believe that lay priorities are irrational because they fail to reflect the true risks as measured by frequencies of adverse consequences. Their remedy is to 'get the numbers right' with the hope that lay people, once relieved of their 'knowledge deficit' and in put possession of correct information, will change their perceptions accordingly. However, the mounting empirical evidence from many controversial cases shows that this strategy generally does not work: Even in the face of credible numbers, lay people often do not adopt different attitudes.

The risk perception literature explains this phenomenon by showing that whereas experts judge risks in terms of annual fatalities (or the frequency of some other unit event), lay people operate with a much broader concept of risk, incorporating sensitivity to a wide range of hazard characteristics such as personal control, lethality, catastrophic potential and inequitable distribution. Lay priorities are different, then, simply because they are based on considerations other than the frequency and seriousness of consequences. This suggests that policy and risk communication will have to adapt to lay people's broader conception of risk. But it is important to see that this explanation does not resolve the disagreement. The deadlock is precisely that, regardless of whether we understand lay perceptions and attitudes as irrational, or as representing basic psychological facts, there appears to be no point in trying to change them.

Can this deadlock be broken? We believe that the risk perception literature contains two distinct lines of thought. One is the line just set out. It emphasises the finding that experts and lay people have different concepts of risk, adding that, although they can each be more or less systematically described and predicted, these concepts cannot be brought together in a reasoned discussion. The other line emphasises the finding that

each party represents different but legitimate concerns. This line suggests that experts and lay people have different objectives in the face of risk, and – underlying these objectives – a different set of values.

The present paper follows the second line. It is motivated by the simple idea that, in order to move the debate on, we need identify these different value bases. In cases of disagreement, the expert and the layperson are both asking the same question, namely: What should we do? But they bring to this question rather different perspectives. If we can conceptualise these, experts and lay people ought to be able to gain more insight into one another's positions; and thus more in the way of mutual understanding. Their disagreements may not be fully resolved, but constructive dialogue will at least become possible.

The paper divides into two parts. The first part (comprising the next two sections) is empirical. In it we report a series of qualitative, semi-structured interviews with lay people and experts on food-mediated health risks. The interviews were conducted in Denmark in 2002. They focused on zoonotic risks. These interviews confirm that experts and lay people perceive and judge the risk of contracting zoonoses through food rather differently. However, the interviews also allow us – to some extent – to uncover the different contexts behind these differences in perception and priorities and to suggest a rational reconstruction of the values underlying each of them.

The second part of the paper (the following section) is philosophical in nature. In it we pick up of the some of more salient features of the interviews and try to interpret them in the light of ethical thought. The distinctive idea here – an idea we believe to be both new and instructive – is that a stylised conflict between the expert and the lay perspectives on zoonotic risks can be understood as a genuine moral conflict between legitimate concerns. In the final section we draw out some important consequences of this idea.

Interviews with Lay People

Eleven lay people (defined here as non-experts with no strong occupational or other links to the food sector) with diverse backgrounds in age, urbanisation, gender, role in providing food in the household, and occupation were selected for interview. The interviews were semi-structured; they began with enquiries about the everyday experience of food and moved on to questions about food safety issues raised by zoonoses. The aim was to obtain a qualitative, context-sensitive understanding of lay perceptions of these latter issues and to look at the personal strategies ordinary people adopt to manage food-mediated zoonotic risks.

Health risks associated with zoonoses were rarely mentioned by the interviewees when they were asked merely about their everyday experience of food. At this stage of the interviews, price, convenience and organoleptic quality were the dominant themes. This general feature is important for understanding the lay

perspective on zoonotic risks: People have a general expectation that food is safe, and their attention turns to hazards only when problems emerge or are brought up. As the interviews progressed, the interviewees were asked to rank the zoonoses they knew out of a sample of the following nine according to how serious/dangerous/bad¹ they perceived them to be: BSE/vCJD and *Salmonella* (the infections on which the present paper chiefly focuses), *Campylobacter*, *Listeria*, *Yersinia*, botulism, 'Roskildesyge',² Trichinae and tuberculosis.³ Here it emerged that the majority of participants had limited knowledge of zoonoses: All were aware of *Salmonella* and vCJD, and some recognised botulism, but few were familiar with *Campylobacter* and *Listeria*. Whereas the experts all understood the request to rank in the same way, the lay interviewees displayed different interpretations of this exercise, and quite a few in fact made two or more alternative rankings.

In a common interpretation the lay ranking was based on *how bad it is to have the relevant infection or condition*. The principles underlying this ranking of consequences seem to be that death is much worse than non-fatal disease, that certain death is worse than risk of death, that death after a dreadful deterioration (vCJD) is worse than instant death, and that availability of treatment and/or chance of recovery makes a disease less worse, whereas long term harm makes it worse. These principles all figure in quantitative risk perception studies as important hazard characteristics. Some of them are detectable in the following exchange:

Interviewer: What is it that makes you place Creutzfeldt-Jakob on top?

Lay1: Well, it is the deaths one has heard about... one has also heard that with the three others, that is *Salmonella*, tuberculosis and botulism... but Creutzfeldt-Jakob [...] appears to be a disease one can build up over long time, and then suddenly it shows up with lethal effect... without particular warning, while the other three after all show some symptoms in the beginning, right?... which makes it possible to get treatment in time. And there is apparently no real treatment for Creutzfeldt-Jakob, so... that must make it the most dangerous...

According to this criterion, vCJD is consistently ranked as more serious than *Salmonella*. Some based this ranking on the belief that *Salmonella* is most often or always non-fatal, whereas vCJD is invariably fatal.

¹ The exact wording of the question varied from one case to another depending on the context.

² The Danish vernacular term for mild diarrhoea.

³ We recognise that, strictly speaking, a zoonosis is a *disease* (transmissible to human beings from animals in ordinary circumstances) and not the agent which causes the disease. However, in the lay interviews, we followed common usage in order to use the names most familiar to lay people. Even though this usage intermix pathogens with diseases, we have chosen to keep it in the paper.

Among these, some were reminded that *Salmonella* can be fatal, but this persuaded only one respondent to change his ranking so that *Salmonella* became "almost equal" with vCJD. The others, even after the reminder, continued to regard vCJD worse.

Only a few interviewees referred to frequencies, taking both the severity and frequency of zoonotic diseases into account. These respondents consistently ranked *Salmonella* as worse than vCJD. It is striking that only a few lay people appear to consider frequencies explicitly in this ranking exercise. However, as we shall see below, it cannot be concluded that lay people do not pay attention to frequencies (or probabilities). But as quantitative risk perception studies also show, they appear to be clearly sensitive to a range of distinctions between possible consequences.

In some cases, the respondents referred to certain characteristics influencing their personal perception of, or feelings about, the relevant risk. A few reported being influenced by experience, i.e. by having been infected themselves, or by having seen infected persons. Presumably, this had made them take the risk more seriously. A few ranked *Salmonella* as equally bad or worse than vCJD on this account; and interestingly, the only respondent who took botulism seriously referred to experiences from Africa.

A few others reported being influenced by media coverage. Since the media have reported a number of *Salmonella* outbreaks in Denmark, whereas there have been no confirmed cases of vCJD, media coverage makes it easy to identify with the victims of *Salmonella* infection.⁴ By contrast, vCJD in Denmark is experienced as a remote danger. Accordingly, these respondents ranked the former as worse.

Finally, a few referred to the criterion of whether or not it is possible to reduce the risk through personal effort (ranking vCJD as worse in this regard than *Salmonella*). An example:

Lay2: So that one [BSE/vCJD] is probably the worst one, because it is something in the meat you can't avoid. *Salmonella* I can avoid by cooking the meat properly and sterilise the things when I have been working with the meat, and the eggs... I can also... abstain from eating soft-boiled eggs.

This consideration, which is also dominant in quantitative risk perception studies, appeared to be important for many respondents when the interviews moved on to a more personal perspective.

The lay interviewees were asked to describe their personal concerns and priorities vis-à-vis food safety. At this point, implicit beliefs about probabilities of personal exposure became more evident. It turned out that, in general, the interviewees did not feel zoonoses to be personally threatening – which explains why zoonoses were not mentioned initially when the respondents were talking about their everyday experience of food.

⁴ One interviewee reported being vividly affected by his knowledge of a spectacular case where a father and son died from eating a heavily *Salmonella* infected cake.

However, if we compare *Salmonella* and BSE/vCJD, it is clear that, even though people felt safe from both, they did so for very different reasons.

Thus one interviewee said:

Lay3: It [vCJD] is not something I am at all afraid of getting myself... If I went out a lot, for instance, and got food from catering companies, then I would be more concerned about botulism, for example, and *Salmonella* probably... be more worried about that.

Here there appears to be little or no concern about exposure to BSE/vCJD, but the picture is different with *Salmonella*. Although massive campaigns to control *Salmonella* have been run at all levels of the food-production chain, only a few of the interviewees believed food to be free of genuinely threatening levels of it. The existence of official control programmes was often regarded as mere confirmation that *Salmonella* is not presently under control.

This notwithstanding, there was a relatively relaxed attitude to *Salmonella*. This attitude seems to be based on the belief that *personal* coping strategies, involving, among other things, the maintenance of high levels of kitchen hygiene and the avoidance of high-risk dishes or ingredients, are generally effective against infection:

Lay4: *Campylobacter* and *Salmonella* I can do something about myself. Here [pointing] I feel powerless – that is the lottery with *Listeria* and botulism... BSE, I certainly hope that one is in control, but otherwise I do not feel very affected by it.⁵

This confirms the importance of personal control, or at least the feeling that one has the ability to control one's exposure to a disease. In addition, most respondents were quite familiar with *Salmonella*, the risk of becoming infected, the symptoms of salmonellosis and the availability of treatment. Where vCJD was concerned, a rather different picture emerged. Although a few respondents mentioned personal strategies,⁶ most seemed to believe that these are not as effective against vCJD as they are against *Salmonella*. And clearly, there was no familiarity with BSE/vCJD. Again, however, vCJD was not in general seen as a personal threat in everyday life.

As the last sentence in the Lay4 excerpt makes clear, this belief may depend very much on trust in the control systems.⁷ Unlike with *Salmonella*, the widely shared

⁵ Interestingly, the kitchen strategies adopted by the interviewees to combat *Salmonella* were often (though not entirely in this quotation) assumed to be effective against other bacterial agents. In this sense *Salmonella* functioned as a 'headline' proxy for all bacterial zoonotic agents.

⁶ The minority of respondents referred to here said that they could buy organic, buy local or just buy Danish. It was also mentioned that one could avoid cuts like T-bone steaks or (in one case) rely on proper cooking.

⁷ This point is well described by Wynne (1996).

attitude appears to involve fundamental trust in public control of BSE. This trust might be the upshot of the resolute reaction of the Minister of Food, Agriculture and Fisheries to the first confirmed case of BSE in Denmark. Apart from immediately imposing the strict regulation required by the EU, she recalled beef-cuts with backbone from retail outlets and encouraged consumers to discard any similar beef they already owned.

Finally, the interviews touched on the issue of responsibility for food safety. Here, a further notable difference between BSE/vCJD and *Salmonella* emerged. Some respondents argued that some incidents of *Salmonella* infection are unavoidable and natural, even if the present number of incidents is particularly high:

Lay5: The *Salmonella*, yes... we all know where that comes from and how you risk getting it... most people after all also know how to avoid it... but there are still many cases of it... There will be bacteria in the food regardless of how you jump and leap, so... Somehow or other, I believe they have been there all the time... people have not always known what they died from, though... something else got the blame.

A few interviewees added that a natural level of 'background contamination' in *Salmonella* might even strengthen our immune systems. By contrast, vCJD can be seen as solely man-made, and more specifically as something imposed on us by agriculture and the food industry.

Interviews with Experts

Thirteen experts on zoonoses (defined here as people who deal professionally with zoonoses), most of whom had been involved more or less directly in the discussion and formulation of food policy, were selected for interview. Four came from industrial associations in primary production, one from retail business, two from regional government agencies, three from government research institutes, one from a clinical hospital department, one from a university and one from a consumer NGO.

The interviews were again semi-structured. They focused on the experts' roles in their organisations; their professional assessment of the nine zoonotic risks presented in the lay interviews; their attitudes to lay perceptions of these same risks; and their views on risk communication in the field of zoonoses.

Among the experts in our sample, there was wide agreement over many factual questions about zoonoses in Denmark. And as remarked in passing above, when asked to rank the nine zoonoses, all the experts understood the task in the same way – as a matter of describing their perception of the actual health threats. Some showed a clear awareness that this 'scientific' approach was likely to be different from the lay approach:

Exp1: First, I shall have to ask you: What does 'risky' mean? Is it my personal scientific attitude to what one really should be concerned about, or is it what people believe is dangerous – the ordinary citizen?

In their approach, the experts all took into account both the frequency and seriousness of zoonotic infection; they tried to assess, for each zoonosis, how many instances of human infection are there, and how serious these infections are. In summing up this information, the experts' implicitly assumed a weighting of the possible different health consequences, ranging from diarrhoea to death. Here is a typical example of how this approach works:

Interviewer: If we speak broadly about zoonoses, which ones do you then consider most risky?⁸

Exp2: Well, it is probably still *Salmonella*, because certainly there has been some success the last year or two in reducing the number of diagnosed cases,... but it is indeed the more aggressive form compared with *Campylobacter*, which is the other main problem... It is very seldom that *Campylobacter* infections become what is called invasive and possibly end up with blood poisoning, complications and death. So you can certainly say that in terms of numbers, they take up a lot of space. And if you add up days lost through sickness and other economic effects, then they take up the most space right now. But the *Salmonella* infections are the ones that potentially involve the greatest risk and complications, and in the worst case death, so it is still these that ought to be in focus...

CJD, or mad cow disease, as it is also called, on which there has been a tremendous focus for quite a few years, is absolutely disproportionate... misjudged as a big threat...

Overwhelmingly, the experts ranked *Campylobacter* and *Salmonella* as the most serious zoonotic food safety problems presently being faced in Denmark. Below these⁹ they placed *Listeria* and *Yersinia*. Many ranked Roskildesyge, which they interpreted as a viral infection, quite high.¹⁰ A few thought that more attention should be given to botulism, because of the many new production forms. Trichinae and tuberculosis were ranked quite low, and BSE/vCJD was ranked generally lowest, although uncertainty about the prevalence of BSE and vCJD caused some experts to rank it somewhat higher, to a midway position at most.

It was on *policy implications* that the experts, representing different interests, found themselves in a certain amount of disagreement. However, most experts adopt a policy objective that takes the frequency and seriousness of human health consequences as its point of

⁸ In introducing the ranking exercise to the experts, the word 'risky' was often used.

⁹ Interestingly, the experts placed *E. Coli* O157 immediately below *Campylobacter* and *Salmonella*, although they were not asked about this infection.

¹⁰ Most experts protested that food borne viral infections are not strictly zoonoses; some observed that other members of the nine zoonotic risks in our sample need not be zoonotic in nature.

departure. This assumption is evident, when Exp2 above says:

But the *Salmonella* infections are the ones that potentially involve the greatest risk and complications [...] so it is still these that *ought* to be in focus...

Note that Exp2 here, from a description of the greatest risk, almost imperceptibly moves to a value judgement about what ought to be done. It is reasonable to interpret this value judgement as the view that resources spent on any efforts to control and prevent zoonoses should be used in proportion to the risk they pose so that reduction of health risk per money unit is maximised. Thus, after having called the recent focus on vCJD "absolutely disproportionate", Exp2 goes on:

As far as I know, it is something like 500 million Kroner [roughly equivalent to €67 million] that we spend in Denmark alone on combating BSE, and theoretically the chance of ever seeing one single human case is about 0.1%. Thus, we are typically driven by the media and communication problems and always end too far out... when this money could have been returned many times if we had concentrated on the real risks. It is a very instructive story.

The notion that resources ought to be spent in proportion to the risk goes unidentified as a value judgement. It appears to be considered part of professional or scientific judgement:

Exp3: vCJD has to my knowledge not been confirmed in Denmark. And I consider it a political problem. This is what we professionals have difficulty finding reasonable – that so many resources are spent on that risk.

On the other hand, objectives involving considerations other than the proportionate reduction of health risks are clearly identified as political in nature. For one thing, this means that they are clearly identified as value judgements; but often, being perceived as disproportionate, they are also considered unjustified:

Exp1: ...BSE, which I find is a very huge political disease. We have had two million cattle in England infected by clinical outbreak of BSE. We have had approximately one hundred persons who became ill. The evaluation is wildly exaggerated, if one looks at it from a strictly scientific point of view... And I know that all the scientific colleagues I have spoken with, who are working on this, totally agree.

The adoption of this 'professional' view does not mean that the experts are unaware of the political reality or do not recognise the legitimacy of other policy objectives. It is, however, a view that is readily adopted or referred to by the experts; and they seem to use it implicitly as a standard against which they compare and judge other

objectives. As we have seen, a key example of a political priority – one explicitly mentioned by most of the experts – is the present spending on BSE/vCJD. Most experts recognised, however, that the measures adopted in response to BSE/vCJD were politically necessary, given EU regulations; and many of them also recognised that the measures have succeeded in closing the issue as far as consumer trust is concerned.

It is worth mentioning that uncertainty about the spread, or potential spread, of BSE/vCJD complicates matters here. A number of experts said that even though the risk presented by BSE/vCJD appears to be small, uncertainty about its true size justifies a precautionary approach. Some saw this precaution as a political necessity. Thus Exp4 conceded, “a politician nowadays cannot act otherwise”. Others advocated precaution on a professional/scientific basis.¹¹ One expert said that the effort to combat BSE/vCJD had been warranted, but that too little was being done about *Campylobacter* and *Salmonella* by comparison.

Reconstruction of Underlying Values

We now move to an analysis of some of the dominant perspectives in terms of moral theory. This will necessarily be somewhat schematic. We shall concentrate on the stylised problem of how to prioritise between *Salmonella* and BSE/vCJD. We start by summarising the expert and the lay perspectives.

As we have seen from the interviews, the experts appear to perceive it as their duty to present a professional view on zoonoses. One part of this duty will be to get the numbers right: The main tools are here epidemiological analyses and risk assessments. However, the experts will also see it as a their duty to present a professional corrective to any political priority, namely that we ought to make the highest possible reduction in health risk per cost unit. This corrective typically involves an implicit critique of other priorities which we reconstruct along the following lines: Resources are limited, and any disproportionate effort necessarily involves costs in terms of negative health consequences that could have been avoided. For instance, the present very costly policy on BSE necessarily draws away resources from other tasks, such as *Salmonella*. It is not necessarily implied that other (political) considerations are illegitimate or wrong; but at least their costs should be recognised openly.

The lay interviews present a less homogenous picture. Lay people appear to think about food risks in many different ways and express no clearly shared priorities. As a point of departure, however, a shared perspective seems to be the expectation that food ought to be reasonably safe to eat. For the fulfilment of this expectation, we are all obviously very dependent on the food industry and its regulation. If for some reason we begin to lose trust in these, some of the differences between *Salmonella* and BSE/vCJD will appear significant.

For one thing, the fact that, in the case of *Salmonella*, there is still room for reducing the risk by a personal risk management effort makes this risk far less frightening than being powerlessly exposed to “the lottery” of

BSE/vCJD (as one interviewee expressed it).¹² Moreover, in this kind of lottery, it is far more frightening that the risk is one of getting an invariably fatal and very dreadful disease. (Of course, *Salmonella*-infection by comparison is usually non-fatal and has an effective treatment available.) For these reasons, we believe that a change in priorities along the lines suggested by many experts – moving resources from BSE/vCJD to *Salmonella* – would be opposed by many lay people. At least, it would if they began to lose trust in beef and perceived even a very small probability of personal exposure.

If we look at these conflicting perspectives from a moral point of view, two important points emerge. First, whereas the lay perspective appears to be primarily personal, the experts take an impartial point of view on society as such. In their view, the objective should be minimising most cost effectively the *total* of expected negative health consequences. This objective is compatible with imposing costs on the individual for the sake of the common good. For instance, by giving priority to *Salmonella* over BSE/vCJD, an individual can be forced to accept a small risk of *death* for the sake of reducing the total number of human *Salmonella* infections (most of them non-fatal). But from the individual layperson’s point of view, this is probably perceived as unacceptable. The individual may have no personal interest in accepting this kind of trade-off.

From a moral point of view, the question here is whether the individual has a right not to have risks placed upon him without his consent. It is generally recognised that a person has a right not to be harmed by others. It is more controversial if a person also has a right not to have a *risk* of harm imposed on him by others, even if the risk is very small. We believe, however, that a case can be made for a right of this kind in the case of BSE/vCJD. Thus, Danish Law forbids selling food that by normal use may be assumed to transmit or cause disease. If the purpose is to protect the individual, then, since even a very small risk of death might be frightening, it might be assumed to cover the case of BSE/vCJD.

In principle, there would then be a similar right not to have the risk of *Salmonella* imposed on one. However, this risk might not be perceived as equally frightening, in view of the probably non-fatal consequences. Moreover, the possibility of personal control makes it possible for the individual to decide himself whether or not he wants to run the risk. Finally, if some prevalence of *Salmonella* is natural and hence unavoidable, the picture is different. Because of the perceived benefits, people might generally be content to run the risk of *Salmonella* infection, and they would still have some personal control.

The conflict between the objective of making outcomes as good as possible from the impartial point of view of society, on the one hand, and respect for individual rights and personal autonomy, on the other hand, is well known from political philosophy.¹³ If there are reasons from the

¹¹ One respondent who took this line recognised that hers was a minority view among professionals.

¹² Of course, one could reduce the risk from BSE by simply abstaining from eating beef altogether. However, the general expectation is that it should not be necessary to resort to such drastic measures in order to feel safe about food.

¹³ A clear statement of the individual perspective is given by Nozick (1974). Kagan (1989) provides a thorough defence of an impartial

point of view of society to change priorities in the direction of *Salmonella*, but people have a right not to have a risk of death placed upon them, what can then be done about this moral conflict? The simple answer is that experts can respect the lay right by involving the general public in the decision. If the objective of reducing total health costs is so important, it ought to be possible to convince people about it, thereby persuading them waive their right.

Another important point is that lay people appear to consider the consequence 'death' as substantially more serious than the consequence 'illness', whereas experts are willing to make a 'proportional' trade-off between these types of consequence. The experts' professional view implies that lay people attach too much weight to the risk of death. The fact that lay people take a primarily personal point of view, whereas experts take an impartial point of view probably again plays a role here. However, it is well known that it is a controversial moral question how to assess the value of avoiding untimely death (See e.g., McMahan (2002) for an overview).

This kind of discussion has been pursued for some years within medical ethics. The measurement of health benefits in terms of QALYs (Quality Adjusted Life Years), for instance, assumes that the value of avoiding untimely death equals no more, and no less, than the value (quality) of the extra years the person enjoys. The implication is that the benefit of a life-prolonging treatment such as heart transplantation can be compared with the benefit of a treatment like hip replacement, which does not prolong life but makes the quality of the remaining life years better. However, critics claim that the value of prolonging life might be incomparable with enhancing the quality of life; or that there is more to the value of prolonging life than simply the value of the extra years. It might be difficult to reach consensus on this question. But clearly, there is a substantial moral issue worth discussing. For an overview, see Bell & Mendus (1988) and Broome (1993).

Finally, we should like to add that the motives behind risky activities appear to play a role for lay people. Thus, the fact that food industry is perceived as governed by a profit motive seems to make food risks more unacceptable than they would have been if food production had been governed by more noble motives. We suggest that organic production could be perceived in this perspective, even to the extent that lay people might accept greater zoonotic risks from organic products because those risks are perceived, perhaps, as foreseeable but unintended consequences of the ideal behind organic production. Kant (1959) is well known for stressing the importance of motives in moral thought.

Conclusion

If we consider the conflicting perspectives in the light of socio-psychological descriptions, debate between them seems bound to be at cross-purposes. Disclosure of the values underlying the conflicting perspectives makes those perspectives open for reasonable discussion. Once the moral nature of this kind of debate is recognised, a

consequentialist perspective. For the issue of risk in this connection, see Jensen (2002).

new set of concepts becomes available for rational discourse. We cannot be sure that a moral dialogue will lead to consensus. However, given the bleak prospects of the presently used strategies in risk communication, it should certainly be worth trying.

The experts' distinction between 'professional' and 'political' views seems to signal that whereas the latter involve value judgements, the former does not. However, it is important for experts to recognise that the professional priority involves a value judgement as well. More precisely, the view that resources should be spent so as to reduce negative health effects most cost effectively is value judgement. This judgement may seem self-evidently correct to experts. Still, it is a value judgement all the same. And this has important consequences for risk communication.

Experts have no professional authority to make value judgements, although they do of course have authority in presenting the facts, and among these facts are the consequences of not pursuing a given objective. Equally, experts may be endowed with some authority by their organisation in holding a particular value judgement. For instance, an agency may have assigned an objective to it by the government, and from this assignment some authority flows. But the experts have no authority to make a value judgement simply because they are experts. Arguing for a value judgement is very different from arguing for facts. Scientific training is very useful in factual argument. But no value judgement follows from a report of scientific findings. In order to convince someone about the validity of a value judgement, it is necessary to appeal to the values he or she already holds. But this is only possible if the appeal itself is presented as a value judgement. If it is presented in a value-free guise as a 'professional' or 'scientific' judgement, communication becomes distorted and therefore runs the risk of being at cross-purposes. We all tend to react with resistance when someone tries to change our value judgements by appealing to his authority in the matter – as if it was a simple matter of expert opinion. We only engage with others, and consider our own value judgements, when the latter are respected from the outset. This requires an open dialogue.

It may be that experts, in an open dialogue, will be able to convince the public that it should accept a small risk of death for the sake of the common good in terms of the total number of human infections. But they are only likely to succeed if they take seriously the individual's legitimate interests. Arrogance in this matter clearly will not help. It is not a matter merely of 'getting the numbers right'. Delicate moral discussion of how far we, as individuals, are obliged to accept risks of death being forced upon us for the sake of reducing general illness in society is required. However, as the interviews showed, most experts actually do understand the lay perspective on food safety quite well, just as lay people are not necessarily insensitive to frequencies and do not generally believe in food that is 100% safe. So the conflicting perspectives should be able to meet.

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