Dealing with values that differ across concerned consumer groups and policy makers — values as elements in societal concerns

Klintman, Mikael

Published in:
Policy Responses to Societal Concerns in Food and Agriculture

2010

Policy Responses to Societal Concerns in Food and Agriculture

PROCEEDINGS OF AN OECD WORKSHOP

OECD

POLICY RESPONSES TO SOCIETAL CONCERNS IN FOOD AND AGRICULTURE

PROCEEDINGS OF AN OECD WORKSHOP

FOREWORD

In November 2009, economists, legal experts, environmentalists, public policy specialists, ethicists and scientists came together at a Workshop, under the auspices of the OECD's Joint Working Party on Agriculture and Trade, to discuss societal concerns in relation to food and agriculture. For the purposes of the Workshop, the societal concerns of interest were defined as being characterised by:

- a bottom-up movement and the presence of advocacy or lobbying groups, multiple stakeholders, active involvement of the media and different views about desirable outcomes;
- the presence of ethical or values dimensions which differ within and between countries;
- uncertainty about processes or impacts or other forms of unknown or inaccessible knowledge such as in relation to scientific evidence; and
- different perceptions of or aversion to risk and possible irreversibilties.

The first day of the Workshop was devoted to discussion of cross-cutting issues in relation to societal concerns including institutions and processes, uncertainty and the precautionary principle, values and international aspects. The second day was devoted to a series of case studies relating to animal welfare, GMO's, biodiversity and fair trade labels.

A selection of the main papers and contributions from panellists are presented here, together with an overview and summary of the Workshop prepared by the rapporteur, Stefan Tangermann, Professor Emeritus at the Department of Agricultural Economics and Rural Development, at the University of Gottingen, Germany. The Workshop was organised and this proceedings volume was prepared by Carmel Cahill, Senior Counsellor in the Trade and Agriculture Directorate of OECD, with assistance from Jenny Griffin, Gillian Nelson and Michèle Patterson.

TABLE OF CONTENTS

THE ECONOMIC AND TRADE IMPLICATIONS OF POLICY RESPONSES TO SOCIETAL CONCERNS AN OVERVIEW

Stefan Tangermann[1]

Agricultural policies have always had a tendency to be controversial. In many cases they generate major transfers of welfare between different groups of people, and hence are favoured by some and criticised by others. They also frequently cause trouble at the international level as domestic programmes interfere with trade flows and affect the wellbeing of people in other parts of the world. In addition to these more "traditional" problems though, agricultural policy makers have more recently been faced with several issues that are even more controversial. Animal welfare, environmental implications, genetically modified organisms (GMOs), quality and safety of food products and social conditions of production are just a few examples of issues where modern societies have concerns, often arising out of widely diverging views on what is right and wrong. Responding appropriately to such societal concerns and identifying the "best" policies to solve these issues has often proven difficult for policy makers, be it in a domestic setting or typically even more intricate — in an international context. In order to throw at least some light on such policy problems, the OECD has decided to invest some effort in analysing such societal concerns and the respective policy responses. The workshop of which an overview is provided here was part of this effort.

Societal concerns are a multi-faceted phenomenon — and the presentations and discussions throughout the workshop were equally multi-faceted. They originated from a wide spectrum of disciplines, all the way from philosophy, through political science, law, veterinary science and economics, to practical policy making. The perspectives brought to bear on the issue of how to deal with societal concerns ranged from academic thought through international organisations, industry and agriculture to decision making in governments. The mood among participants of the workshop oscillated between slight frustration with the complexity of the issues covered, to mild optimism regarding the availability of practical options for policy responses to at least some of the concerns society expresses about what happens in the field of agriculture and food. The workshop covered many dimensions of the theme, but in the limited amount of time available could not possibly have dealt with everything one would want to know about the nature of and constructive policy responses to societal concerns. This overview is an attempt, necessarily somewhat subjective, at highlighting some of the major lessons learned during the workshop, while also indicating some of the open questions remaining. It begins by commenting on the nature of societal concerns, proceeds to looking at possible resolutions, poses some questions not much covered by the workshop, and ends by drawing some tentative conclusions regarding the potential role of international organisation in dealing with societal concerns.

1. Professor Emeritus, Department of Agricultural Economics and Rural Development, University of Gottingen, Germany.

The nature of societal concerns

The nature of the policy problem posed by what is referred to as "societal concern" was well described in the document outlining the scope of the workshop, i.e.:

"A main characteristic is that the pressure for a policy response is a bottom-up movement characterised by the presence of advocacy or lobbying groups, multiple stakeholders, often different views about desirable outcomes and active involvement of the media. Other characteristics of interest are the presence of an ethical or values dimension which may differ within and between countries; uncertainty about processes or impacts or other forms of unknown or inaccessible knowledge such as uncertainties about scientific evidence; information asymmetries; different perceptions of or aversion to risk and possible irreversibilities" (see workshop programme).

These features of societal concerns were fully confirmed by the presentations and discussions of the workshop, and no doubt was left that they make for what Sandra Batie calls "wicked problems" – a term that was frequently referred to throughout the workshop. Three dimensions appear central in this context, i.e. complexity, uncertainty and value conflicts.

Complexity is a common feature of a growing number of policy issues in an increasingly globalised world employing sophisticated technologies and running against resource constraints. It is characteristic of societal concerns for a number of reasons, well explained in the presentations by Sandra Batie and Dan Bromley. To start with, the policy problem is often ill defined, or rather it has several facets, emphasised to different degrees by different groups. Are GMOs potentially dangerous for the environment, for biodiversity or for human beings? Or is the major problem that farmers planting GMOs can cause trouble for their colleagues using conventional varieties? In many cases, a host of interdependencies add to the complexity of a social concern. When rainforests are cut in Indonesia, with the resulting damage to biodiversity and climate, it may be in response to more biodiesel being mandated in far-away Europe. Shared responsibility of several agents, or a lack of clear allocation of responsibilities, is another reason for complexity. Are social conditions under which an exported good is produced in a developing country the responsibility of the government of that country, of the companies involved in producing and marketing the product, of the government of the importing country or of people consuming it?

The crucial element of uncertainty surrounding the typical societal concern is lack of definite knowledge regarding the relevant cause-effect relations. As argued by Sandra Batie, the linear model of "normal science" is not well-suited for wicked problems, because of complexity of the issues involved, lack of definite knowledge about the component parts of the systems concerned and hence ambiguity regarding outcomes of given actions addressing the problem. Climate change is an obvious case in point. Different scientists hold different but equally plausible views regarding the relative contributions of man-made and "natural" factors causing global warming (not to speak of those scientists who even doubt whether there is any significant warming at all). In a situation like that there cannot be certainty regarding the effects of policies that try to change human behaviour in the interest of slowing down the process of climate change.

For Dan Bromley, such uncertainty is the general state of affairs in public policy making: the world is stochastic and hence indeterminate, and human action is animated by doubt and surprise. Rather than working on the basis of actual understanding of cause-effect relations in the real world, Bromley tells us, we have to make choices based on imaginings. The implication, of course, is that there are necessarily doubts as to which policy action might

most effectively contribute to solving the problem at hand. While Dan Bromley appears to feel that this is generally the case when it comes to making choices in public policy, Sandra Batie suggests that there are also still "tame problems" where linear science works and relatively clear-cut policy decisions can be made. However, she sees wicked problems, suffering from uncertainty regarding cause-effect relations, as becoming more and more frequent. In other words, what is referred to as societal concerns may increasingly become the norm of policy making, rather than the exception.

Value conflicts, finally, are probably the most egregious ingredient of policy problems resulting from societal concerns. Different groups of stakeholders have different views of the nature of the problem, of the implications of alternative options for policy choice, and in particular of the desirability of given outcomes. For example, the subjective adequacy of applying the precautionary principle depends not only on the perceived extent of uncertainty regarding potentially negative implications of given actions (for example, treating cattle with hormones) but also on the choice of normative standards regarding the acceptability of risk. Sandra Batie suggests that wicked problems, and hence cases of societal concerns, are characterised by a combination of high uncertainty and strong value conflicts. Mikael Klintman points out that values play an important role in the way issues are framed in a complex reality where people have trouble making sense of an amorphous situation and acting on it. He also explains that providing factual information will typically not do away with controversies between different frames that have been formed around conflicting values. Bridging the wide gaps between different prevailing value sets is as much a challenge in dealing with societal concerns as is the need to identify potentially effective policy measures.

When dealing with societal concerns, there is no way around acknowledging their three dimensions, *i.e.* complexity, uncertainty and value conflicts. One may feel depressed when faced with the colossal task of developing policy responses to issues involving these features, and there was some uneasiness among workshop participants when confronted with these characteristics of societal concerns. But then the workshop began to understand that we should not feel too badly or deficient if confronted with such problems. This is simply the fundamental nature of many issues in our modern world. The more we learn about interdependencies among the component parts of the system around us, the more we become aware of the complex structure of the environment in which we live. The further outward we push the frontiers of science, the better we are able to identify the remaining uncertainties. The more we become conscious citizens, the stronger we feel about our values and the more we are prepared to defend them. In other words, societal concerns make for wicked policy problems, but their existence is a positive indication of a liberated society living in an increasingly interdependent and scientifically advanced world. Harmony in making policy decisions is a myth, and it no longer applies to many issues arising when we deal with food and agriculture.

The workshop was also offered some consolation. Societies adapt. Institutions and the law develop. Bernard O'Connor reminded us that there were times in which the King's stick "solved" controversies and provided responses to seemingly intractable problems, but also that time has moved on and societies found have other ways of dealing with their concerns. Even more consolation came when the workshop was informed of concrete solutions that have been found here and there in responding to a number of societal concerns.

Responding to societal concerns

There is obviously not one general recipe for how to develop policy responses to the tricky societal concerns arising in the field of food and agriculture. The issues at hand are too different in nature, and the economic, social and technological environments in which they occur too variable, for one standardised formula to chart the way forward. But a few common lessons can be drawn from the cases presented and discussed during the workshop. Rather than dealing with these individual cases in turn and highlighting their idiosyncratic circumstances, it may be useful to take another look at the three constituent dimensions of societal concerns, i.e. complexity, uncertainty and value conflicts, and consider approaches to dealing with them.

Complexity

In confronting the problem of complexity, logic may help to identify the individual component parts of an issue, to analyse them one by one, and to build up suggestions for an overall policy response in a stepwise fashion from an understanding of the most promising ways of dealing with each individual element. Mikitaro Shobayashi demonstrated this approach by outlining the way in which the OECD has dealt with the issue of multifunctionality in agriculture. For a long time, this issue had been controversial at the international level because some countries felt that the multifunctional character of agriculture justified, if not required, output-related support, while others maintained that it was no more than a pretext for intervening in agricultural markets and trade in the interest of domestic farmers.

In the case of multifunctionality, analytical logic suggests to begin with a distinction between commodity production and non-commodity outputs (such as landscape, environmental goods or food security) generated by agriculture. With this distinction made, it becomes clear that jointness (or the lack of it) between commodity and non-commodity production is a crucial criterion because it determines whether the desired non-commodity outputs can be supplied independently of commodity production. At the same time, the extent to which any non-commodity outputs are public goods or externalities is an important question as it reveals whether public policy is required to overcome a market failure. Once these individual elements have been separated analytically, the puzzle can be put together, and the most promising policy response can be identified depending on the specifics of the picture that emerges from that puzzle. After this exercise was elaborated with the governments of the OECD countries around the table, the issue of multifunctionality now appears to have lost much of its controversial character in international policy debates.

Analytical logic may also help to reduce complexity where distinctions between product attributes and process characteristics are relevant. Take the case of GMOs. Societal concerns about "green" GMOs, as discussed by Marco Valletta, relate to a host of issues. Some of them have to do with (potential) implications of the process of producing GMO crops, such as threats to biodiversity and the environment, or imperfect crop segregation and negative implications for farmers producing non-GMO crops. Other concerns though, bear on the nature of the GMO product itself, such as fears that it might cause allergies. Organic products, occasionally mentioned during the workshop as an example of strong value expressions among given consumer groups, are another case in point. When it comes to debates on whether there should be a specific public policy addressing organic production it may be useful to make a distinction between its impact on the environment, clearly a process feature relating to a public good, on the one hand, and on the other hand any quality

attributes of organic products that may have implications for private goods such as product taste or consumer health.

Another approach to dealing with complexity is the creation of layered policy designs where each individual layer responds to some part of the concern. Two cases presented during the workshop may help to understand how layering can be achieved. One of them is the European Union's approach to dealing with GMO foods, as presented by Marco Valletta. It involves an element of layered institutional design in terms of dealing with risk. At one level risk is assessed, and at a different level risk is managed, and two different institutions are charged with these two tasks. Risk assessment is performed by the European Food Safety Authority, based on scientific evidence and international standards, arguably fully independent from any political considerations. The task of actual risk management, *i.e.*. deciding on product authorisation, labeling requirements, purity norms *etc*., is left to the European Commission and the Council of Ministers and is performed through a regulatory committee procedure open to influences from political considerations and public opinion.

The Swiss approach to dealing with animal welfare, presented by Andreas Brandenburg and François Pythoud, provides an example of layered policy measures. The Swiss policy response to animal welfare concerns establishes three layers, namely mandatory requirements, voluntary participation in government programmes, and private labels. A basic level of minimum requirements regarding the treatment of animals, to be respected by all farmers, is laid down in legislation, in the Swiss case even mandated by the Federal Constitution. At the next level, programmes are established under which farmers who voluntarily decide to make specifically defined and more demanding ethological efforts can receive financial compensation from the public purse. Beyond that level, even higher animal welfare standards can be defined under private labels, and consumers then have the choice whether they are prepared to pay the higher market price attracted by products carrying those labels.

Uncertainty

In dealing with the uncertainty dimension so typical of many societal concerns, the challenge is to push the envelope as far as possible in the direction of providing evidence, so as to move the "imaginings" on which we operate (Bromley) as close as conceivable towards an understanding of actual reality.

There are obvious limits to what policy makers engaged in responding to a particular societal concern can do in terms of generating new and conclusive scientific evidence. The generation of evidence rests with the scientific community, and any attempt by policy makers at interfering with the process of scientific discovery will easily aggravate at least the perception of uncertainty, if not the actual degree of uncertainty. In this regard, governments can only create the conditions under which science can operate sufficiently well, including the provision of a sufficient resource base for scientific research. It can also provide incentives for scientists to engage in prospective research looking at issues that have the potential of turning into societal concerns in the future.

However, governments can assist in the process of making available scientific evidence widely accessible, and guarding against impressions of lacking objectivity of the evidence provided. In this sense it helps to involve science at all levels and in each individual step of working towards a resolution of the issue. It is also important to bring diverse sources of information into play, even though this may well mean that conflicting pieces of evidence are provided. There is no way around admitting that science does not (yet) have definite

answers to many complex questions. Attempts at suppressing dissenting views simply don't work in open societies with active media, and simply make things worse.

Creating a maximum degree of transparency is as decisive as is establishing an institutional framework that clearly separates the provision of scientific evidence from the process of taking political decisions. Here again a clear institutional distinction between risk assessment and risk management can help to reduce uncertainty, and certainly to deal with the perception of uncertainty.

There is also always the danger that scientific evidence is deliberately misrepresented by groups of stakeholders trying to distort the process of decision making in their favour. Exposing such cases of misrepresentation is a difficult, but nevertheless crucial part of the efforts to work towards a resolution of problems resulting from societal concerns. It is bad enough that there are many cases of "objective" uncertainty regarding cause-effect relations, but this problem should not be exacerbated by "subjective" uncertainty regarding what is, and what is not, known.

Uncertainty in terms of scientific evidence is also at the heart of the debate about the precautionary principle, as discussed in the workshop by Peter Saunders, Daryl Brehm and R. von Schomberg. Obviously, if the all implications of adopting a given technology or producing and consuming a given type of good are fully known, and if there is no doubt regarding what this means for human beings, nature and resource use, then there is no reason to take precautions – the technology or good concerned can then be classified unequivocally as either safe or unsafe and accordingly either admitted or banned. However, as discussed above in relation to the issue of uncertainty as one central ingredient in societal concerns, complete, comprehensive and unequivocal knowledge of cause-effect relations is probably the exception rather than the norm in many walks of life. In most cases one can probably find a scientist, if not a whole group of them, who disagrees with the majority view of either the nature and intensity of a potential safety threat or the threshold beyond which it should be banned.

In other words, it will frequently be impossible to exclude the existence of any risk. The question then is where to draw the line between what is considered an acceptable risk and what is not. The term "reasonable doubt" plays some role in the debate about the precautionary principle, but remains essentially empty of definite meaning in the absence of normative standards regarding the level of acceptable risk. If one subscribes to the view that absolute certainty is an exception rather than the rule, then different positions regarding the acceptability of the precautionary principle essentially boil down to different opinions on which level of risk is acceptable. Since there is no "scientific" way of identifying the "right" level of acceptable risk, society is thrown back to the unavoidable need to establish subjective norms for what level of risk can be accepted — and different societies obviously have different subjective norms on these matters.

The argument was advanced during the workshop that a number of disastrous outcomes we are experiencing today could have been avoided had the precautionary principle been applied in the past (the destructive effects of tobacco and asbestos were given as examples). However, the workshop was also reminded that there is not only the risk of accepting a course of events that ends up having highly negative implications, but also the risk of rejecting an option that could have brought great benefits. For economists having imbibed the concept of opportunity costs from their infancy it appears clear that any institutional design for decision making that forgets about this two-sided nature of the issue can only produce biased results. In the process of political decision making in response to societal concerns, though, the situation is less clear-cut, for two reasons.

First, negative outcomes of "wrong" decisions that have actually been taken in the past (such as the introduction of tobacco and asbestos) can be observed in reality and hence can be used, in the social discourse about acceptable levels of risk, as red flags for future decision making. The unrealised benefits that did not materialise in fact, because the decision to ban the respective development was actually taken in the past, are, however, unobservable and therefore lost upon peoples' minds. Second, the workshop was reminded that subjective views of acceptable risk levels tend to be asymmetric, in the sense that potential losses are weighed more heavily than potential gains of equal magnitude. The implication is a degree of conservatism, acting to some extent against the adoption of new technologies and products. Again, the extent to which this asymmetry in assessing potential losses and gains, and the resulting risk aversion, prevails in peoples' minds is likely to differ across different cultures and societies and hence may lead different countries to have different perspectives on the precautionary principle.

Moreover, this asymmetry of perception may also be a factor in explaining why some people appear to hold strong beliefs that are essentially immune to the provision of evidence. Sandra Batie illustrated this case by making reference to consumers pronouncing absolute positions such as "I do not care whether GMOs are safe —I don't want to eat them".

Conflicting values

The existence, among some people, of strong beliefs such as unwillingness to eat GMOs regardless of their actual safety, is an indication of the difficulties policy makers cannot avoid when dealing with value conflicts. At a very fundamental level, value conflicts can only be overcome if values of some (or all) stakeholders change. This raises right away the essential question of whether governments have any role whatsoever in the formation of values among their citizens. It can well be argued that a democracy can only function properly if government behaviour reflects, rather than determines, the values of their citizens. However, from a more pragmatic perspective things are less clear-cut. There will always be value conflicts among different groups of people, and societies can only live in peace and freedom if ways are found to defuse these conflicts. Governments of democracies therefore have the responsibility to help organising their societies in a way that allows them to live in peace and freedom, and hence are called upon to work on ways to defuse value conflicts, which may well mean to assist people in reconciling their diverging values.

As presentations and discussions during the workshop have shown there is a whole list of things governments faced with wicked problems resulting from societal concerns can do to help defusing value conflicts. The list begins with various contributions to shaping the institutional design. For example, governments can organise the societal discourse by bringing people together in appropriate fora where perspectives can be exchanged and, if it all goes well, an understanding of each others' views can be improved. It also helps to work towards agreement on process before embarking on a discussion of options for resolving the issue at hand. As one constructive element of the process it makes a lot of sense to begin by trying to find agreement on a desirable outcome first, before debating the instrumental steps on the way to that outcome. Though this approach may appear to have little to do with the formation of values, it can still be helpful in working towards a resolution of value conflicts as values are not necessarily abstract and absolute, but often come in the form of feelings about concrete desirable outcomes.

The case of resistance against eating GMOs, irrespective of their safety, is illustrative in this context. There is not much point in debating the values behind such behaviour. However, if agreement can be found on the desirability of the outcome that nobody should

be forced to eat GMO food unwillingly, then it is relatively easy to proceed to practical instrumentation, which in this case is labeling of any GMO content in food. Conrad von Kameke also suggested that agreeing on certain outcomes regarding the outcomes of agricultural production regarding implications for the environment and resource use (such as less use of water and land, and lower carbon emissions) might make it easier to agree on the acceptability of using GMO crops holding the promise to achieve such outcomes.

Another institutional ingredient in dealing with value conflicts is the establishment of the highest quality regulatory framework, offering the hope that mistrust can be kept to a minimum. However, there is no guarantee that this hope always materialises. The case of Australia's dealings with GMO foods, presented by Joanna Hewitt, is illustrative in this regard. There is general appreciation for the high quality and independence of the Australian institution responsible for preparing risk assessments and risk management plans for licensing the release of live or viable GMOs (the Office of the Gene Technology Regulator, OGTR). Yet, the approvals of two varieties of GM canola granted by the OGTR remained politically controversial, and all Australian States and Territories entered into a moratorium precluding their commercial release. Before coming back to the final resolution of this case, a further comment on institutional design may be in place.

The point was made above that layered institutional designs may help in dealing with the issue of complexity (as, incidentally, they may also be productive approaches to dealing with uncertainty and value conflicts). The European Union's layered institutional design by which a distinction is made between responsibilities for risk assessment on the one hand and risk management on the other hand was cited as an example in that regard. Though institutional design was not at the core of the workshop, it was interesting to compare in passing the selective bits of information provided regarding the different institutional approaches to dealing with GMOs adopted in different countries. In Australia, risk assessment and the preparation of plans for risk management are both done in the same institution, the OGTR. In the European Union, risk assessment and risk management are strictly distinguished and allocated to different institutions. In the United States, as mentioned in passing by Darryl Brehm, several institutions are involved, ranging from the Executive Office of the President through the Environment Protection Agency, the Food and Drug Agency, the Department of Agriculture and the National Institute for Health to the National Science Foundation. Different countries may need different institutional designs, depending on their history and the respective political, social and cultural environment. What appears crucial, though, from the perspective of dealing constructively with value conflicts, is that a clearly visible distinction is made between the provision of scientific evidence on the one hand and the political conclusions on the other hand that are drawn from that evidence.

An element of institutional design very directly oriented to dealing with value conflicts is the creation of ethical committees providing ethical guidance in the decision process. Linda Fulponi who introduced this approach in the workshop also showed how ethical delphi studies and the formulation of an ethical matrix can help to find out about values involved in a given case and their interrelations. Along the same lines, it can be helpful to clarify the relationships between different categories of values, for example the way in which non-economic values interact with economic implications of given projects.

Remembering Mikael Klintman's point that controversies between conflicting value frames can only be overcome through reframing it was interesting to see how progress was eventually achieved in the Australian case of releasing GM canola varieties. Joanna Hewitt reported on the intensive debates that took place among the different groups of stakeholders, the wider community and policy makers and the active contributions made and facts

provided by Australia's Chief Scientist and scientific professionals in major research organisations. In Klintman's terms, this process obviously contributed to reframing. Surveys showed that community attitudes regarding use of GM technology actually shifted, and in the end some States spearheaded the retreat and abandoned their moratoria. It would probably go too far to suggest that through this process a wicked problem was turned into a tame one. But against the background of all the intractable cases of societal concerns considered throughout the workshop it was reassuring to learn about this successful case of working towards a resolution. It was a bit like being told that, after all, there can be life after death.

A very important lesson Joanna Hewitt drew from experience with this Australian case is that policy leadership, rather than followership, can make a difference. There was only very little talk during the workshop about how values are formed in the first place and how they are influenced by different actors (see below). However, Hewitt's point about the positive effect that leadership from the highest political level, if well exercised, can have on the resolution of value conflicts was a welcome contribution to filling this gap. Everybody can probably cite examples of where politicians have lacked the courage to lead the way and have, instead, hidden behind ostensibly firm and immoveable beliefs in the wider community. While such populist attitudes may at first glance appear to avoid controversies, they are more likely in the longer term to generate new conflicts as they allow different value frames to go unchallenged, rather than creating a culture of reframing in the interest of moving towards a common understanding society's overall interest. Populist policy can also result in frequent shifts of positions and policies. Conrad von Kameke provided an interesting perspective of the frequent fluctuations of their positions on GMOs in the governments of France and Germany (which he also suggested tended to be always at opposite ends of the spectrum between pro and contra GMOs).

Finally, rather than working on the formation of values to overcome conflicts, a wholly different approach is to create a framework in which each group can live according to its own values. Obviously this is possible only where it is technically practicable to provide different groups in society with different options. Climate change is a case where this is clearly not feasible: climate is necessarily the same for everybody in a given geographic entity. However, distinctions can be made between different consumer goods exhibiting different product attributes or having been produced in different types of processes. Such distinctions can then be labelled, and consumers can be left to opt for the good best in line with their values. Fair trade labels provide an example, presented in the workshop by Helena Johansson. While not generating all the positive effects that consumers (and the organisations organising fair trade product chains) may hope for, fair trade labels illustrate the fact that there may well be scope for market solutions to some societal concerns.

Cutting across the three dimensions of societal concerns used as the organising principle in this overview, it should be helpful to make an attempt at identifying which of them poses the greatest difficulty in the respective case at hand. Is the problem mostly intractable because the issues involved are so complex? Is the predominant difficulty that there is scientific uncertainty? Or is the greatest trouble that values of the different stakeholders are in conflict? Depending on where among these three dimensions the problem is culminating one may want to start looking for approaches to moving towards a resolution.

Open questions

A workshop dealing with a multi-faceted and complicated issue such as societal concerns, in a limited amount of time, cannot possibly address all aspects that are relevant. Moreover,

the better a discussion flows (and it flowed well in this workshop), the more it also tends open up new questions. And indeed, there are a number of issues the workshop did not touch upon, or which became apparent during the workshop. What follows is a (necessarily subjective) list of some of the biggest questions which remained after the workshop. Given the crucial significance of values in the genesis of societal concerns, several of these open questions have to do with the formation of values.

Indeed, one would want to know much more about the formation of values than the workshop was able to achieve. It is certainly not as if people are born with certain values and then maintain them through the rest of their lives. Values change over time, based on experiences made and information collected. Values held by individuals respond to developments in the wider community and examples set by others. New options emerging as a result of scientific and technological progress are assessed not just based on pre-existing values but may trigger the formation of new value sets. Given that values are not static but dynamic they can also be modified deliberately by others. The comment was made in passing during the workshop that peoples' perspectives on a number of societal issues may be more the result of purposeful "marketing" than of intrinsic values. An open question, then, is who can influence values in which way. In that context, what is the role of the media? How does the media decide which views to promote?

In the context of societal concerns it would appear to be particularly desirable to know more about how NGOs can and do influence values. There is probably not one single case of a policy problem in food and agriculture that is referred to as a societal concern in which there is not intensive activity of one or several NGOs. Given that NGOs have "business models" much as commercial companies, it must be in their interest to stimulate public support for their target concerns. The best way to do this is to influence peoples' values. Moreover, in governments there is a tendency to take pronouncements of NGOs as expressions of citizens' interests. Information used by the media is often drawn from NGOs. Efforts to resolve cases of societal concerns through working on citizens' values are, therefore, probably futile if they neglect the influence of NGOs.

One can go even a step further and ask a question also not raised at the workshop, namely what we know about the democratic quality of the process of value formation. Is it conceivable that some cases of "societal" concerns are in fact more like cases of concerns raised and promoted by NGOs, in order to raise their visibility and sharpen their profile? Is it possible that there are societal concerns without much of society behind them? If so, what is the role of public policy in dealing with these cases? Are they not primary examples of situations in which government leadership, rather than followership (Joanna Hewitt) is urgently needed?

Along somewhat similar lines, can we be sure we know sufficiently well "actual" values held by citizens? If there may be reasons to be somewhat skeptical regarding the representativeness of concerns expressed by NGOs, and on their behalf by the media, then of course an alternative appears to be to turn to citizens directly, for example through surveys. However, it is a well known fact that responses in surveys do not necessarily mirror real preferences as revealed in actual behaviour. For example, preferences for bio-food pronounced in surveys, along with willingness to pay higher prices for them, do not match with actual buying decisions, not even for the individual respondent who has often been found to be in fact less prepared to pay the higher prices charged for bio-food. Moreover there is the possibility of strategic behaviour in expressing values. For example, if producers argue for the application of the precautionary principle in the case of a novel product, their

real interest may be less the avoidance of risk but protection of the market for traditional products.

At a different level, had the time been available during the workshop it might have been productive to dig somewhat deeper regarding the extent to which a layered approach in terms of mandatory requirements, voluntary participation in government financed programmes and private labels can help to defuse societal concerns. More specifically, can any general principles be formulated for where to draw the line between mandatory and voluntary or private action? To take an example from animal welfare, is a mandatory ban on given practices in treating animals, rather than labelling of products originating from farms which denounce that practice, appropriate where the majority of citizens disapprove of that practice? Or should the practice be banned mandatorily only if, say, ninety percent of citizens are against that practice? What are the ethical, political and economic implications involved in decisions like this? Can it be argued that in cases where a majority (or, say, ninety percent) of citizens disapprove of a given production method it is more cost-effective to ban that practice altogether rather than allowing consumers to chose based on labelling, with all the transaction costs of labelling and consumer information involved?

In somewhat more general terms, which responses to societal concerns can be left to consumers, and which ones require government action? Green consumerism is on the rise, and could potentially be seen as having the potential to shift responsibilities from public policy to private action. The traditional view was that externalities of production processes, such as environmental damage resulting from agricultural production, need to be dealt with in the production sphere, through regulation or economic incentives. Now that consumers exhibit an increasing interest in implications of production methods, even where they have no impact whatsoever on product quality, governments may feel they can lean back and let this new type of market process solve the problem. Is that an appropriate response of public policy? And is it conceivable that through such evolutions in consumer behaviour we can wait for some societal concerns to resolve themselves based on deliberate private action in the market place? Are economists called upon to develop a whole set of new paradigms regarding the functioning of markets and economies where consumers are no longer selfish agents but caring citizens?

Probably the biggest gap left in the workshop, though, is the whole set of intractable issues involved in societal concerns resulting in conflicts at the international level. Societal concerns operating within a given jurisdiction may pose all sorts of wicked problems for public policy. But where societal concerns lead to international conflict, the resulting problems tend to be wicked to the power of two or more. Most of the concrete examples of societal concerns in food and agriculture discussed during the workshop actually have a strong international dimension. Be it societal concerns regarding GMOs, the precautionary principle, animal welfare or biodiversity, all of them can or do lead to international conflict. Different nations have different perspectives on these matters and different policies to deal with them. More frequently than not the policies concerned have implications for international trade, and that is where conflict then arises. One part of the problem is that a policy measure having an impact on trade automatically turns into a policy with an implicit extra-territorial application. If Europe decides not to approve given GMOs for commercial release, US citizens are affected as US farmers having a tradition and interest in producing for export to the European market can no longer utilise all production technologies that are allowed under US legislation. Another problem is that banning certain production practices in a given country, while they continue to be legal in other parts of the world, impairs competitiveness of domestic producers and hence leads to call for protection. Regulations regarding animal welfare are a case in point.

In such cases of international conflict, the crux of the matter is divergence of values across nations, and the difficulty, if not impossibility, of reconciling such differences in values between peoples with different histories, cultures, social institutions, economic conditions, resource endowments and so on. Reframing through adjusting the definition of the problem or any other approach might work, in some cases, in a given nation and result in modified value sets that are less in conflict. But who can initiate reframing at the international level? And if national value sets are immune to mutually consistent adjustment, what are the options for resolving the resulting problems at the international level? A whole extra workshop may be needed to look into this international dimension of societal concerns.

Among the many difficult issues to be considered in a discussion targeting specifically the international dimension of societal concerns, just two shall be mentioned here. First, to what extent is it necessary and appropriate to make a distinction between concerns relating to local goods and other concerns that relate to global goods? If a country wants to protect its national groundwater and imposes the respective constraints on domestic producers, then it would appear to be clear that it should not be allowed to provide output-related compensation to its farmers (though these farmers will continue to argue strongly for compensation in the political arena). But if a nation enacts legislation that contributes to protecting a global good such as climate, is it acceptable that it then provides compensation in a form which interferes with trade? Second, and somewhat related, what is the acceptable geographical scope of a given concern? If a nation decides to reduce animal suffering by banning certain practices in livestock production, should it still allow the importation of the respective livestock products if in the countries of origin they are produced under these practices? Should I be concerned about animal suffering only if it occurs in my neighborhood, or should my concern have global scope? And if the latter, what follows for public policy and international trade?

The role of international institutions

The fact that so many societal concerns have a strong international dimension immediately draws attention to the role that international institutions can potentially play in dealing with such wicked problems. Three different potential functions of international institutions come to mind in this context, *i.e.* setting law, mediating between science and policy, and providing a platform for dialogue. While each individual international organisation may well represent some combination of all of these three functions, more typically each individual international organisation has a primary focus on one of them.

Clearly, international organisations engaged in setting law, by acting as a framework where legally binding agreements are struck, make an important contribution by defining the room of manoeuvre for national policy responses to societal concerns, and by arbitrating or adjudicating in disputes among nations. In particular, the WTO embodies rules that determine the extent to which national governments must have an eye on trade implications of policy responses to domestic societal concerns, and they equally define the extent to which trade is allowed to suffer from international conflicts of values among nations. While absolutely necessary in order to secure peaceful relations among nations in their respective field, international organisations setting legally binding rules are, though, less likely to be very effectual when it comes to dealing with the root causes of societal concerns, in cases of both domestic conflicts and international controversies. As a matter of fact, the imposition of the rule of international law on domestic constituencies where a societal concern has originated may make things even more difficult as people sometimes have a tendency to resist "solutions" forced upon them by an external power.

International institutions which mediate between science and policy can act as "boundary organisations" in the sense of making contributions to bridging the divide between scientific evidence and politics. The potentially helpful role of boundary organisations in defusing problems resulting from societal concerns was occasionally mentioned during the workshop. The World Organisation for Animal Health (still keeping its historical acronym OIE for Office International des Epizooties), represented in the workshop by Monique Eloit and her presentation on animal welfare and trade, can be seen as performing the role of a boundary organisation. Under its auspices, member countries come together to consider the available scientific evidence on animal health issues, including animal welfare, discuss implications for policy making, and can agree standards.

Dialogue, finally, can be an effective ingredient in coming to grips with societal concerns, in various ways. The process of simplifying complexity, reducing uncertainty and reconciling conflicts of values is best advanced in dialogue, rather than through adjudication. Overcoming gaps between perceived uncertainty and actual limits of scientific evidence is a sensitive task that cannot be forced. Bringing science and policy more closely together requires an improvement of mutual understanding. Open discourse is the most effective approach to achieve the reframing of value sets so as to defuse value conflicts, be they national or international. International organisations that can provide a platform for dialogue can perform such functions. They can do so particularly well if they have a record of being independent of any particular political currents and of being strongly anchored in sound analysis. The OECD is an organisation of that nature. Its pool of information on the way given policy issues are treated in different countries, coupled with its reputation for being non-partisan, can make it an effective messenger contributing to domestic debates about societal concerns. And when it comes to international conflicts of values in the field of societal concerns, the OECD can offer its services as a platform for non-committal dialogue among governments on options for conflict resolution.

The workshop on the economic and trade implications of policy responses to societal concerns reviewed here has utilised this potential of the OECD. It was not geared to airing resolutions to any particular conflict resulting from a given set of societal concerns, but aimed at clarifying the origins and nature of societal concerns, and implications of policy responses to them, in a more general fashion. The lively discussions during the workshop and the open exchange of views between academic experts and government officials have been rather effective in that sense. This achievement, as well as the fact that a number of important questions could not yet be addressed by the workshop, may be an incentive for the OECD to keep working on the issue of societal concerns in the field of food and agriculture.

Boundary organisations are institutions that straddle the shifting divide between politics and science. They draw their incentives from and produce outputs for principals in both domains and thus, it is hypothesised, facilitate the transfer of useful knowledge between science and policy.

SOCIETAL CONCERNS AS WICKED PROBLEMS: THE CASE OF TRADE LIBERALISATION

Sandra S. Batie and David B. Schweikhardt[1]

Trade negotiations are increasingly affected by social concerns beyond those of economic efficiency. Such concerns are "those that originate from generally or broadly accepted values of society appealing to a broad range of its members. New concerns spring up in response to evolving views and developments in such areas as new technologies, the environmental impact of agriculture, and rural structural change" (Tothova, 2009). Societal concerns may develop with respect to non-commodity outputs (e.g. improved water quality, emission of greenhouse gases, or animal welfare), commodity outputs (e.g. pesticide residues or Genetically Modified Organisms (GMOs), or they can involve processes and production methods unincorporated in the final product (e.g. sustainability or fair trade attributes) (Tothova, 2009). These culturally determined social concerns appear to be multiplying and pose dilemmas for both the development of international trade agreements and for domestic agricultural policy. For example, how can the competing goals of trade liberalisation and regulatory self determination of World Trade Organization (WTO) members be balanced? And, which social concerns are legitimate value choices and which are merely trade protection arguments (Winickoff *et al*., 2005)?

Societal concerns can be divided into whether they are "tame" or "wicked" problems (Rittell and Weber, 1973). The term wicked, in this context, does not refer to something evil, but rather it refers to social problems that are highly resistant to resolution (Australian Government, 2007). Wicked problems are those which are difficult to describe (e.g. they are messy), they are the subject of considerable political debate, and they are unlikely to have an optimal solution (Busch, 2009). As such wicked problems are not solved; they are, at best, managed.[1]

There are many additional dimensions of tame problems that can be contrasted with wicked ones. Such distinctions include whether (1) there is a clear definition of the problem, (2) the role of stakeholders *vs*. experts, and (3) the role played by science in addressing the problem. In addition, wicked problems have many interdependencies and are often multi-causal; attempts to address wicked problems frequently result in unintended consequences; they tend to be unstable so that they are a moving target; they usually are quite socially complex; they rarely are the responsibility of any single organisation; and, they often involve changes in individual behaviours (Australian Government, 2007). Table 1 summarizes some of these characteristics.

1. Sandra S. Batie, Elton R. Smith Professor of Food and Agricultural Policy and David Schweikhardt, Professor, Department of Agriculture, Food, and Resource Economics at Michigan State University. This paper draws in part on Batie (2008).

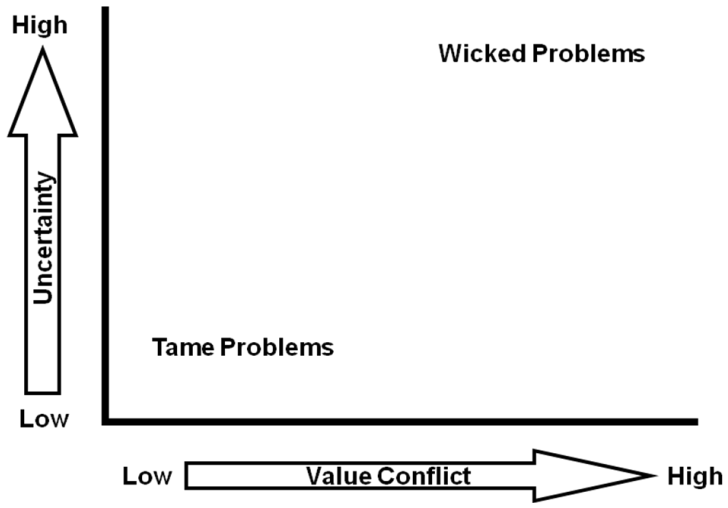
Table 1. Summary of differences between tame and wicked problems

Characteristic	Tame Problem	Wicked Problem
1. The problem	The clear definition of the problem also unveils the solution. **** The outcome is true of false, successful or unsuccessful. **** The problem does not change	No agreement exists about what the problem is. Each attempt to create a solution changes the problem. *** The solution is not true or false—the end is assessed as "better" or "worse" or "good enough". ***
2. The role of stakeholders	The causes of a problem are determined primarily by experts using scientific data.	Many stakeholders are likely to have differing ideas about what the "real" problem is and what are its causes.
3. The "stopping rule"	The task is completed when the problem is solved.	The end is accompanied by stakeholders, political forces, and resource availability. There is no definitive solution.
4. Nature of the problem	Scientifically based protocols guide the choice of solution(s). **** The problem is associated with low uncertainty as to system components and outcomes. **** There are shared values as to the desirability of the outcomes.	Solution(s) to problem is (are) based on "judgments" of multiple stakeholders. **** The problem is associated with high uncertainty as to system components and outcomes. **** There are not shared values with respect to societal goals.

Source: Adapted from Kreuter *et al.* 2004.

Figure 1 illustrates two crucial distinctions between tame and wicked problems. Tame problems are those problems where there is (a) low uncertainty associated with causes and effects and (b) there is low social conflict over the desirability of possible problem resolutions. Neither situation is the case with wicked problems; with wicked problems, there is considerable scientific uncertainty and considerable controversy over the means to address the problem. There are numerous examples of wicked problems: animal welfare, climate change, GMO food production, and trade liberalisation are just four of them. It is important to recognise whether a policy issue or problem is more tame or more wicked in nature, because this characteristic influences the use of science (including risk assessments) in addressing the problem and in identifying potential solutions, as well as the need to involve those who have an interest in resolving the problem(s).

Figure 1. Tame vs. wicked problems



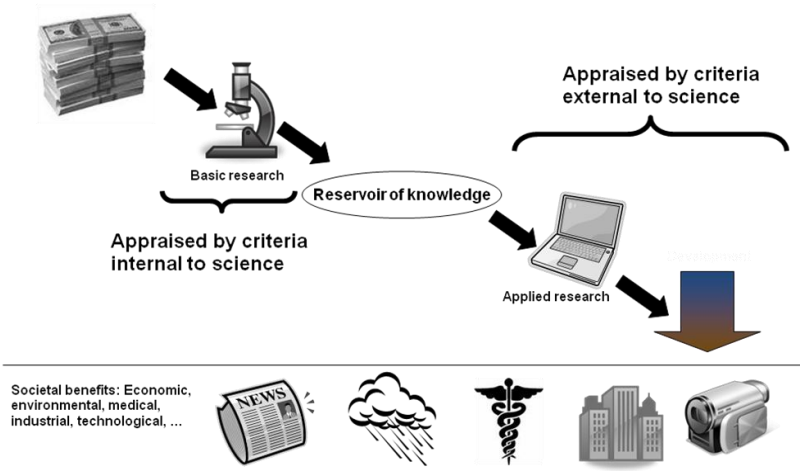
Source: Batie (2008).

There is a long history of science (and risk assessments) addressing tame problems: There is less experience with the use of science (and risk assessments) for more wicked ones. After a review of those relationships and why they matter, the case of trade liberalisation is used as an illustration of why the type of the problem — as tame or wicked — influences effective policy development and implementation. Implications can then be drawn for how to address those policy issues that involve wicked social concerns.

Linear science, knowledge, and policy development

Historically, normal science (*i.e.* conventional or mainstream science), has had a close relationship with the creation of policy alternatives to address social concerns (Funtowicz and Ravetz, 1993; Stokes, 1997). During much of the post-World War II period,[2] the production of knowledge by normal science has been guided, almost exclusively, by a linear model. This relationship works far better, the tamer the problem. The normal science model is illustrated in Figure 2 and can be summarised: "[B]asic research, conducted by scientists who are largely autonomous, is a resource for applied research. Applied research is the source of results useful to practical concerns, including policy development" (Pielke Jr., 2007). In this model, scientific knowledge flows into a reservoir that can then be drawn upon by society to create beneficial technologies and outcomes. Basic science tends to be judged by criteria internal to science, such as disciplinary standards, whereas applied research and development tends to be judged by criteria external to science, such as the potential usefulness to society (Pielke Jr.and Byerly Jr., 1998; Stokes 1997). Thus, normal science frequently has a division between those who do the science and those who use it: "Autonomy is implicit in the [linear] model, because the reservoir [of scientific knowledge] isolates science from society; science assumes no responsibility to apply the knowledge it puts into the reservoir, and society does not set scientific priorities" (Pielke Jr. and Byerly Jr., 1998).

Figure 2. Linear, normal science



Source: Pielke, R.A. Jr., and R. Byerly Jr. 1998.

Tame problems

With respect to policies and decision-making, normal science maintains implicit assumptions that scientific progress leads to societal progress (Frodeman and Holbrook, 2007). The assumption is that scientists collect facts and search for objective truths, and then, based on these findings, policy makers develop appropriate policies to address social concerns (Ascher, 2004; Oreskes, 2004). Within this perspective is the idea that reducing scientific uncertainty will reduce political uncertainty, and that reaching a consensus on the science is a prerequisite for a political consensus and for policy action to occur (Vatn and Bromley 1994). Thus, getting the science right is necessary to settle political disputes and for effective policy making to occur (Pielke Jr., 2007; Sarewitz, 2004).

These implicit assumptions are tantamount to conflating the "what is" and the "what if" products of science with the "what ought to be" product of politics. Therefore, these assumptions are quite problematic; however, they tend to be more realistic when (1) there is widespread agreement by stakeholders as to what are desirable outcomes as well as when (2) there is low uncertainty surrounding the system components and outcomes of alternative course of actions (Pielke Jr., 2007). That is, they tend to be more realistic with the "tamer" problems of society.

Wicked problems

Normal science and its implicit assumptions are ill suited for wicked problems - with their attendant conflict over social values and high uncertainty about system components and outcomes. With wicked problems, scientists alone cannot assume to deduce the policy choice to be undertaken. Indeed, if an attempt is made to impose a scientific answer to a wicked problem, political gridlock is a far more likely outcome than is a political consensus (Pielke, Jr., 2007). Instead, the role of scientists in policy design is more that of an "honest broker", working with others to inform policy choices and widen the range of alternatives from which policy can be developed (Pielke, Jr., 2007).

Wicked problems appear to require not just more multidisciplinary research, but a reinvention of normal science itself (Busch, 2009). This reinvention is what some refer to as post-normal science (Funtowicz and Ravetz, 1993). The need for such a reinvention is

because wicked problems cannot be easily categorised into separate disciplinary boxes nor can they be divided into more manageable parts under the assumption that there are clear and known casual paths (Weber and Khademian, 2008). With wicked problems, it is difficult to decide what facts to gather without first discussing social or individual values; thus, it is necessary not only to have many disciplines involved, but also to have interaction with those whose resources and cooperation are indispensible for tackling the problem - that is, with stakeholders[3] (Bueren, Klijn, and Koppenjan, 2003).

Involving stakeholders is complicated, however, since various actors bring different values and perceptions to the policy dialogue and debate. For example, consider the policy issue of the sustainability of ecosystems: Environmental ethicists may focus on the intrinsic value of nature; applied economists may focus on the instrumental value of nature; and non-academics may bring tacit knowledge garnered from practical experiences and personal values associated with nature and resource use (Norton, 2005). Similarly, management agencies might consider natural resources from the perspective of wildlife survival, whereas project agencies might consider natural resources as commodities (Ingram and Bradley, 2006). Even when dialogue/debate occurs and includes all of the actors, clear solutions rarely emerge; rather, via negotiation, processes are identified which are judged as better or worse (not right or wrong) in managing (but not solving) the wicked problem (Norton, 2005).

To illustrate these points relative to the management of wicked problems, trade liberalisation is examined below first as a tame problem and then as a wicked one. Within this illustration, the sciences of interest are those of applied economics and those underlying risk assessments.

Trade liberalisation as a tame problem

Until recently, the wisdom of trade liberalisation was not often questioned. The assumption was, following the normal science model, that economic science had resolved uncertainty about the desirability of achieving trade liberalisation. Therefore, the policy direction to be taken was clear - toward more trade liberalisation. Indeed, the normal economic science argument for trade liberalisation has 200 years of tradition (Driskill, 2007 and 2008; Gomes, 2003; Irwin, 1996)[4]. Because the trade liberalisation argument was framed[5] as a tame problem - with no uncertainty about the desirability of the gains from trade and with clear belief in the cause (liberalise trade) and effect (overall, countries would be better off), then economic science was free to dictate "what ought to happen" (trade ought to be liberalized). That is, countries ought to seek the most cost-effective means to liberalise trade and to embed rules into trade agreements and institutions as well as to find economic and legal instruments (e.g. taxes, penalties, dispute resolutions) that pursue these objectives.

As a tame problem, then, trade liberalisation is frequently identified as the appropriate social objective. Drawing from the neoclassical economic science paradigm, any perceived outcomes from trade liberalisation that are viewed as undesirable can be labelled market failures, and are to be "corrected" by government "intervention". Furthermore, those movements away from trade liberalisation which are not viewed as appropriate corrections of market failure, are labelled as inefficient and are to be avoided or banned. Thus, some social concerns are viewed as evidence of market failures (e.g. water pollution from agriculture) requiring government regulation; other potential government interventions may be viewed as inefficient because they are not seen as addressing market failures (e.g. prohibiting trade in response to those food safety concerns not supported by scientific

risk assessments). Neglected in this framing of the trade problem is that the existence of social concerns, whether or not they are considered market failures, illuminates the fundamental policy question of what it is that society "ought to do". That is, social concerns bring into question the wisdom of trade liberalisation, and thereby illuminate its wicked nature. When trade issues are seen as wicked, efficient trade liberalisation will not be widely accepted as what society "ought to do."

The other evidence that trade liberalisation is more wicked than tame can be illustrated by the history of the General Agreement on Tariffs and Trade (GATT) and the WTO Doha rounds.

GATT and trade negotiations as a tame problem

If trade liberalisation were truly a tame problem, there would be agreement on the objectives of trade policy. If this agreement were the case, then there should be low transaction costs to obtaining agreements on what is to be done. Disputes could be easily resolved by appeal to prior agreed rules and principles. Paul Krugman (1991) believes that this situation was close to the actual case for the GATT - the predecessor to the WTO. Trade protectionism in this early postwar period was a matter of explicit, unilateral government policies about manufactured goods. While Krugman gave less credit to economic science and more to the mercantile traditions of exporters and importers, he argued that the early postwar GATT was relatively successful in all sectors except agriculture in reducing protectionism by lowering tariffs, quotas, and exchange controls. One reason for this success was that there were fewer actors in the GATT negotiations, there was a dominance and leadership of the United States that limited free riding and dampened disputes, and the issues were fairly straight forward with significant consensus both as to cause-and-effect and as to proposed solutions (*i.e.* the characteristics of a tame problem). However, Krugman noted that the agriculture sector, with its more wicked problems, was the exception. In agriculture, there was no significant agreement on the desirability of liberalised trade nor on the certainty about the science underlying the issues.

Also, if agricultural liberalisation were truly a tame problem, the lessons from normal linear science could be used to resolve debates with sound science (e.g. with the teachings of neoclassical economics and scientific risk assessments) and there should be little or no controversy. If this situation was the case, and if trade liberalisation was a tame problem, the Doha rounds would have been completed and declared a negotiated success long ago! Agricultural trade liberalisation is a wicked problem.

Agricultural trade liberalisation as a wicked problem

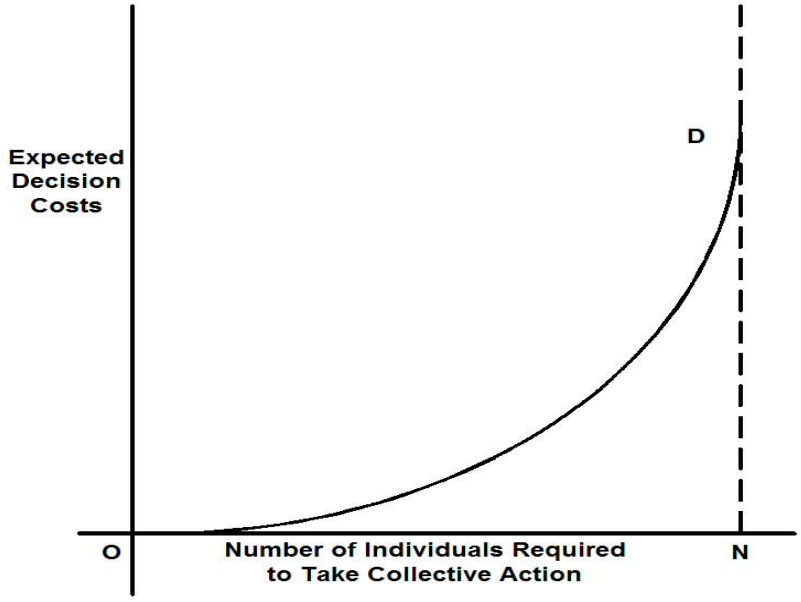
There are many underlying reasons that agricultural trade liberalisation can be considered a wicked problem. First, trade creates opportunities for some sectors of the economy and some firms or individuals, but it reduces opportunities for others. That is, agricultural trade liberalisation helps some people and hurts others. Most neoclassical economists recognize this fact, but many, drawing on theory, assert that overall if the gainers gain enough so that they can potentially compensate the losers, there is a net benefit to trade liberalisation. Therefore, many economists conclude that trade liberalisation is an efficient and optimal policy response (Driskill, 2008).

However, the assumption that potential compensation solves the political and moral issues of uneven distributional impacts of trade is invalid as such reasoning is tantamount to assuming that efficient allocation is a policy goal. However, policy goals do not emanate from disciplinary paradigms (Bromley, 2008; Stephenson, 2003). Economists' or other

scientists' values cannot be, with validity, substituted for others' values in civil society - at least not in a democracy (Bromley, 2009). The assumptions of normal science are challenged when there are wide disagreements about the wisdom and desirability of the outcomes of trade (*i.e.* when there are social concerns). That is, challenges to the results of normal science occur when the problems are wicked.

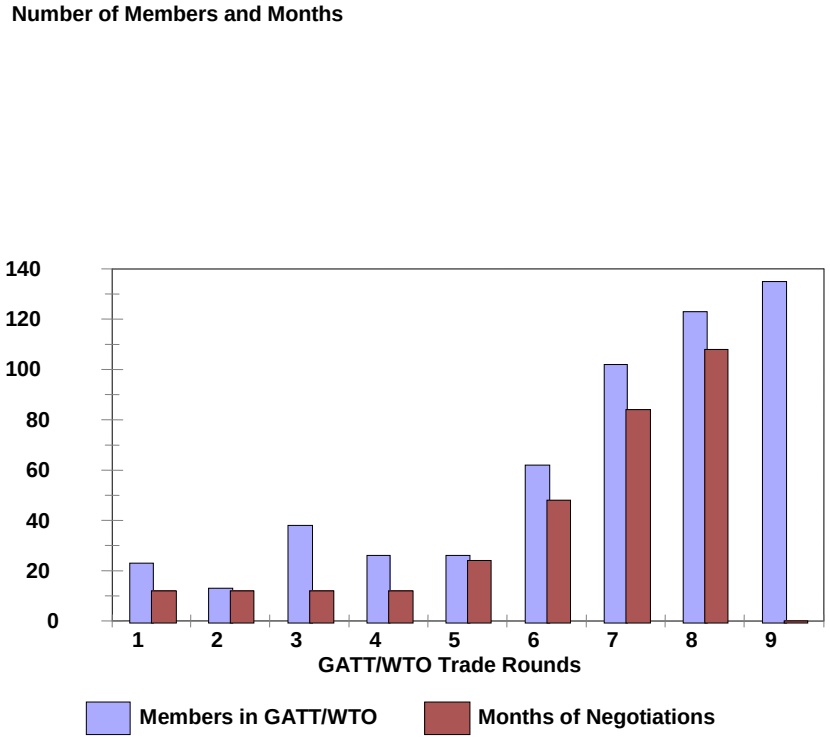
Second, and as a reflection of the wicked nature of agricultural trade liberalisation, there are many new actors compared to the earlier GATT days. These actors bring their own values and objectives, and raise transaction costs of negotiation. Figure 3 illustrates that, as the number of individuals required to take collective action increases, so do the costs and difficulties of reaching decisions. This general point can then be related to trade talks (Figure 4). In trade negotiations, the number of members and length of GATT/WTO negotiations are highly correlated. Negotiating settlements gets more complicated as the diverse set of actors become more creative in exploiting weakness in the existing system of trade rules in order to find new ways to protect their own markets (and address their social concerns) (Krugman, 1991; Blustein, 2009).[6]

Figure 3. Costs of Decision Making



Source: J. Buchanan and Gordon Tullock, 1962.

Figure 4: GATT and WTO Members and length of negotiations



Source: Generated from WTO GATT documents.

Third, new players bring new social concerns associated with liberalised agricultural trade. These concerns include, among others, animal welfare, GMOs, ecological sustainability, fair treatment of workers, hormone use in animal production, and the protection of regional foods. Sometimes these social concerns are smokescreens to avoid losing trade protection. In many cases, however, these concerns represent sincere cultural values, or they reflect a perception that trade liberalisation is inappropriately harmful to the desired social conditions of some countries or some individuals within countries.[7]

In addition, the low costs of modern communication make communication among stakeholders virtually effortless. They can create virtual communities with common concerns and share, reinforce, and articulate their beliefs and knowledge. Even more fundamentally, many of these stakeholders comprise a social movement that is redefining food as having public good characteristics rather than being a market-based commodity (Jarosz, 2009); this redefinition challenges the basic assumptions of pro-trade liberalisation arguments.

Fourth, these social concerns may also represent a distrust in the idea that science and technology leads to social progress (Froedman and Holbrook, 2007). For example, science's improved understanding about system connections, as well as recent volatility in natural resource and commodity prices, have raised serious concerns about the ecological sustainability of many of our current development paths and practices (Millennium Ecosystem Assessment, 2005). Many critics note that science itself introduces new risks and might not be able to manage them (Nowotony, Scott and Gibbons, 2001). This belief is one reason that some reject risk assessments as a means of resolving trade dispute resolutions such as those involving agricultural food safety.

Fifth, another reason is that dispute resolution processes, such as those incorporated in risk assessments, involve many value judgments (Box 1). Therefore, many stakeholders will reject the validity of WTO dispute resolution rules and demand self-determination of countries with respect to country specific objectives (Winickoff *et al*., 2005). Such issues will be seen as legitimate matters of governance in which values are a subject of dispute and determination (Samuels, 2001).

Box 1. Values and risks assessments

Risk assessments always incorporate value judgments. As a result, there are legitimate cultural differences in risk assessments between trading partners. Scientific knowledge alone cannot define what comprises an adequate risk assessment (Winickoff, *et. al*, 2005). As one European stated with respect to GMOs and the sound science test, "I do not care if GMOs are safe, I do not want to eat them." This statement summarizes succinctly that the values incorporated in the risk assessments of GMOs do not reflect all the values felt important by stakeholders. That is, risk analyses and the standards they support "incorporate not only 'objective ' assessments of technical evidence, but also collective, often tacit, cultural judgments about the appropriateness of particular social roles, power relationships, public attitudes, and regulatory styles" (Winickoff, *et al.*, 2005 quoting Jasanoff, 1998). If these analyses leave out values important to various stakeholders, the debate and controversy continues and can even jeopardize the legitimacy and utility of global institutions such as the WTO.

Indeed, like the distinction between wicked and tame problems, risk situations themselves can be arrayed on a continuum of high scientific uncertainty (with respect to the knowledge base and analytical methods to be relied on) and low consensus (with respect to the framing of scientific issues to be addressed and the values to be protected through public policy) to high certainty and high consensus (Winickoff, *et. Al.*, 2005). When there is no public consensus on either values or methods, or even on what agriculture production and distribution "ought to be," then risk assessment becomes wicked indeed.

Implications of the Wicked Nature of Trade Liberalisation Problems

The more wicked the problem, the less likely that experts will be allowed to prevail with respect to decisions about what "ought to be" the objectives of policies. Addressing wicked problems in a policy context requires both use-driven science that recognises and addresses uncertainties as well as meaningful engagement of stakeholders (Ingram and Bradley, 2006; Johnson, 1992). What is needed are new ways of thinking about the conduct of science - particularly in such activities as the use of risk assessments in dispute resolutions, as well as the development of institutions to facilitate use-driven science-stakeholder processes (Sarewitz, 2004).

While there is a growing literature documenting various experiments addressing social concerns in policy contexts (e.g. Australian Government, 2007; Cash, *et al*. 2003; Graffy and Booth, 2008; Fear *et al*., 2006; Kelman, 2008; Lemos and Morehouse, 2005; NAS, 2009; Ingram and Bradley 2006; Stewart, *et. al.*, 2004; Vaccaro, *et. al*., 2009; Weber and Khademian, 2008), there is not a single roadmap for how to proceed with all wicked problems. Each issue has its own context and dynamic. However, common attributes are that these experiments frequently involve attention to the design of the processes by which decisions will be made and how stakeholders interests will be engaged, they frequently involve the co-creation of knowledge by combining the explicit knowledge of experts with the implicit and experiential knowledge of stakeholders, and they can also involve the development of new institutions, such as boundary organisations, to facilitate processes and co-creation of knowledge.

The Management of Wicked Problems: The Example of Boundary Organizations

Effective engagement of stakeholders is challenging (Jacobs, Garfin, and Lenart, 2005; McDowell, 2001); particularly so when the social concerns are contentious. While there are resources that help to guide critical engagement, and University extension faculty have been pursuing such engagement for decades (Johnson, 1992), there remains more to learn (Fear *et al*., 2006). While this paper will not provide a comprehensive review of various methods of engaging stakeholders in order to effectively manage trade liberalisation problems, the discussion below of the use of one institution--that of boundary organisations - as an approach to critical engagement is illustrative.

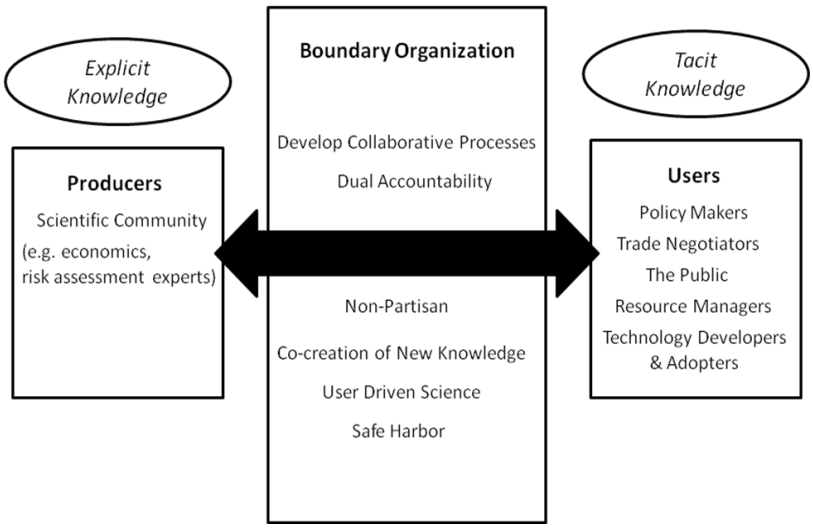
A boundary organisation is a bridging institution which links suppliers and users of knowledge and recognises the importance of location-specific contexts (Ruttan *et al*., 1994). As defined by Ingram and Bradley (2006), "Boundary organisations are situated between different social and organisational worlds, such as science and policy. In general, boundary organisations succeed when three conditions are met. First, they must provide incentives to produce boundary objects, such as decisions or products that reflect the input of different perspectives. Second, they involve participation from actors across boundaries. Third, they have lines of accountability to the various organisations spanned [by the boundary organisation] (Guston, 2001)." Adaptive and inclusive practices are essential to the functioning of boundary organisations.

Figure 5 presents a figure of a boundary organisation: on the left side are use-driven science and other sources of expert knowledge and on the right side are users of science. The boundary organisation is used to link scientific knowledge (in this example, use-driven science as to what are the impacts of alternative trade policy options) to the users. The arrow goes both ways because boundary organisations link those who have explicit knowledge, such as experts, with those potential users of knowledge - such as civil society, trade negotiators, or policy makers - who have tacit knowledge garnered from experience.[8] Thus, a boundary organisation, by combining tacit and explicit knowledge can co-create new, transformational knowledge and shared understanding which may be critical to the innovation in the policy process (Conklin, 2006; Guston, 2001; Peterson, 2009). This co-creation process, by allowing participants to critically reflect on each other's views, enables participants to reflect not only on their own preferences and viewpoints but also on how they might be changed (White, 1994)[9]. Such efforts are necessarily iterative and interaction between researchers and stakeholders as both parties incorporate the knowledge from the other in a series of efforts to create new knowledge applicable to the problem at hand (Johnson, 1992).

Boundary organisations can function to reconcile the supply and demand of existing knowledge; co-create new knowledge; translate, negotiate, and communicate among the multiple parties on both sides of the science-use nexus; make transparent tacit assumptions and values embedded in models, paradigms, and assertions; identify uncertainties; seek alternative framing of problems; build hybrids (e.g. objects such as indicators or maps that contain both science and policy information); and build capacity to link knowledge to action (Miller, 1999). In addition boundary organisations can provide process accountability and "safe harbour" to all parties when there is serious conflict by functioning in a non-partisan manner. These boundary organisations include not only stakeholder engagement and use-driven science in support of policy objectives and implementation, they also act as intermediaries who translate and connect scientific knowledge to users.

Linking insights and knowledge to action is a large challenge (Ingram and Bradley 2006; Jacobs, Garfin, and Lenart, 2005; Stephenson and Shabman, 2007). Achieving and implementing a negotiated consensus on which actions to undertake is a complicated process that takes time and resources (Jacobs, Garfin, and Lenart, 2005). And, as the scale of a problem expands to include regional, national, or global phenomena, the challenges become even larger. However, the end result of using a well-functioning boundary organisation can be a product that is distinctly different and more broadly accepted than would have emerged from either the experts or the stakeholders if they operated independently (Ingram and Bradley, 2006).

Figure 5. Boundary Organizations



Source: Adapted from Clark and Holliday 2006.

Conclusion

It is no longer a convincing argument to all stakeholders in the debate to use neoclassical economics arguments to justify trade liberalisation; and it is invalid to suggest that such an argument is value-free (Bromley 2009). Cash and his colleagues (2003) argue that the "effectiveness" of scientific inputs into policy needs to be gauged in terms of the impacts of how issues are defined and framed and also on which options for managing problems are considered. That is, the role of science, including economic science, is not to narrow the range of options to one (e.g. trade liberalisation), but rather to expand the options for addressing the issue(s), and to highlight the consequences, including distributional consequences, of alternative options. The ranking of the desirability of options, if political gridlock is to be avoided, must germinate from those affected by the choice of options. Thus, context specific processes that provide avenues for engagement become exceptionally important in managing of wicked trade liberalisation problems, such as the management of social concerns.

Notes

1. The term "wicked problem" is generally accepted but is not precise since the word "problem" suggests solutions and a key characteristic of wicked problems is the lack of a definitive or optimal solution. However, the term "wicked problems" will be used here.
2. The assumptions embedded in normal science precede WWII, however. Consider the motto of the 1933 Chicago World Exhibition which has clear reference to the linear, science-push model: "science finds, industry applies, man conforms" (Wynne, 2007).
3. Stakeholders as the term is used here refer to those who have an interest in the resolution of the problem; the interest is not limited to financial impacts; it includes those individuals impacted by policies as defined by the individual(s) or by others.
4. This argument is frequently rationalized with the concept of comparative advantage (Driskill, 2008).
5. Frames are "principles of selection, emphasis, and presentation composed of little tacit theories about what exists, what happens, and what matters" (Gitlin, 1980).
6. Krugman (1991) speculates that this difficulty of a multiple set of actors with limited trust and communality of interests has given to the rise of regional trade agreements between fewer countries that have greater trust among them (e.g. NAFTA).
7. If values are considered to be normative knowledge of situations, conditions, or things, then the frequently used distinction between "economic" and "non-economic" values has no validity (Johnson, 1992). In wicked problems, the situations, conditions and things that possess value are a matter to be discovered, and not to be assumed.
8. Explicit knowledge is that which is codified, rational, separable from context, and thus transmittable by formal means such as textbooks or manual. Tacit knowledge is context-specific and informal arising from experience and practice (Peterson, 2009). This sharp distinction between tacit and explicit is useful as a heuristic framing, but too stark as a descriptor of reality. In truth, both types of actors bring explicit and tacit knowledge to the policy process (Gieryn, 1983; Star and Griesemer, 1989).
9. One method used to co-create knowledge is the formulating of scenarios such as those of alternative trade futures. Scenario work enhances integration across themes and serves as a mechanism for interdisciplinary work that engages stakeholders. With dynamic scenario development alternative futures are identified (sometimes with forecast models), and then the analysis works backward in time to identify crucial pathways that avoid undesirable outcomes or result in desirable ones. What is a desirable future is arrived at through a negotiated process among stakeholders.

References

Australian Government (2007), "Tackling Wicked Problems: A Public Policy Perspective. Contemporary Government Challenges". Australian Public Service Commission, Commonwealth of Australia.

Ascher, W. (2004), "Scientific Information and uncertainty: Challenges for the Use of Science in Policy Making", *Science Eng. Ethics*, N°10 pp. 437-455.

Batie, Sandra S. (2008), "Wicked Problems and Applied Economics", *American Journal of Agricultural Economics* 90 Number 5, pp. 1176-1191.

Blustein, Paul. (2009), M*isadventures of the Most Favoured Nations: Clashing Egos, Inflated Ambitions, and the Great Shambles of the World Trade System,* New York: Public Affairs.

Busch, Lawrence. (2009), "Global Warming and Hot Potatoes: How Debates Over Standards Shape the Biophysical, Social, Political and Economic Climate", Paper presented at the (July) annual meeting of the Rural Sociology Society, Madison, Wisconsin.

Bueren, E.M., E.H. Klijn, and J.F.M. Koppenjan, (2003),"Dealing with Wicked Problems in Networks: Analysing an Environmental Debate from a Network Perspective", *Journal of Public Administration Research and Theory* 13(2), pp. 193-212.

Bromley, D.W. (2008), "The Emergence and Evolution of Environmental and Natural Resource Economics", pp. 11-28, In J. Wu, P.W. Barkley, and B.A. Weber (eds.), *Frontiers in Resource and Rural Economics: Human-nature, Rural-urban Interdependencies* Washington DC: Resources for the Future.

Bromley, Daniel W. (2009*), Sufficient Reason: Volitional Pragmatism and the Meaning of Economic Institutions*, Princeton, NJ: Princeton University Press.

Buchanan, J.M. and G. Tullock (1962), *The Calculus of Consent: Logical Foundations of Constitutional Democracy*, The University of Michigan Press.

Cash, D. W., W.C. Clark, F. Alcock, N.M. Dickson, N. Eckley, D.H. Guston, J. Jager, and R. Mitchell (July 2003), *Proceedings of the National Academy of Science* (PNAS) 100 (14) pp. 8086-8091.

Clark, W., and L. Holliday (Rapporteurs) (2006), *Linking Knowledge with Action for Sustainable Development: The Role of Program Management*. Workshop Summary, Roundtable on Science and Technology for Sustainability Policy and Global Affairs. National Research Council of the National Academies. Washington DC: The National Academies Press.

Conklin, J. E. (2006), *Dialog Mapping: Building Shared Understanding of Wicked Problems*, Napa, CA: CogNexus Institute.

Driskill, R. (2008), *Why Do Economists Make Such Dismal Arguments About Trade?* http://www.foreignpolicy.com, (Web Exclusive), May, 2008.

Driskill, R. (February 2007) *Deconstructing the Argument for Free Trade*, posted on http://www.vanderbilt.edu/econ/faculty/Driskill/DeconstructingfreetradeAug27a2007.pdf

Fear, F.A., C.L. Rosaen, R.J. Bawden, and P.G. Foster-Fishman. (2006), *Coming to Critical Engagement: An Autoethnographic Exploration*, Lanham, MD: University Press of America.

Frodeman, R., and J.B. Holbrook. (2007), "Sciences' Social Effects.", *Issues in Science and Technology* 23(3), pp. 28-30.

Funtowicz, S. O. and J. R. Ravetz. (1993), "Science for a Post-Normal Age", *Futures* 25 (7), pp. 739-755.

Gieryn, T. F. (1983), "Boundary Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists", *American Sociological Review* 48, pp. 781-795.

Gitlin, T. (1980), *The Whole World is Watching.: Mass Media in the Making and Unmaking of the New Left***,** Berkeley, University of California Press.

Gomes. L. (2003), *The Economics and Ideology of Free Trade: A Historical Review*, Cheltenham, UK: Edward Elgar.

Graffy, E.A and N.L. Booth (2008), "Linking Environmental Risk Assessment and Communication: An Experiment in Co-evolving Scientific and Social Knowledge", *International Journal of Global Environmental Issues*, 8 (1/2), pp. 132-146.

Guston, D.H. (2001), "Boundary Organisations in Environmental Policy and Science", *Science, Technology and Human Values* 26(4), pp. 399-408.

Ingram, H., and B. Bradley. (2006), "Water Sustainability: Policy Innovation and Conditions for Adaptive Learning", Paper presented at the Michigan State University Sustainable Michigan Endowed Project Academy, Dearborn MI, and 18-19 November.

Irwin, D. A. (1996), *Against the Tide: An Intellectual History of Free Trad,*. Princeton, NJ: Princeton University Press.

Jacobs, K.L., G.M. Garfin, and M. Lenart. (2005), "More than Just Talk: Connecting Science and Decision Making", *Environment* 47 (9), pp. 6-22.

Jarosz, L. (2009), "Energy, Climate Change, Meat, and Markets: Mapping the Coordinates of the Current World Food Crisis", *Geography Compass*, 3(6), pp. 2065-2083.

Jasanoff, S. (1998), "Harmonisation: The Politics of Reasoning Together, pp 173-194, in *The Politics of Chemical Risk: Scenarios for a Regulatory Future*, Roland Bal and Willem Halffman (eds.), Kluwer Academic Publishers.

Johnson, Glenn L 1992. Research Methodology for Economists: Philosophy and Practice. New York: Macmillan.

Kelman, S. (2008), "Adversary and Cooperationist Institutions for Conflict Resolution in Public Policymaking", *Journal of Policy Analysis and Management*, 11(2), pp. 178-206.

Kreuter, M.W., C. De Rosa, E.H. Howze, and G.T. Baldwin. (2004), "Understanding Wicked Problems: A Key to Advancing Environmental Health Promotion", *Health, Education, and Behaviour* 31, pp. 441-454.

Krugman, Paul 1991. "The Move Toward Free Trade Zones" in *Policy Implications of Trade and Currency Zones*, a symposium sponsored by the Federal Reserve Bank of Kansas City. Jackson Hole, Wyoming, 22-24 August 1991.

Lemos, M. C. and B. J. Morehouse (2005), *The Co-production of Science and Policy in Integrated Climate Assessments. Global Environmental Change*, 15(2005), pp. 57-68.

McDowell, G.R. (2001), *Land-Grant Universities and Extension into the 21st Century: Renegotiating or Abandoning a Social Contract*, Ames IA, Iowa State Press.

Millennium Ecosystem Assessment, (2005), *Ecosystems and Human Well-being: Synthesis***,** Washington DC, Island Press.

Miller, C.A. (1999), "Report of the Workshop on Boundary Organisations in Environmental Policy and Science", Bloustein School of Planning and Public Policy, Rutgers University, New Brunswick NJ, 9-10 December.

National Academy of Science (NAS). (2009), "Enhancing the Effectiveness of Sustainability Partnerships: Summary of a Workshop", National Research Council, Washington, D.C, National Academies Press.

Norton, B.G. (2005), *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Chicago IL, University of Chicago Press.

Nowotny, H., P. Scott, and M. Gibbons. (2001), *Rethinking Science: Knowledge and the Public in an Age of Uncertainty*, Cambridge UK: Polity Press.

Oreskes, N. (2004), "Science and public policy: What's proof got to do with it?" *Environmental Science Policy* 7, pp. 369-383.

Peterson, C.H. (2009), "Transformational Supply Chains and the 'Wicked Problem' of Sustainability: Aligning Knowledge, Innovating, Entrepreneurship, and Leadership", *Journal on Chain and Network Science* 9(2), pp. 71-82.

Pielke, R.A., Jr. (2007), *The Honest Broker: Making Sense of Science in Policy and Politics*, Cambridge UK, Cambridge University Press.

Pielke, R.A., Jr., and R. Byerly, Jr. (1998), "Beyond Basic and Applied", *Physics Today* 51(2), pp. 42-46.

Rittell, H. and M. Weber (1973), "Dilemmas in a General Theory of Planning", Elsevier *Policy Studies*. 4, pp. 155-169.

Ruttan, V.W., D. E. Bell, and W.C. Clark. (1994), "Climate-change and Food Security— Agriculture, Health and Environmental Research", *Global Environmental Change-Human and Policy Dimensions* 4(1), pp. 63-77.

Samuels, W. J. (2001), "The Political-Economic Logic of World Governance. Review of Social Economy", 59(3), pp. 273-84.

Sarewitz, D. (2004), "How Science Makes Environmental Controversies Worse", *Environmental Science and Policy* 7, pp. 385-403.

Star, S. L. and J. R, Griesener (1989), "Institutional Ecology: Translations and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology", 1970-39, *Social Studies of Science* 19, pp. 387-420.

Stephenson, K. 2003. "Environmental Goal Setting." In M. R. Tool and P. D. Bush (eds), *Institutional Analysis and Economic Policy*, Boston MA: Kluwer Academic Publishers, pp. 443-460.

Stephenson, K., and L. Shabman. (2007), "Overview of Computer-Aided Dispute Resolution: Approach and Evaluation", in K. Stephenson, L. Shabman, S. Langsdale, and H. Cardwell, (eds.) *Computer Aided Dispute Resolution: Proceedings from the CADRe Workshop*, Albuquerque, New Mexico, http://www.svp.iwr.usace.army.mil/docs/SVP-2007-R-06.pdf.

Stewart, R., L. C. Walters, P. J. Balint, and A. Desai (30 March 2004), *Managing Wicked Environmental Problem*, Report to Jack Blackwell, Regional Forester, USDA Forest Service, Pacific Southwest Region. http://gunston.doit.gmu.edu/snfpa_risk/

Stokes, D.E. 1997, *Pasteur's Quadrant: Basic Science and Technological Innovation*, Washington DC, Brookings Institution Press.

Tothova, M. (2009), "The Trade and Trade Policy Implications of Different Policy Responses to Societal Concerns", *OECD Food, Agriculture and Fisheries Working Papers*, No. 16, OECD, Paris.

Vatn, A., and D. Bromley. (1994), "Choices without Prices and without Apologies" *Journal of Environmental Economics and Management* 26(2), pp. 129-48.

Vaccaro, L., J. Reed, J. Diana, A. Horning, and D. Scavia (September 2009), *Tackling Wicked Problems Through Integrated Assessment: A guide for Decision Makers, Project Leaders and Scientists*, University of Michigan, Ann Arbor, Mi., Sea Grant Michigan and the Graham Environmental Sustainability Institute.

Weber, E.P., and A.M. Khademian. (2008), "Wicked Problems, Knowledge Challenges, and Collaborative Capacity Building in Network Settings", *Public Administration Review* 68 (2), pp. 334-339.

White, L.G. (1994), "Policy Analysis as Discourse", *Journal of Policy Analysis and Management* 13(3), pp. 506-525.

Winickoff, D., S. Jasanoff, L. Busch, R. Grove-White, and B Wynne (2005), "Adjudicating the GM Food Wars: Science, Risk and Democracy in World Trade Law", *The Yale Journal of International Law*, 30, pp. 80-123.

World Trade Organisation. GATT Documents, www.wto.org.

Wynne, B. (chairperson) (2007), "Taking European Knowledge Society Seriously", report on the Expert Group on Science and Governance to the Science, Economy and Society Directorate, Directorate General for Research. European Commission, Brussels.

WHY IS PUBLIC POLICY SO HARD? THE EXCLUDED YET ATTENTIVE CITIZEN

Daniel W. Bromley[1]

In the statement of scope for this workshop, we find the following claim:

A main characteristic (of public policy) is that the pressure for a policy response is a bottom-up movement characterised by the presence of advocacy or lobbying groups, multiple stakeholders, often different views about desirable outcomes and active involvement of the media. Other characteristics of interest are the presence of an ethical or values dimension which may differ within and between countries; uncertainty about processes or impacts or other forms of unknown or inaccessible knowledge such as uncertainties about scientific evidence; information asymmetries; different perceptions of or aversion to risk and possible irreversibilities. The purpose of this Workshop is to explore the characteristics of societal concerns that are relevant for designing policy responses to them, both in a purely domestic context and in the more complex setting of international trade and international obligations.

I find this to be a nice statement of the problem and I will therefore draw on it for guidance and inspiration in what I wish to say here. I will start by answering the question posed in my title - public policy is hard precisely because many members of the scientific community act as if they have the correct and pertinent answers to the questions put to them. Compounding the problem is that the general public is often unimpressed with what scientists offer up. And when there is a desire (or a need) to harmonise policies across disparate nation-states then the potential for policy dissonance is practically overwhelming. How can we be surprised at this situation?

We can only be surprised if we maintain a child-like innocence of what public policy entails. Perhaps public policy is simply the attainment of Adam Smith-like harmony by other means? Or perhaps it is difficult precisely because public policy is not about different individuals arguing over what they want. Rather, public policy is a process of working out what disparate individuals want as they work their way through what it seems possible for them to get (to have). I suggest this latter interpretation of policy is the pertinent one.

This is not the standard account of public policy in the eyes of the economist. Actually, economists tend to have two visions of public policy — one vision concerns how public policy actually works, and a second vision concerning how it ought to work. The first vision sees public policy as a coming together of clashing interest groups (with their various experts) intent on twisting some vexing policy problem to their particular advantage. The experts have their specific knowledge and the interest groups have their interests. On this telling the powerful interest groups win out over the weaker ones and the process ratchets

1. Anderson-Bascom Professor of Applied Economics, University of Wisconsin-Madison and Visiting Professor, Division of Resource Economics, Humboldt University-Berlin.

forward. All sides to each debate bring their experts to offer self-serving testimony, and the poor policy maker, as with Solomon, is faced with the impossible task of divining the truth from among the Babelian cacophony. This is the cynical view of public policy to which many economists subscribe. The prescriptive vision is to bring public policy more in line with the rational-actor model prevalent in our textbooks. Here clear goals and objectives are set down, alternative means are identified, and then optimising choices are made. This latter view about proper public policy was no doubt aided by Kenneth Arrow's influential book in which it was argued that there are two means by which "social choices" are made - politics and the market. When Arrow went on to show that collective action in a democratic (voting) setting could not deliver consistent results, the implication was that only markets could be relied upon. The way was cleared to insist that markets - or market-like arrangements - would produce consistent choices. The greater flaw is that markets are not, and cannot, be means for arriving at collective choices. Markets are mere compilation machines for millions of atomistic (individual) consumption and investment decisions. While the aggregate of these atomistic choices hold implications for social (collective) outcomes, it cannot possibly be true that markets are a means for making social choices.

Moreover, the market ideal advanced by economists, predicated on rational-choice models, presents a vexing problem of uncertainty - what Russell Hardin terms indeterminacy (Hardin, 2003). By indeterminacy Hardin means a situation in which the chooser - whether an individual or a parliament - is unable to be sure that the specific intention that underwrites the particular choice will indeed result in the specific outcome that was the explicit reason for the specific intention and the implicated choice. In writing about just how difficult this is, Hardin notes that:

> *"…people often do not understand how different strategies affect their interests. This should not be surprising... Strategic and stochastic thinking are hard. Indeed, they are hard even for those who are sophisticated theorists of them. However, people are not especially good at understanding causal relations either, and yet they manage to get through life most of the time. Our task in explaining their successes and failures is often the task of understanding how they choose to deal with indeterminacies that often swamp reason."* (Hardin, 2003, pp. 136-7)

One is left with the impression that it is the world's fault that individuals cannot make the right (correct) choices (Bromley, 2007). It is the world's fault that "good" theories of choice are difficult to construct. Strategic and stochastic thinking are hard - even for the sophisticated theorists of strategic and stochastic choice. Mere mortals are not very good at causal relations either.

We see here two accounts of collective choice - one spelling out how perverse and misguided it is, and the other spelling out just how hard it is to bring it in line with the economist's ideal. In the face of these views it is a wonder that any collective choice is possible. I suggest that the cynical view is a gross exaggeration, and the desire to push public policy in the direction of rational-choice models of economics is misguided.

Getting concepts right

The interesting and pertinent problem is not that public policy is difficult. The problem is that economists and some political scientists have problematised individual and group choice in a way that makes it seem harder than it is. Hardin's interest in indeterminacy arises because he believes indeterminacy has been ignored in order to preserve the purity of rational-choice theory. The problem, according to Hardin, is that indeterminacy emerges from the inevitable mismatch of the preferences of all those in the interaction when any one individual undertakes choice. In addition, Hardin claims that agents do not have clear ideas about what their intentions and associated actions will produce in the way of outcomes.

We see that "social indeterminacy is a problem of set-theoretic choice rather than of physical possibilities. The central problem is indeterminacy of reason in the face of strategic interaction" (Hardin, 2003, p. 8). That is, reason fails us (is indeterminate of what is best to do) because of the reality of the context of choice. Notice the use of the word reason here. It seems that Hardin uses reason to denote a perfect mapping between the intentions of an agent and the realisation of those intentions (outcomes) once choice has been made. That is, he seems to wish reason to connote a process in which there is perfect correspondence between intentions, actions, and outcomes. When that mapping is not perfect, reason appears to have failed the agent - or the agent's reasoning was faulty. Hardin's diagnosis of the difficulty in public policy is fairly typical of many political scientists and economists. And according to his assessment, there are few prospects for bringing rationality to public choice. It is here that Hardin stumbles on his own conceptual framing of the choice problem. Hardin is not alone. Indeed, the standard rational-choice approach to public policy is equally flawed.

In what follows, I will spell out an approach to public policy that allows us to avoid the conceptual incoherence of standard economic models, and that also reveals how to incorporate "societal concerns" into the policy process.

Individual action

The solution to the problems identified above is straightforward if we start with the idea that the fundamental purpose of reason in individual and public choice is to contend with the fact that the world is indeterminate. The theory of human choice and action that I will offer does not start with the odd notion that indeterminacy defeats reason, but with the idea that the purpose of reason is to defeat indeterminacy. That is, the reason we reason is precisely because as evolved sapient agents we have good reason to believe that the world out there is not a machine but is, instead, stochastic both on its own (nature is indeterminate), and because others are out there doing their own reasoning and choosing and acting - the aggregate of which means that the future changes in the very process of us seeking to go there. Is that not the plausible purpose of reason? Indeed if there were no indeterminacy we would hardly need reason at all - we would merely need to calculate in order to know the best thing to do. But to calculate is not to exercise choice. Calculation is the logic of mechanical determinism.

To suggest that indeterminacy swamps (or defeats) reason is to regard human choice and action as a machine process in which right (good, perfect) calculations are necessary and sufficient to produce right (good, perfect) outcomes. This idealised vision of choice is precisely where rational-choice thinking in economics has done so much mischief. If choice is merely calculation over probabilistic outcomes then we should stop using the word choice and recognise that individuals act not by choosing but by doing what is necessary on the basis of their flawless calculations. Individual action—and by extension collective action

(what we call public policy) - is not a machine process and it cannot possibly be thought of as an exercise in rational choice. Decisions about the future are contestations among thoughts about the future. To quote G.L.S. Shackle: "Choice, inescapably, is choice amongst thoughts, and thoughts…are not given (Shackle, 1961, pp. 272-73).

The question then becomes: how might we think of choice and action in a way that gives a role for reason and reason giving? I propose that volitional pragmatism offers that prospect (Bromley, 2006). Volitional pragmatism starts by acknowledging complexity in the world around us. That is, rather than complaining that individual and collective choice (public policy) do not conform to our idealised model of rational choice; volitional pragmatism takes the world as it is and offers an approach to choice and action. Pragmatism holds that we do not know what we want until we begin the task of determining - learning about - what we might plausibly have. That is, pragmatism regards all human action as a diagnostic undertaking in the quest for valuable belief—the only category of belief that provides reasons for human action. To quote Hans Joas:

In pragmatism, precisely because it considers all psychical operations in the light of their functionality for action, it becomes impossible to hold the position that the setting of an end is an act of consciousness per se that occurs outside of contexts of action. Rather, the setting of an end can only be the result of reflection on resistances met by conduct that is oriented in a number of different ways. Should it prove impossible to follow simultaneously all the various guiding impulses or compulsions to action, a selection of a dominant motive can take place which then, as an end, dominates the other motives or allows them to become effective only in a subordinate manner…action is teleological only in a diffuse fashion. Even our perception is shaped by our capacities and the possibilities for action. (Joas 1993, p. 21)

We see here recognition of the many images of action, and we see that the setting of ends outside of the context of action is psychologically impossible. That is, the prior specification of future outcomes is impossible until those who must act are in a context to act. Action is a diagnostic undertaking, and diagnosis is an example of abduction. Abduction brings together observed phenomena with particular axioms to suggest hypotheses and assumptions that offer plausible reasons for the observed phenomena. An abductive syllogism is of the form:

The surprising fact, C, is observed:

- But if A were true, C would be a matter of course,
- Hence, there is reason to suspect A is true.

Abduction starts when particular circumstances and events are encountered and we find ourselves in need of an explanation. That is, human action is animated by doubt and surprise. Why are GMO crops accepted in America but are frowned upon in much of Europe? Why do agricultural subsidies persist? Why is the EU's Common Agriculture Policy the source of so much contention? Charles Sanders Peirce talked of the "irritation of doubt." The essential purpose of abduction is the production of belief about specific events. To Peirce, "…the action of thought is excited by the irritation of doubt, and ceases when belief is attained; so that the production of belief is the sole function of thought (Peirce 1957, p. 36)."

When individuals or collections of individuals face the need to choose (to act), abduction is the process we deploy to get a grip on the reason for the new surprise - that surprise (and its reasons) constituting the necessary precursor to choice and action. Diagnostic thought is deployed for the sole purpose of fixing belief. And a belief is that upon which we are prepared to act. Pragmatists consider our individual comprehensions of the settings and circumstances within which we are situated to be necessarily limited to impressions of the

world around us. And most importantly, different individuals necessarily formulate and hold different impressions. To put the matter another way, claims of "truth" about the world around us is a property of statements about that world. Truth is not a property of objects and events - the "thing in itself". Individuals do not argue about objects and events - they discuss and argue about statements about, and descriptions of, objects and events.

Each of us apprehends the settings and circumstances within which we are situated, and these apprehended phenomena become our impressions of those settings and circumstances. When we describe these impressions, the descriptions (and re-descriptions) constitute our expressions about the world around us. These expressions are the stories we tell to ourselves and to others. More importantly, these expressions form the mental stage on which we live. This stage constitutes our individually perceived and individually constructed "reality". This particular reality "belongs to" the individual who created it. Our interest here in "societal concerns" can now be understood as the particular issues that agitate different individuals in the area of agricultural and trade policy.

Notice that the essential function of expressions is to constitute (to construct) the mental stage onto which we might then project our imaginings of future outcomes to see how they will "play out" - plausibly materialise. It is here that we formulate the reasons that will come to provide the grounds for choosing among the array of plausible created imaginings. Individual choice and action is a contest between expressions and imaginings. We are situated in a constructed reality (an expression), and we continually reflect on alternative created imaginings. This deliberation consists in checking these imaginings against our expressions of the present and of the imagined future. We act when we find a feasible created imagining that meets our expectations about outcomes in the future. And of course we also act when we reject all created imaginings (perhaps because they seem infeasible) and stick with our current action trajectory.

Joint action

Let us now turn to public policy. The difficulty here should be obvious. The foremost burden in joint action is the necessity to deal with a multitude of contending expressions. As Peirce insisted, "the meaning of an object to us is nothing but the sum of its perceived effects" (Peirce 1934). It follows that each of us will have quite distinct expressions about the world "as it is" and about our place in that world.

We see that the central challenge in collective action (public policy) is for the pertinent decision group(s) to work out a reconciliation of the multitude of expressions and imaginings about the future. Progress in such difficult matters is to be found in reasoned debate - the asking for and giving of reasons (Brandom 1994, 2000). Joint action is contentious because of the reality of contending expressions. Because joint action must ultimately result in but a single choice (coordinated and coincident action), contending expressions are inevitably confronted by contending created imaginings. The participants in that process bring differing expressions about the *status quo ante*, and quite different created imaginings about the prospects for the future.

Public policy

I have insisted that it is incoherent to think of public policy in terms of rational choice models. Public policy redefines fields of action (choice sets) for individuals - public policy reallocates income and wealth streams. Public policy forces some people to change the ways they have been doing certain things. It is the purpose of collective action - and it is the business of the political entities in nation-states - to craft remedies for emerging problematic settings and circumstances. Whether for village councils, national parliaments, supra-

national bodies such as the European Parliament, or the United Nations, the task of public policy is an ongoing search for plausible and acceptable solutions to new unwanted circumstances. Public policy defines new realms of individual action. That is why public policy is contentious.

Public policy is nothing but thinking about, weighing, and ultimately choosing among alternative institutional setups that will give rise to alternative imagined and plausible futures. Rationing transactions - institutional changes - redefine realms of individual action, and thereby redirect income flows. But the futures of central concern to citizens, members of parliaments, and the courts are only imagined futures (Shackle 1961). To Shackle, actions that can still be chosen or rejected on the basis of their plausible implications for the future have no objective outcomes associated with those available actions. The only outcomes that such actions can have merely exist in the mind - the imagination - of the decision-maker(s). This means, quite simply, that outcomes of available actions are not ascertained (or discovered) but created. This is a central aspect of volitional pragmatism (Bromley, 2006, 2008).

Institutional change entails the formulation and implementation of created imaginings. This approach may be easier to apprehend if we start with the idea that all institutional change entails three steps. The first step is recognition on the part of affected individuals that the *status quo* institutional setup induces particular individual behaviours, the aggregate of which gives rise to realised outcomes that are no longer regarded as acceptable - or as reasonable.

Perhaps the health-care system is creaking under excessive demands, a shortage of health professionals, and antiquated facilities. Perhaps schools are failing to meet the expectations that parents and politicians have for them. Perhaps the food supply has come under suspicion for harbouring contagious diseases. Perhaps there are concerns about genetically modified organisms making their way into natural habitats and destroying particular ecological settings. These unsettling circumstances do not just materialise out of thin air - nor do they exist without a reason. Rather, they are the products (results) of individual behaviours that are themselves the inevitable and "rational" economising entailments of the existing institutional arrangements.

We see that the existing constellation of institutions gives rise to individual behaviours, the aggregate of which generate acceptable outcomes, or else such behaviours generate unacceptable outcomes. It is the emerging awareness of defective outcomes that is at the root of a growing dissatisfaction with the *status quo ante*, and it is precisely these dissatisfactions that become the essential catalyst of nascent demands for institutional change. I suggest that public policy is motivated by an inchoate yet emerging recognition that something must be done about existing institutional settings and their associated outcomes to mitigate probable harms that would otherwise emanate from a continuation of the *status quo ante* institutional setup. On this view, institutional change is provoked and motivated by a shared apprehension concerning unwanted created imaginings in the future. This perspective accords explicit recognition to the work in prospect theory indicating that humans have a greater distaste for losses from a *status quo* position than for the gains that may arise from changes in that *status quo* (Kahneman and Tversky 1979; Tversky and Kahneman 1987).

Once this galvanising condition has been met, institutional change still requires two more conditions. The first of these concerns new created imaginings. We may usefully regard these imaginings as families of hypothetical propositions of the sort: if X_i then Y_i where the subscript i relates to the proposition held by the i^{th} member of the community - whether citizen or politician. The essence of created imaginings is that they allow members of a

democratic society to create mappings of plausible outcomes (imaginings) from the enactment of new institutional arrangements. Just imagine what the health care system might become if only we could increase the number of doctors by 20% over the next five years. Imagine how the wait for elective surgery might be reduced if only we could increase the number of spaces in hospitals by 10% over the next decade.

Of course individuals will create different imaginings about possible outcomes. This should not surprise us. We have different imaginings because the available actions are novel events in our lives. We have not done that before, so why should it be supposed that each of us could have definitive data and similar imaginings concerning precisely what will transpire? As Shackle says, "an action which can still be chosen or rejected has no objective outcome" (Shackle 1961, p. 143). This is precisely why there are consultants, parliamentary (legislative) committees, elaborate hearings, independent research organisations ("think tanks"), advisors, experts, and indeed entire sectors engaged in the task of creating plausible imaginings. If the task were easy and straightforward many people would need to find other lines of work.

Once there is an emergence of plausible created imaginings, we begin to approach the final stage of institutional change - policy formulation. Democratic market economies are in continual need of new created imaginings as new problems and new opportunities arise almost on a daily basis. Those who celebrate the dynamic properties of markets are telling us only half of the story. The real dynamism of democratic capitalism is that the existing institutional arrangements are regarded as the indispensable malleable architecture for adaptation. With this idea at hand, it is easy to see that this cacophony of created imaginings will evolve from just that - an inchoate cacophony - into a slowly coalescing and emerging consensus that begins to narrow the range of institutional alternatives and plausible imaginings.

When the process of sifting and winnowing through the various created imaginings reaches the point that several of them have come to dominate the others, the third essential component of institutional change comes in to play. This final stage is the actual process whereby the working rules (or entitlements) of the economy are modified for the explicit purpose of implementing one of these dominating created imaginings. We may properly consider this emergent and now reigning imagining as the reason for the new institutional arrangements. That is, the emergent created imagining is the outcome in the future for the sake of which the new institutional arrangements must be implemented now. This dominant imagining comprises the sufficient reason for the new institutions. It explains the institutional change.

The process is repeated *ad infinitum* in a democratic market economy. That is, such economies are engaged in a continual process of: (1) Assessing existing settings and circumstances; (2) searching for plausibly causal (epistemic) connections between those outcomes and the institutional arrangements on which they are plausibly predicated; (3) formulating new created imaginings; (4) working out the political arrangements to discard the most implausible imaginings; (5) searching for and articulating the plausible mappings between surviving created imaginings and the institutional arrangements that are their plausible explanations; and (6) undertaking collective action in the parliaments, the executive branch, and the courts to modify the implicated institutional arrangements from their *status quo* configuration to a new and plausible configuration that will - on the newly accepted emergent imagining - plausibly lead to the desired outcomes in the future.

I have insisted that public policy is collective action in restraint, liberation, and expansion of individual action. And I have argued that the essence of public policy is that of rationing

(redefining) economic settings and circumstances. Public policy is the essence of what we call a rationing transaction because the actions of the legislatures/parliaments and the courts redirect or reallocate economic opportunities for differentially situated individuals. Public policy necessarily advances the economic and social agenda of some individuals, and it impedes the economic and social agenda of others. Individuals will struggle to have their interests represented in that process, but there can be no doubt that public policy is precisely concerned with such reallocations of relative advantage in the economy.

Institutional change is a central aspect of the modern nation-state precisely because the essence of our existence is the continual adaptation to new settings and circumstances, new opportunities, and new unwanted outcomes. The puzzle is not that institutions undergo reconsideration and alteration. The analytical challenge for social scientists is to understand why these processes look as they do in democratic market economies.

Collective choice is a process of reconciling contending expressions and imaginings, and this is an essential activity leading to the formulation of what seems best, in the eyes of the individual (or of the group), to do. Individuals and groups work out what seems best by working out what seems possible as they work their way toward what they will come to realize seems best. The process entails not only working out the best means but also the best ends. Notice that this account is at odds with the decision process as envisaged by many economists.

The arrival at a consensus about what is better to do is always predicated upon a clear but evolving notion of the purposes of the future - an outcome in the future for the sake of which action must be taken today. Recall that this is what philosophers call final cause. Purpose is central to pragmatism, and settled belief about both purpose and how to get there represent the essence of "correct" thoughts and belief about the appropriate action to be taken. Richard Rorty insists that the right question to ask is: "For what purposes would it be useful to hold that belief?"(Rorty 1999, p. *xxiv*). He sees this question as rather akin to asking: for what purposes would it be useful to load that particular program onto my computer?

We have here a debate about the true and the quest to justify claims about the true. I have earlier pointed out that pragmatism insists that the word "true" does not apply to events and objects in the world around us. Rather, the word "true" applies to statements about events and objects in that world. In other words, truth is not a property of perfect correspondence between propositions (words) and particular events and objects to which those propositions (words) refer - between language and things (signs and objects). Truth is not denotative. Truth is, instead, a property of particular statements (words) about specific events and objects - between contending linguistic claims. Truth is connotative.

Implications

Human choice and action is properly characterised as prospective volition - the human will in action, looking to the future, trying to determine how that future ought to unfold. As this process evolves, individuals (and groups of individuals) bring contending expressions and imaginings to the task of choice and action. Individuals (and groups) do not know precisely what they want until they are able to work out what they seem able to have. Surprise motivates action. This process of working out plausible futures entails the consideration of plausible imaginings in conjunction with existing expressions about current and possible future situatedness. Group action is more complicated than individual action because it requires reconciliation of disparate and contending individual expressions and imaginings until a consensus emerges - the properties of which are that this consensus is regarded as; (1) feasible; and (2) the best thing to do at this particular time. This process can

be thought of as an exercise in pleading, resistance, persuasion, cautious acquiescence, and eventual emergence of a consensus.

The two properties of that consensus - feasible and best at this time - represent judgments reached by those individuals who are responsible for collective action. Notice that this judgment is something that can only emerge as individuals and groups contend with the need to reconcile disparate expressions and disparate created imaginings. The first step in this process of working out an emergent consensus is necessarily confined to legislators, administrators, and judges. In a democracy, the second step is to justify this agreement to the political community whose individual actions will be restrained, liberated, and expanded. In the absence of this justification, collective action will lack legitimacy. This justification to the larger political community necessarily entails the giving of reasons for the decision reached. The process of giving reasons must be carefully crafted so that the reasons given match as closely as possible the asking for reasons that is expected from the political community to whom the collective action is directed (Brandom 2000). This activity is properly thought of justification in the service of emergent consent.

Our interest in "societal concerns" seems to arise from the fact that a large number of individuals believe they are excluded from the discourse about agricultural and trade policy. This is no surprise. In many countries agricultural policy - and to a lesser extent trade policy — are indeed regarded as the private realm of particular important interests. Efforts by urban constituents to break into the action are rarely successful.

It is my view that the dominant mental framings of public policy — that it is the proper realm of the experts, or that it is in need of a serious infusion of rational - choice theory — serve to keep the necessary policy discourse attenuated. Volitional pragmatism offers, I suggest, a fresh perspective on the need for greater openness to those societal concerns that now seem excluded.

References

Arrow, K. J. (1963), *Social Choice and Individual Values New Haven*, Yale University Press.

Brandom, R. B. (1994), *Making it Explicit: Reasoning, Representing, and Discursive Commitment*, Cambridge, MA: Harvard University Press.

Brandom, R. B. (2000), *Articulating Reasons*, Cambridge, MA: Harvard University Press.

Bromley, D. W. (1989), *Economic Interests and Institutions: The Conceptual Foundations of Public Policy*, Oxford, Blackwell.

Bromley, D. W. (1990), "The Ideology of Efficiency: Searching for a Theory of Policy Analysis," *Journal of Environmental Economics and Management*, 19, pp. 86-107.

Bromley, Daniel W. 2006. Sufficient Reason: Volitional Pragmatism and the Meaning of Economic Institutions, Princeton: Princeton University Press.

Bromley, D. W. (2007), "The Problematic Problematisation of Choice: An Essay on Hardin's Indeterminacy and Society", *in Research in the History of Economic Thought and Methodology*, Warren S., J. Biddle and R. Emmett (eds.), Oxford, Elsevier.

Bromley, D. W. (2008) "Volitional Pragmatism," *Ecological Economics*, 68, pp. 1-13.

Cooter, R. and P. Rappoport (1984), "Were the Ordinalists Wrong about Welfare Economics?" *Journal of Economic Literature* 22 (June), pp. 507-30.

Joas, H. (1993), *Pragmatism and Social Theory*, Chicago, University of Chicago Press.

Joas, H. (1997), *The Creativity of Action*, Chicago, University of Chicago Press.

Joas, H. (2000), *The Genesis of Values*, Chicago, University of Chicago Press.

Kahneman, D. and A. Tversky (1979), "Prospect Theory: An Analysis of Decision Under Risk," *Econometrica*, 47, pp. 263-91.

Peirce, Charles Sanders. 1877 (1997). "The Fixation of Belief," in Louis Menand (ed.), Pragmatism, New York: Vintage Books.

Peirce, C.S. (1878), "How to Make Our Ideas Clear", *Pragmatism*, Menand L. (ed.), New York, (1997),Vintage Books.

Peirce, C.S. (1934), *Collected Papers*, Vol. 5, Cambridge: Harvard University Press.

Peirce, C.S. (1957) *Essays in the Philosophy of Science*, Vincent T (ed.), New York, The Liberal Arts Press.

Rorty, R. (1999), *Philosophy and Social Hope*, London, Penguin Books.

Shackle, G.L.S. (1961), *Decision, Order, and Time in Human Affairs*, Cambridge, Cambridge University Press.

Shackle, G.L.S. (1992), *Epistemics and Economics*, New Brunswick, NJ, Transaction Publishers.

Tversky, A. and D. Kahneman (1987), "Rational Choice and the Framing of Decisions", *Rational Choice*, Reder R. and M.W. Reder (eds.), Hogarth, Chicago, University of Chicago Press.

THE PRECAUTIONARY PRINCIPLE

Peter Saunders[1]

There is no definitive statement of the precautionary principle, but there is a reasonable consensus about what it says, at least among its proponents. The 1998 Wingspread Declaration (Science and Environmental Health Network 1998) which takes its name from the place where it was formulated, is typical.

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the precautionary principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.

The European Commission, in 2000, expressed it less succinctly but the statement begins with the key phrase

The Precautionary Principle applies "where preliminary objective scientific evaluation indicates that there are reasonable grounds for concern."

The statements of the principle by those who are advocating it or proposing to use it, are essentially similar. The principle is to be applied when (a) there is scientific evidence for a threat to the environment or to health, but (b) the evidence, while sound, is not conclusive. What is crucial is that there must be a *prima facie* scientific case for a threat. If there is not, then nothing happens.

If there is, then we do not have to wait until we are certain about the hazard before we can take measures to mitigate or avoid it. The precautionary principle states that we are permitted to act on the basis of evidence that is not conclusive. It does not, however, say that we are obliged to. What, if anything, we actually do is a matter for judgment on the basis of the evidence that we have in front of us.

The precautionary principle is something like the burden of proof. In a civil court the playing field is level, but in a criminal court it is deliberately not. The defendant is not required to prove his innocence; it is for the prosecution to prove him guilty beyond reasonable doubt.

The lack of balance is deliberate. Courts are supposed to convict the guilty and acquit the innocent. In an imperfect world that isn't always going to happen, and the legal system has to allow for when it does not.

1. King's College London and Institute of Science in Society.

There are two different ways in which things can go wrong, just like Type I and Type II errors in statistics. The view that we as a society have come to is that while it is undesirable that a crime should go unpunished, it is far worse for an innocent person to be convicted. So we shift the balance to make it less likely that will happen, which naturally means that we have to accept a greater probability that a criminal will be set free.

In the same way, when we act on the basis of evidence that is not conclusive, we are saying that we have reason to be concerned that something is hazardous and we are sufficiently worried about the consequences that we are willing to go without it, or at least to delay its introduction until we have more evidence.

Neither the burden of proof nor the precautionary principle is an algorithm for decision making. A jury still has to decide whether the defendant is guilty beyond reasonable doubt – and even what they are prepared to accept as "reasonable doubt". In the same way, even if we accept the precautionary principle, we still have to weigh up the evidence as best we can, and we still have to decide how much reassurance we are going to require before we allow something to proceed. As in ordinary risk assessment, an important factor in this is how much we believe we stand to gain if it does go ahead.

Common criticisms

There are a lot of criticisms of the precautionary principle around.

- *Ill-defined*: Critics sometimes complain that there are so many definitions of the precautionary principle that it cannot be taken seriously. In fact, those that are not covered by the description above come from opponents, each setting up his or her own straw man to knock down. Then, to add insult to injury, they say that anything with so many different definitions is obviously too vague to be useful.
- *Vacuous:* Some people complain that the precautionary principle does not lead to definite decisions. But that is not what it is meant to do. Like the burden of proof, it is something we take into account when we are making decisions.
- *Incoherent:* Others, evidently believing that the precautionary principle does lead to definite decisions, complain that because there can be risks on both sides of an action, it can "ban what it simultaneously requires" (Sunstein 2008). As above, the answer is that the role of the precautionary principle is to influence decision makers, not do their job for them.
- *Too weak:* The 'burden of proof' in a trial does matter: people are acquitted who would be found guilty if criminal trials were like civil proceedings. See below for examples of where the principle could have a real effect. And while some people say it is too weak, naturally there are others who claim it is.
- *Too strong:* Even with the burden of proof on the prosecution, many people do get convicted. In the same way, even if we adopt the precautionary principle, progress will continue. Almost all innovations will proceed without being challenged, just as they do now.
- *Anti-scientific:* On the contrary, the precautionary principle is all about science. For it to apply at all, there must be scientific grounds for concern, and it then requires that more science must be done to allay (or not) those concerns. Sweeping but unsupported assurances that everything will be all right will not do.

- *An excuse for protectionism*: Anything that can lead to a restriction can be used as an excuse for protectionism. But at least here the innovator has an opportunity to counter the objection, by providing real evidence that the concerns are unwarranted, or at least outweighed by the advantages.
- *These matters should be dealt with in the courts:* This is really just another version of the misunderstanding that the precautionary principle is an algorithm for taking decisions, which it is not.

Critics of the precautionary principle often make up alarming stories of how it could stop progress dead in its tracks. Here is a typical example:

Given that the dynamics of science are not predictable, it is important to consider the dangers of excessive precaution. One of those is the threat to technological innovation. Imagine it is 1850 and the following version of the precautionary principle is adopted: No innovation shall be approved for use until it is proven safe, with the burden of proving safety placed on the technologist. Under this system, what would have happened to electricity, the internal combustion engine, plastics, pharmaceuticals, the Internet, the cell phone and so forth? (Graham 2003)

Not only is this all a flight of fancy, it depends crucially on a "straw man" version of the precautionary principle. What the critics do not provide are examples where the precautionary principle was applied and resulted in losses. In contrast, there are many real cases where if it had been applied the outcome would have been far better than what actually happened.

Tobacco

The precautionary principle would not have prevented Sir Walter Raleigh introducing tobacco into Europe because at that time there was no evidence that it was harmful. We are told that in the late 1940s, when Sir Richard Doll and his colleagues were trying to find out why lung cancer had increased, they had no idea that the cause was tobacco. The most likely candidate seemed to be the great increase in motor traffic during the war.

The epidemiological studies provided strong evidence that smoking was an important cause of lung cancer (Doll and Bradford Hill 1950). The sceptics, above all the tobacco industry, refused to accept this conclusion, demanding instead proof in the form of a clearly demonstrated mechanism. As a result, while it has been widely known since about 1950 that smoking is dangerous, it was only much later that governments started to act. Had the precautionary principle been applied, they would not have waited for the proof the industry was demanding. They would have started much earlier to increase the tax on tobacco, ban advertising especially when aimed at children, not allow smoking in public buildings, and so on.

It is obviously impossible to calculate how many lives would have been saved if governments had not waited so long. Above all, we cannot say when they would have judged the evidence strong enough to justify going ahead over the objections of the tobacco industry. But the WHO MPOWER report (World Health Organisation 2008) estimates that in the twentieth century, tobacco killed 100 million people. If we suppose that only 1% of those lives would have been saved if the precautionary principle had led countries to act sooner, that is still a million lives. That in itself is a sobering thought, but we can, if we prefer, convert it into monetary terms by using the usual risk assessment valuation of a life as USD 6 million. That gives a total cost of USD 6 trillion, massive even when compared with the amounts involved in bailing out the banks.

Asbestos

Most people probably believe that the danger of asbestos was only discovered 30 or 40 years ago and that action was taken as soon as it was. In fact, it was in London in 1898 that Lucy Deane, one of the first "Women Inspectors of Factories" noticed that people who worked with asbestos suffered more serious ailments than those who worked in other dusty environments. She even found a reason why: asbestos particles are sharp (Harramoës, Gee, MacGarvin, Stirling, Keys, Wynne and Guedes Vaz 2001).

For the next hundred years, governments and the asbestos industry kept insisting that there was no conclusive proof that asbestos was as dangerous as we now know it is. They also maintained that there was no alternative for it, which we also now know there is. They therefore only gradually restricted its use. As late as the 1970s it was being installed in buildings in the United Kingdom and it was not until 1998 that it was finally banned altogether in the United Kingdom and France. A nice touch that: a commemoration of the 100th anniversary of Lucy Deane's report.

For asbestos as for tobacco, we cannot really estimate how much was lost by ignoring the precautionary principle. We can, however, get an idea of the scale by noting that in 2000 it was estimated that there were about a quarter of a million deaths from mesothelioma yet to come in Europe alone. That converts to about USD 1.5 trillion, not including all the deaths in the twentieth century, or the rest of the world, or asbestosis or other costs.

This is something to bear in mind the next time someone complains about the unreasonable cost of adopting the precautionary principle.

The Bradford Hill criteria

The precautionary principle had not been formulated at the time that Sir Richard Doll's results were published. Those involved in the research were, however, very conscious of the problem. They had what they considered to be convincing evidence that smoking causes lung cancer, but the government and the tobacco industry were refusing to accept it. And while the sceptics had their own reasons for wanting not to believe the result, they also had some logic on their side. For while epidemiology can show there is an association between two variables, that does not necessarily mean that one is the cause of the other. Something more is needed to establish causation.

This led one of the investigators, Sir Austin Bradford Hill, a professor of medical statistics in London University, to produce what are now called the Bradford Hill criteria (Bradford Hill 1965). These seem to be very well known in the world of medicine but not more widely:

- *How strong is the association*? The death rate from lung cancer was over nine times as high in smokers as in non-smokers.
- *Are the results consistent?* By 1965 there had been 36 different inquiries, not all using the same methodology, and all had found an association between smoking and lung cancer.
- *Is the phenomenon specific?* Death rates for smokers are higher for many causes of death but the increase is much greater for lung cancer so there does appear to be a specific connection.
- *Temporality:* Did the purported cause occur before the effect? This is not always obvious, for instance in the case of diseases that take a very long time to become apparent.

- *Dose response*: The death rate from lung cancer increases with the number of cigarettes smoked.
- *Plausibility*: If we do not *know* the mechanism (if we did, we would not need these criteria) is there a plausible candidate?
- *Coherence*: If our present *knowledge* does not even suggest a plausible mechanism, does it actually rule out the possibility?
- *Experiment:* If people stop *smoking*, does the death rate from lung cancer fall? We now know that it does.
- *Analogy*: Are there *analogous* examples? Since the effects of thalidomide and rubella became known, it has been much easier to make the case that some other birth defect could be due to a drug or a viral disease.

Bradford Hill himself insisted that what he was proposing was not a check list where all the boxes have to be ticked. In any real situation, some of the criteria may not be met. For example, there is no dose response when you take a drug overdose: you either die or you don't. What is deemed 'plausible' can also change over time. In the nineteenth century it was thought totally implausible that doctors not washing their hands could be responsible for the deaths of women in maternity wards. But the criteria do suggest the sorts of questions we should ask when we are faced with a *prima facie* case for hazard and we are trying to decide whether action is warranted.

A current example: childhood leukaemia

There is a long-standing debate about whether children who live near nuclear power stations are more likely to develop leukaemia. There is evidence for clusters around certain nuclear installations, such as Sellafield, Aldermaston and Rosyth in the United Kingdom, but the numbers involved are small. This makes it hard to get statistical significance, which is often taken as proving there is no effect, which of course it does not.

The authorities also point out that the amount of radiation involved is generally believed to be far too small to have an effect, and so they have suggested other possible causes, generally to do with the influx of workers into an area that had previously had a small, stable, rural population, though no one seems to have thought of a plausible mechanism by which that could happen.

Now a new study has been carried out by the German Bundesamt für Strahlenschutz (BfS). Instead of just looking at the number of cases of childhood leukaemia in the area around a power station, they carried out a detailed study both of children with leukaemia and of controls in the same area (Bundesamt für Strahlenschutz 2007). They found a significant correlation between proximity to the reactor and the incidence of leukaemia. It has also been pointed out that the radiation from a reactor is significantly higher when it has been opened up for its annual maintenance, and there is evidence that this might have an effect on unborn children at a sensitive time in their development, manifesting itself a year or two later as leukaemia. The radiation may not be evenly distributed over an area because it is a matter of the dispersal of radioactive gases, so the dose at one location at a particular time may be considerably higher than the mean annual level for the entire region.

Thus two more of the Bradford Hill criteria have been met. There is a dose response, and there is a plausible mechanism. In contrast, there is still no plausible mechanism for the hypothesis that the cause is something other than radiation.

Surely this counts as a *prima facie* case, and warrants further investigation. Yet in 2008 the UK government published a White Paper (Department for Business, Enterprise and Regulatory Reform 2008) laying out its proposals to build a new generation of nuclear power plants. This is what it had to say on the issue of clusters of childhood leukaemia:

> *2.107 During the course of our consultation in July 2007, a separate report identified that leukaemia rates were higher in children and young people living near nuclear facilities (Baker and Hoel 2007). However, it concluded that there was no clear explanation for this and that further research is needed before firm conclusions can be drawn from the report. A report was also published by the German Federal Office for Radiation Protection on a study into childhood cancers in the vicinity of nuclear power stations in Germany (Committee on Medical Aspects of Radiation in the Environment 2006). The report concluded that whilst in Germany it believes that there is a correlation between the distance of the child's home from the nearest nuclear power station and the risk of developing leukaemia, it did not follow that ionising radiation emitted by German nuclear power stations was the cause. Childhood cancer is also related to socio-economic factors and this does not seem to have been taken into account in the German study. The study also covers a relatively small sample in comparison to COMARE's 11th report (2006) which contains 32 000 cases.*

According to the White Paper, because no mechanism for the increase in leukaemia rates has been demonstrated, there is no proof that radiation from nearby nuclear plants is responsible and the epidemiological evidence from two separate studies (another of the Bradford Hill criteria satisfied) can therefore be ignored. This is a clear application of what we might call the "antiprecautionary principle": any innovation must be permitted unless and until it can be proven to be unsafe. This has, of course, been the traditional view of the tobacco industry.

Evidence

Far from being anti-science, the precautionary principle relies on science at every stage. It does not come into play unless there is at least *prima facie* scientific evidence of a hazard, it requires scientific evidence to determine whether or not restrictions are justified, and, if they are, further scientific evidence might lead to their being lifted. Scientific evidence is also required to assess the benefits we may lose: do we need GM food to feed the planet, will the lights go out all over Europe if we decide not to go for nuclear power, is there really no alternative to asbestos for brake linings?

Policy makers will therefore have to draw on scientific evidence, and this can be more problematic than it appears. Ordinarily, when we want to know about science, we ask scientists, and most of the time we can be confident that the answers we get will be as factual as they can be, bearing in mind the uncertainties inherent in science and the fact that in some of the most interesting areas there is not yet a consensus.

In the sorts of issues in which the precautionary principle can apply, however, many of the scientists with the relevant knowledge are likely to be connected directly or indirectly with the innovation being considered. That does not mean that their advice should be ignored, but it should be treated with some caution, as we would treat any advice from someone with a vested interest. As a British government minister said while replying to a question in Parliament, "... where somebody is paying, one questions whether the research will be reflective of scientific rigour or not." (Norris 2009).

It has, for example, been shown in both pharmaceuticals and nutrition that research sponsored by industry is far more likely to produce results favourable to industry than research done by independent scientists (Lesser, Ebbeling, Goozner, Wypij and Ludwig 2007) (Davidson 1986) (Lexchin, Bero, Djulbegovic and Clark 2003). That may be because of the way the experiments are designed, or because results not favourable to the industry are not published, or for other reasons, but the effect is beyond doubt. One would expect that in the same way the evidence given to governments and their regulators by industry funded scientists will also tend to favour the interests of the companies that support them. This does seem to be the case, but so far there do not appear to have been any formal studies.

It is not just that the scientists who are consulted may be selective about the evidence they choose to present. The evidence itself is selective. Research is expensive, and so the people that hold the purse strings have a major say in deciding which lines of research are followed up and which are not. In most of the cases where the precautionary principle is relevant, much of the research will be have been funded by industry, either in their own laboratories or in universities or research institutions. Government funding too will have been largely directed towards supporting industry. Even those scientists who are free to choose their own topics are going to be attracted by the prospect of making a profit out of their work, and their institutions will be putting pressure on them to concentrate on research that will lead to major grants and to patents.

Research in these areas is therefore largely directed towards the development of new products: new GMOs, new pharmaceuticals, new applications of nanotechnology, new nuclear power plants, and so on. Far less attention will be paid to studying the possible dangers. What is more, scientists who do carry out research into hazards, or who become aware of hazards as they carry out research that was not specifically aimed at finding them, are likely to run into great pressure from industry (Ho and Ryan 1999) (Saunders and Ho 2001) (Saunders 2006) (Saunders 2007) (Healy 2004).

A full account of the ways in which industry can ensure that the evidence on which decisions are made is biased in their favour is clearly beyond the scope of this article, but by way of an example here is one that has recently attracted attention.

Early in 2008, the US Environmental Protection Agency (EPA) invited comments ahead of a meeting it was holding on two proposals concerning GM crops. In response, 26 scientists, all of them experts in the area and none known to be opposed to GM, wrote to the EPA to complain that they were unable to do proper research in the area because anyone who buys GM seeds is required to sign a stewardship agreement. This forbids them not only from saving seeds from the crop to plant the following year, but also from carrying out any research without the express permission of the seed company. Some of the scientists had even obtained such permission, and then when the results were not turning out as the company had hoped, had it withdrawn (Pollack 2009).

As a result, when the EPA or anyone else is trying to assess the benefits and hazards of any GM variety, or of GM crops in general, the only scientific evidence they will have will be what the biotechnology companies want them to have. In fact, that is almost the case already, often through refusals to release data on the grounds of "commercial confidentiality", but the industry is trying to close the last loopholes.

Research into climate change provides another example of the problems of evidence. Most of the work was done by people like meteorologists and oceanographers who were working for universities and for government establishments with adequate resources and no incentives or *a priori* bias one way or the other. Imagine what would have happened if all the

experts, their equipment, their data and their supercomputers had belonged to the oil industry.

When the American scientists had completed their report, however, the Bush administration altered the conclusions to suit the industries that are major producers or users of fossil fuels. Fortunately, the research was international, and they were unable to prevent the results from becoming known.

It is bound to be difficult for lay people to take decisions that are based on science when there is disagreement about what the evidence is and what implications can be drawn from it, but the problem occurs in other contexts as well. When technical issues are important in a court case, expert witnesses are called. Often their evidence is accepted without challenge. Sometimes it is not, and when that happens, the witnesses are cross examined by the lawyers just as other witnesses are.

Policy makers should do the same. Where there is disagreement about the science, they should require all the scientists they consult to explain what precisely is the evidence on which their statements are based. Where there are opposing scientific opinions, each side should be encouraged to comment on the other's submission. It is best for them to give evidence together, because a lay person may not know the key questions to ask or whether a particular response is adequate, yet still be able to judge at the end of the discussion which side has the better case. The ordinary citizens who serve on juries are expected to be able to do this, so should regulators.

Non-scientists may not realise how much of a typical paper can be understood by someone with no expertise in the field. For example, a recent paper in the prestigious journal *Science* has the title "Suppression of Cotton Bollworm in Multiple Crops in China in Areas with Bt Toxin-Containing Cotton" (Yu, Lu, Feng, Jiang and Zhou 2008). In the abstract, the authors state "Our data suggest that Bt cotton not only controls *H. armigera* [the cotton bollworm] on transgenic cotton designed to resist this pest but also may reduce its presence on other host crops and may decrease the need for insecticide sprays in general." If, however, we read through to the last two sentences of the paper we find: "Nevertheless, as a result of decreased spraying of broad-spectrum pesticides for controlling cotton bollworm in Bt cotton fields, mirids have recently become key pests of cotton in China. Therefore, despite its value, Bt cotton should be considered only one component in the overall management of insect pests in the diversified cropping systems common throughout China." A lay person reading this will make up his or her own mind about how effective Bt cotton is in reducing pest infestation and pesticide use.

It is not just lay people who should read the whole paper for themselves. Scientists do not read carefully every paper they cite in their work; indeed they may never have looked at some of them at all but know about what they contain only through the abstract or a brief mention in another paper. As a result, what becomes part of the common knowledge base in the subject may not be what was actually found. This is yet another reason why policy makers should insist that the scientists who advise them must provide the original evidence for what they say.

Equally, the public should be wary about taking at face value what the policy makers say about science. The Bush administration was not the only one to seek to massage the evidence. The UK White Paper (2008) quoted in the last section states that the BfS report "believes" there is a correlation, when in fact the investigators found a significantly significant correlation. It also points out that the BfS study used a smaller sample than COMARE, but neglects to mention that the analysis was more detailed and that it did find

statistical significance. One need only read the BfS and COMARE reports (Bundesamt für Strahlenschutz 2007) (Committee on Medical Aspects of Radiation in the Environment 2006) oneself to get a better picture.

Finally, when health and safety are involved, policy makers should not confine themselves to the peer reviewed literature. Peer review is a useful part of the scientific process, but it has a number of serious weaknesses and cannot be the sole test of what is or is not science (Saunders 2008) (Peters and Ceci 1982) (Smith 2006). It is probably still the best way we have of deciding which papers should be published and become part of the scientific literature, but when there are plausible reports of risk to humans or the environment, the precautionary principle – and ordinary common sense – tell us we should not ignore them until some learned journal has decided to publish them[1].

Conclusion

By itself, the precautionary principle does not stop anything. What it does is prevent governments and regulators from deliberately ignoring a strong scientific case by using the excuse that there is no proof of danger. It prevents companies from insisting that they must be allowed to carry on until absolutely conclusive scientific proof is available. It would make it much more difficult for companies to demand damages from regulators, as the Ethyl Corporation was able to do when the Canadian government passed legislation banning the fuel additive MMT[2] . Because the Precautionary Principle shifts the burden of proof on to the innovator, and given the doubts about MMT (there was already a partial ban in the US) it would have been for Ethyl to show that it was safe.

If the precautionary principle were implemented, most innovations would proceed without interference just as they do now. Some, however, would not. There would be a cost attached to that, as there is in all regulation, but history has shown us that the cost of ignoring warnings can be very great indeed.

Notes

1. This is not a hypothetical point. In 2007, the UK Food Standards Agency, on receiving a report on research it had itself commissioned, refused to do anything until the work had been published. See P.T. Saunders (2008): Food colouring confirmed bad for children: Food Standards Agency refuses to act. Science in Society 36, 30-31.

2. See, for example, the bill introduced into the California State Legislature by Senator Soto, *info.sen.ca.gov/pub/03-04/bill/sen/sb_0001-0050/sjr_19_bill_20030521_introduced.html*. The suits mentioned in the bill arise under the North American Free Trade Agreement, not the laws of Canada, Mexico or the United States. This demonstrates how the precautionary principle is especially relevant in international dealings, where trade has been given a higher status than other values.

References

Baker P.J. and D.G. Hoel (2007), "Meta-Analysis of Standardised Incidence and Mortality Rates of Childhood Leukemia in Proximity to Nuclear Facilities", *European J. of Cancer Care* 16, pp. 355-363.

Bradford Hill A. (1965), "The Environment and Disease: Association or Causation?" *Proc R Soc Med* 58, pp. 295-300.

Bundesamt für Strahlenschutz (2007), "Background Information on the KiKK Study". Available at http://www.bfs.de/en/kerntechnik/kinderkrebs/kikk.html

Committee on Medical Aspects of Radiation in the Environment(COMARE) (2006), *Eleventh Report: The Distribution of Childhood Leukaemia and Other Childhood Cancers in Great Britain 1969-1993,* Health Protection Agency.

Davidson R.A. (1986), "Source of Funding and Outcome of Clinical Trials", *J. Gen. Intern. Med.* 1, pp. 155-158.

Department for Business, Enterprise & Regulatory Reform (2008), "Meeting the Energy Challenge: A White Paper on Nuclear Power", *The Stationery Office*.

Doll R and Bradford Hill A (1950), "Smoking and carcinoma of the lung", *British med. J.* 2, pp. 739-748.

European Commission (2000*), Communication from the Commission on the Precautionary Principle*. Available at http://ec.europa.eu/dgs/health_consumer/library/pub/pub07_en.pdf

Graham JD (2003), "The Perils of the Precautionary Principle: Lessons from the American and European Experience", Speech at the Heritage Foundation Regulatory Forum. http://georgewbush-whitehouse.archives.gov/omb/inforeg/speeches/031020graham.pdf. Accessed 4/12/09.

Harramoës P, D. Gee, M. MacGarvin, A. Stirling, J. Keys, B. Wynne and S. Guedes Vaz (2001), "Late Lessons from Early Warnings: the Precautionary Principle 1896-2000", European Environment Agency, Copenhagen. ISBN 92-9167-323-4.

Healy D (2004), *Let Them Eat Prozac*, New York University Press, New York and London. See also the review by P.T. Saunders (2008), "The depressing Side of Medical Science, Science in Society 39, pp. 50-51.

Ho M.W. and A. Ryan (1999), "Pusztai Publishes Amidst Fresh Storm of Attack - The Sorry State of 'Sound Science'", *ISIS News* (now *Science in Society*) 3.

Lesser L.I., C.B. Ebbeling, M. Goozner, D.Wypij, D.S. Ludwig (2007), "Relationship Between Funding Source and Conclusion among Nutrition-Related Scientific Articles", *PLoS Med* 4: e5. doi:10.1371/journal.pmed.0040005.

Lexchin J., L.A. Bero, B. Djulbegovic, O. Clark (2003), "Pharmaceutical Industry Sponsorship and Research Outcome and Quality: Systematic Review", *BMJ* 326, pp. 1167–1170.

Norris D. (2009), "Reply to Oral Question to [UK] Department of Environment, Food and Rural Affairs", *Hansard*, 29 October 2009.

Peters D. and S. Ceci (1982), "Peer-Review Practices of Psychological Journals: the Fate of Submitted Articles, Submitted Again, *Behavioural and Brain Sciences* 5, pp. 187-255.

Pollack A (2009), "Crop Scientists say Biotechnology Companies are Thwarting Research", *New York Times*, 23 February 2009. (Refers to EPA Docket EPA-HQ-OPP-2008-0836). Available at http://www.nytimes.com/2009/02/20/business/20crop.html?_r=1

Saunders P.T. and M. W. Ho (2001), "Big Business=Bad Science?", *ISIS News* (now *Science in Society*) 9, pp. 11-12.

Saunders, P.T. (2006), "Actonel: Drug Company keeps Data from Collaborating Scientists", *Science in Society* 30, p. 48.

Saunders, P.T. (2007), "Actonel and Dog that did not Bark in the Night", *Science in Society* 36, pp. 4-6.

Saunders P.T. (2008), "Peer Review under the Spotlight". *Science in Society*, 38, pp. 31-32.

Science and Environmental Health Network (1998). The Wingspread Consensus Statement on the Precautionary Principle. Available at http://www.sehn.org/wing.html Accessed 4/12/09.

Smith R. (2006), "Peer Review: a Flawed Process at the Heart of Science and Journals, *Journal of the Royal Society of Medicine* 99, pp. 178-182.

Sunstein CR (2008), "Throwing precaution to the wind", *Boston Globe*, 13 July, 2008. http://www.boston.com/bostonglobe/ideas/articles/2008/07/13/throwing_precaution_to_the_wind/ Accessed 12/12/09.

World Health Organisation (2008). *WHO Report on the Global Tobacco Epidemic, 2008*, The MPOWER package. WHO, Geneva. ISBN: 978 92 4 159628 2.

Yu K.M., Y.H. Lu, H.Q. Feng, Y.Y. Jiang and J.Z. Zhou (2008), "Suppression of Cotton Bollworm in Multiple Crops in China in Areas with Bt Toxin–Containing Cotton". *Science* 321, pp. 1676-1678.

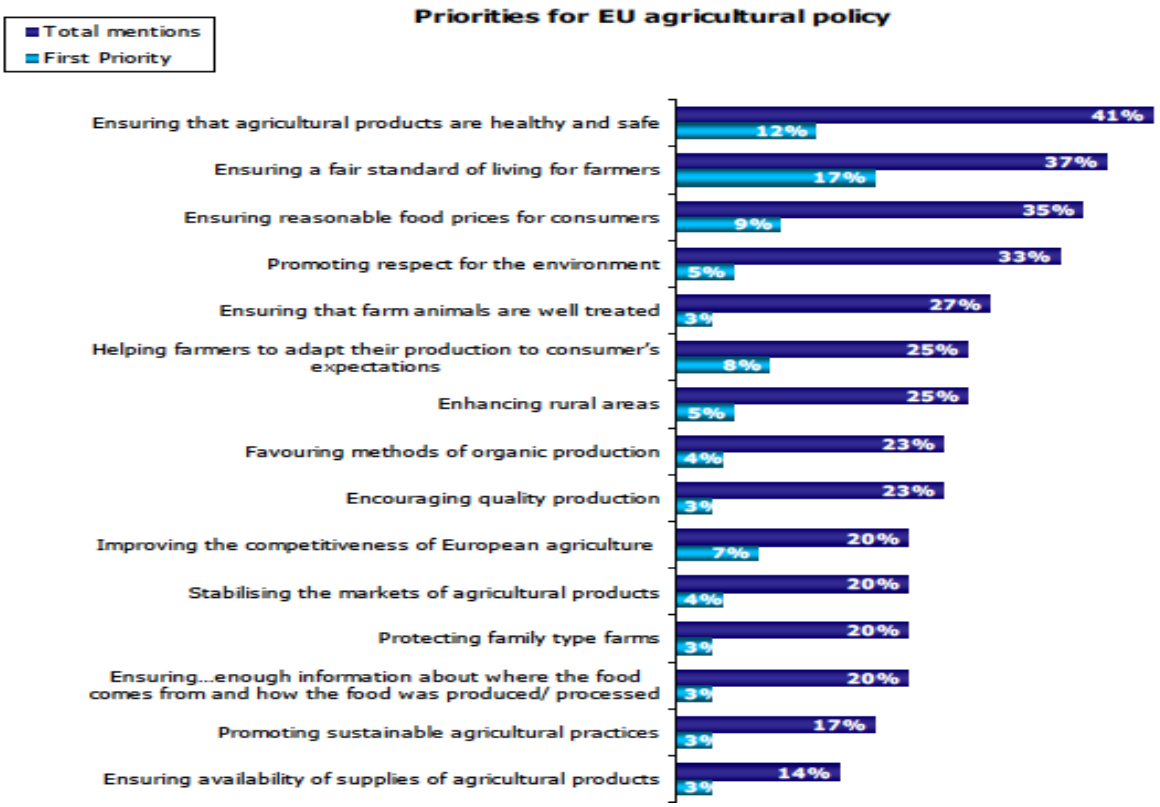
DEALING WITH VALUES THAT DIFFER ACROSS CONCERNED CONSUMER GROUPS AND POLICY MAKERS — VALUES AS ELEMENTS IN SOCIETAL CONCERNS

Mikael Klintman[1]

Consumer sovereignty is one of the pillars of the ideology of market liberalism, where *Homo Economicus*, is intended to operate among free market mechanisms, such as product labels and other sources of information. According to this principle, our daily purchases ought to reflect our – authoritative – decision of how society's resources should be allocated (Klintman and Boström, 2006). The narrow version, namely that Homo Economicus ought to choose products only based on price and "quality" of the end product, might have been useful in times when food was produced close to where it was consumed: In less advanced societies, consumers did not need formal schemes of information to get a picture of how animals had been treated on the nearby farm. Yet, with the developments of food technologies and pesticide chemistry as well as with the increasing distance of food production and processing in a globalised food market, consumers' pictures of production processes and of the whole food chain have become blurred. So rather than claiming that consumers have suddenly — or during the last decade or two — moved from an Homo Economicus position (only being concerned with price and quality of the product in a narrow sense) to a late modern diversification of consumer rationalities (by incorporating a broadening of values; ethical, metaphysical, aesthetic), the wider interests have probably existed among broad consumer groups all through history. What is, however, relatively new is the acknowledgement among several consumer groups that it may no longer trust the State to fully ensure that food production is based on values beyond those surrounding price and product quality. This is a main reason why societal concerns among various groups on the market keep getting increased attention in media and policy debates. This is, for instance, reflected in the many surveys of societal concerns among the public. The EU survey below is one such study, which indicates fairly high levels of public concerns for animal welfare, respect for the environment, and decent conditions for farmers.

1. PhD, Research Policy Institute, Lund University, Sweden.

Figure 1. Question: In your opinion, which of the following should be the main priorities of the European Union in terms of agriculture policy?



Source: Spec. Eurobarometer, 276, 2007.

When discussing and debating societal concerns among consumers and other actors in the sector(s) of food and agriculture (*e.g.* surrounding various environmental risks, animal welfare, working conditions among farmers), it is impossible not to bring in, and trying to make sense of, the multi-facetted concept of values. The aim of this paper is to analyse the concept of values as well as practical challenges involved when actors and organisations in the sectors of food and agriculture are to relate to the wide array of values behind societal concerns when developing policies, not least with trade implications. Theoretically, the paper makes use of works on sociology, moral philosophy, and policy analysis. Examples and data are collected from my own recent studies on preconditions for green consumerism, and social concerns among citizen consumers. In addition to the challenges of defining values, there is the challenge that values surrounding food and agriculture encompass an immense problem area. In light of this immensity, this paper is built on a critical discussion of four myths in the area; other issues within the broad problem area are beyond its scope.

The paper claims that various types of values are multi-facetted and intertwined in our decisions surrounding food purchases. Values could – and should – nevertheless be taken into account in consumer-related policy making, such as in the development of a limited number of schemes of consumer information. In cases where there are risks of market protectionism (such as when the North tries to isolate itself from products from the South), one should scrutinise the factual claims (sometimes erroneous ones) that may lie behind such preferences — often euphemistically expressed as ethical consumer values (*e.g.* environmental concerns). Although facts can rarely resolve disputes across conflicting, deeply rooted values, facts may be useful for assessing to what extent a certain production

process is consistent with the values held. For instance, there are several cases where food produced far away may harm the environment less — even when transportation is taken into account — than food produced domestically. Moreover, an avenue towards improved performance on animal welfare or on the environment may be through collaboration in an open and transparent market rather than in a partially closed one.

What are values?

Concepts that all of us use in our daily lives are particularly important to define. *Values* is such a concept. It can be found in a wide range of disciplines, where economics is among the disciplines where values are analysed and discussed particularly intensively. Yet, the context of societal concerns makes it necessary for us to go beyond the strictly economic perspective of values, and move to broader social scientific perspectives. Turning to the social sciences and the humanities, there are indeed several definitions of values, among which two are mentioned here. In the first definition, values are said to be

> "[…] interests, pleasures, likes, preferences, duties, moral obligations, desires, wants, needs, aversions and attractions, and many other modalities of selective orientation" (Pepper, 1958:7).

The second definition is briefer, and presents values as

> "ideas held by human individuals or groups of what is desirable, proper, good or bad (Giddens, 1989: 732).

Notwithstanding the fact that the two definitions differ – the former could be labelled "maximalist", and latter "minimalist" – both of them imply that values as a concept is broad and vague. Yet, this should not make us try to force values into a stricter format. What we could do, however, is to briefly distinguish between values and similar terms. Firstly, values are different from attitudes, in that the latter are more specific. For instance, a person's negative attitudes towards compromises in animal welfare might reflect her ethical or metaphysical values. Secondly, values are different from norms. Whereas the concrete practice of purchasing meat that is labelled organic can be a norm among a certain group of people, this might reflect their values. In contrast to values, attitudes are thus specific views whereas norms concern concrete practices.

Although the above-mentioned distinctions do not turn values into something very clear cut, the best way to move forward is – in our view – to try to make use of this breadth of values when examining the role they play in issues of societal concerns. With this ambition, it is nevertheless possible to make the concept more manageable by distinguishing between various types of values. For our purposes, a division into four value types is fruitful, namely ethical, aesthetic, metaphysical, and material values (Miegel and Johansson, 1992).

Applied to values surrounding food and agriculture, *ethical values* are probably what first come to mind, namely as what is right and wrong (morally) about various agricultural and food-related processes, in terms of environmental impact (locally and/or globally), the working conditions for farmers or the welfare of animals. It is important to note that ethical values both refer to issues that are substantive (the impact of the actual products and production processes) and procedural (whether the decision-making processes of agricultural and food-related policies have been fair, inclusive, etc.). *Aesthetic values* denote the aspect of a product or production process being stimulating or unstimulating to the senses (food tasting or looking appetising, for instance). This meaning of aesthetic is the most obvious one. Moreover, influenced by sociology we would like to emphasise a different – and for our purposes even more relevant – aspect of aesthetic values, where these refer to the value in

terms of self-expression, style and identity of individuals and groups. Concepts such as "eco-chic", "green fashion", and "organic food trends" partly imply aesthetic values. Moving to *metaphysical values*, these refer to positions and practices corresponding or not corresponding to various outlooks of life. Halal, Kosher, and vegetarianism based on outlooks of life are examples of manifestations of metaphysical values. *Material values*, finally, have to do with conceptions of what choices of food products and production processes are economically or practically valuable, here surrounding societal values.

Myth I: The four value dimensions are best dealt with as distinct and clearly separable dimensions of people's value judgements

Whereas it is quite simple to distinguish between the above-mentioned value dimensions in theory, it is far more difficult do so when analysing concrete positions, statements and choices of people. Firstly, values have a real impact on our perceptions. As an example, tomatoes that are falsely labelled "domestic" or "organic" are actually perceived as tasting better than unlabelled tomatoes (Ekelund and Tjärnemo, 2004). Secondly, in very few cases, if in any, only one value dimension influences our concerns or preferences. For instance, several empirical studies indicate that conventionally grown, domestic products are often preferred over organically grown, foreign ones. Also, consumers often regard "local" and "domestic" production as "ethically/environmentally sound". This is also how local production often is presented or implied by local or regional producers and retailers. Finally, the material values are particularly difficult to completely discern from the other dimensions. Although we mentioned above that we would focus on social scientific dimensions of values rather than on economic ones, it would — in our view — be far too limiting to exclude economic aspects, at least in terms of how various individuals and groups perceive the financial aspects of societal concerns surrounding food and agriculture. As food and agriculture to such a large extent are sectors connected to our roles as consumers, ethical, aesthetic and metaphysical values are always related to the practical and financial dimension of food choices. For example, when investigating people's views on local food production or eco-labelled food, the implications of their production processes are highly intertwined with perceptions of the regional economy and employment.

In sum, to understand the value foundations of societal concerns, policy makers should acknowledge the relationship between ethical, aesthetic, material and metaphysical dimensions of values. In issues of food and agriculture, these dimensions are frequently intertwined, entailing that the ethical dimension is only one part of consumers' societal values. This means that a mixture of value dimensions must be dealt with in market and trade policy making.

Myth 2: Conflicts between deeply rooted values can be dealt by bringing better facts of the same kind

The second myth refers to the common call for more information and more facts for solving controversies in policy processes across deeply rooted values, such as between those actors and organisations that are in favour of GM food, and those that are against such production processes. To be sure, information and facts should always be sought, but it may only in rare cases lead to resolution. To explain why more facts – especially facts of the same kind – often do not lead to resolution of controversies, it is useful to bring in the concept of framing. This concept refers to

"[…] a way of selecting, organising, interpreting, and making sense of a complex reality to provide guideposts for knowing, analysing, persuading, and acting. A frame is a

perspective from which an amorphous, ill-defined, problematic situation can be made sense of and acted on" (Rein and Schön, 1993:146).

In Boström & Klintman's version, the term is explained as follows:

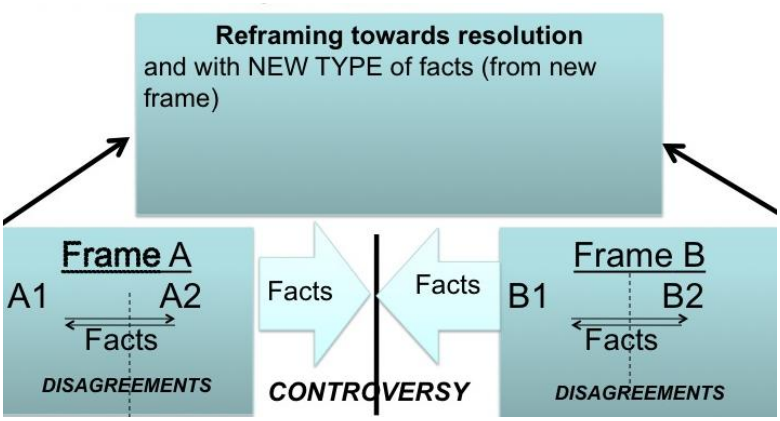
"Framing can […] be seen as this process – calculated or accidental , explicit or implicit – of translating and making sense of a multifaceted world" (Boström and Klintman, 2008:114)

In this light, we must distinguish between two types of conflicts:

- disagreements, which take place within one common frame, and
- controversies, which take place between separate frames.

Figure 2 indicates how disagreements may take place where actors (individuals or organisations) actually share basic values, *i.e.* within the same frame. Where there is a basic sharing of values, facts may play a major role in resolving disagreements. If, for instance, actors share strong ethical values about animal welfare, disagreements whether a certain policy scheme – for instance an organic food label – is sufficiently serious about animal welfare may be resolved by introducing the facts about the criteria and practices behind the label. Put in the language of other chapters in this volume (for a published paper, see Batie, 2008), problems that are often called "wicked" become "tame" in cases where values are shared.

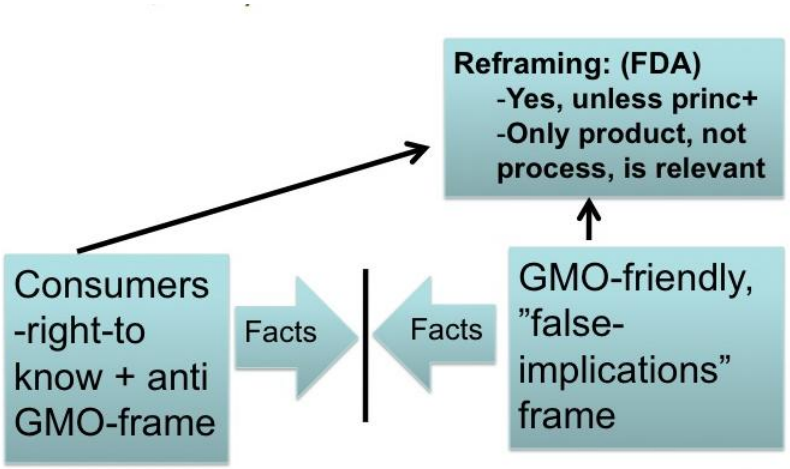
Figure 2. Facts and values from a framing perspective



As Figure 2 also shows, conflicts may take place between frames with separate, basic values. This is where wicked problems actually are wicked, intractable, and where new facts of the same kind will not help much in the effort to find a resolution. This is particularly true with intrinsic values, such as metaphysically based preferences for "natural" production process, and for "not playing God" (as GMOs are sometimes conceived). Yet, there are ways toward resolution. By "reframing" the issue into another issue, taking place in another frame, through bringing in an entirely different type of fact and/or other values that the actors have to agree on, resolution may be reached. It should be noted, however, that resolution may or may not imply that consensus has been reached. Whereas consensus might be a central goal in disagreements, it is often unrealistic, and in the end all that is possible is an acknowledgement of the strength and public resonance of the values within the new frame (Klintman, 2006).

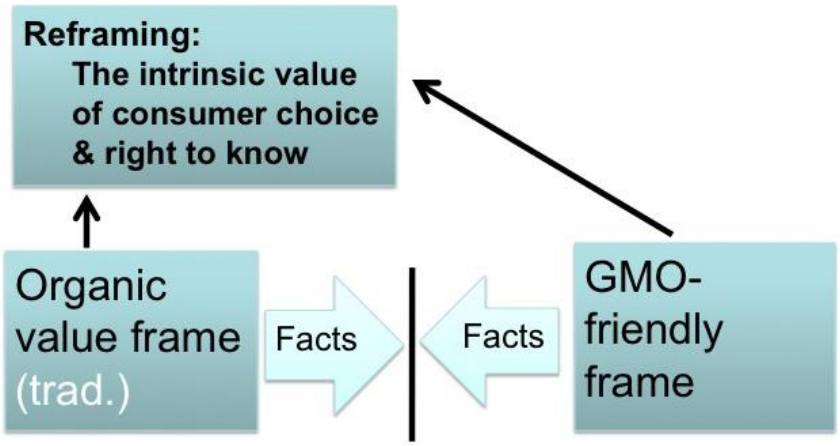
Figure 3 illustrates an example of a resolution through reframing. Some years ago there was a heated issue of whether GMOs in the United States should have a mandatory label or not. The GMO industry was against it, claiming that consumers would erroneously perceive such a label as a warning implicitly prescribing consumers not to choose GMOs. Certain environmental and consumer-oriented NGOs were in favour of such a label. Both camps came up with several factual arguments about risks – or non-risks – to the environment, ecological balance, of GMOs. Yet, it was not the strength and quality of the facts from one of the camps, for instance about the risks and benefits of GMOs, which resolved the controversy. Instead, it was a reframing of the issue (mainly by the Food and Drug Agency, FDA) into FDA's issue framing contending that only product characteristics, and not production processes, ought to be relevant for consumers to the extent that a mandatory label ought to be introduced (*i.e.* the narrow version of *Homo Economicus*, see introduction). Moreover, this reframing included the principle of "yes, unless", namely that new technology should not be regulated unless it has been shown to be harmful – to human health (when the issue is within FDA's domain). This is the opposite of the "no, unless", or precautionary principle, contending that the technology should not be approved of unless it has been shown to be safe (Klintman, 2002). In the controversy over whether GMO should have a mandatory label, FDA reframed the issue into one where GMOs should not have a mandatory label, (as no "convincing" risks with the final products have been shown in humans).

Figure 3. The Controversy over mandatory GMO labels in the United States



In another controversy (Figure 4), over whether GMOs (in cases where pesticides have not been used) should be allowed to be awarded the "organic seal", similar cross fire of facts was exchanged between the organic actors who where against a GMO inclusion, and the GMO industry as well as the US Department of Agriculture. Still, no factual claims led to its resolution. Instead it was a reframing into "consumers' right to know", and "consumer democracy" that resolved the issue. Those in favour of GMO inclusion under the organic seal could not continue their efforts in light of the cultural resonance among the public contending that such an inclusion would go against consumer democracy. Consequently, GMO was not permitted under the organic seal.

Figure 4. From controversy to frame resolution: GMOs under US organic labelling



Source: Klintman, 2006.

In the context of societal values and trade implications these two cases are particularly interesting, since the outcomes of both these controversies can be argued to resonate with one of the basic principles of market-oriented policy making: Both resolutions can be said to be of benefit to international trade, at least from the domestic, US perspective. No mandatory label on GMOs is arguably beneficial for the international trade of the United States, since GM food constitutes a substantial part of US food exports. An organic label in the United States that excludes GMOs is also beneficial for food trade of the United States, as it harmonises organic criteria across the Atlantic, for instance. This raises the issue that behind or above several policy controversies surrounding food, the principle of trade is always there, perhaps overriding the other value-based struggles and controversies. And sometimes the trade principle is consistent with societal concerns and values. So, one should not forget that trade liberalisation may contribute positively to value-based concerns: ethical, metaphysical and aesthetic, as well as the material ones.

Myth 3: Most values within societal concerns surrounding agriculture can be handled within one or two voluntary standards, for instance an organic standard

Disagreements that take place within a frame, and controversies that take place across frames, both imply that citizens and consumers do not constitute one group that is united in terms of societal, value-based concerns — against, for example, a united category of profit-seeking actors and organisations. This raises the following question: how should "value-based" labels and other consumer instruments be developed in order to cover the multiplicity of values behind societal concerns? Could such instruments work at all, given this value multiplicity? We will discuss this using organic food labelling as a reference. How about organic labelling? Will it do?

There is an interesting tension, not least among economists, on the issue about how many value-based food labels, and how much information about externalities there should be on products and services. On the one hand, there is the call for "the informed consumer" and consumer sovereignty, which is a very basis of the above-mentioned notion of *Homo Economicus*. Moreover, when asking citizen-consumers in surveys about whether they would like to know more about the wider, societal implications of the production processes, a vast majority will typically be in favour of more information, provided that the cost of the product would not increase drastically.[1] On the other hand, it is very common, not least

among economists and policy makers, to express concerns about how much information consumers really should have. The first part of this concern often refers to the cognitive risk of "information overload", simply that too much information will make consumers blasé and/or unable to distinguish more important information from less important information in their purchasing decisions. The second part of this concern is more normative, and has a narrow Homo Economicus foundation. It contends that only values associated with the end product should matter to consumers. This restricts "relevant" values to material ones – price, consumer health, taste, and to some extent metaphysical ones, such as Halal, Kosher and some other food preferences that are very well defined and established. The influential newspaper *The Economist*, for instance, regularly criticises instruments such as eco-labels and certificates, which aim to make consumers act "politically", by taking more than price and product quality into account. Underlying this criticism is the view that green and ethical consumerism aimed at reducing negative externalities for humans, animals and nature - in the long run may threaten open market competition. The newspaper's concluding statement in one of its articles is illustrative of this view: "Conventional political activity may not be as enjoyable as shopping, but it is far more likely to make a difference" (*The Economist*, 7 December 2006, print edition).

Despite such criticism, the importance of bringing the wider values of consumers to the grocery shelves is well anchored among politicians, business and in civil society, not least via NGOs. As to societal concerns about food choices, there are, in addition to the traditional, organic concern (*e.g.* using no pesticides or artificial substances), ethical, aesthetic and metaphysical values reflected in increasing consumer interest in:

- working conditions (partly covered in organics)
- vegetarian/vegan food
- climate-smart foods (modes of transportation, land use, energy use, *etc*.)
- water footprints of food
- the choice of hunted animals or farmed animals
- certain GMOs endorsed with environmental arguments
- aquaculture rather than traditional fishing
- how to reduce over-consumption and waste of food.

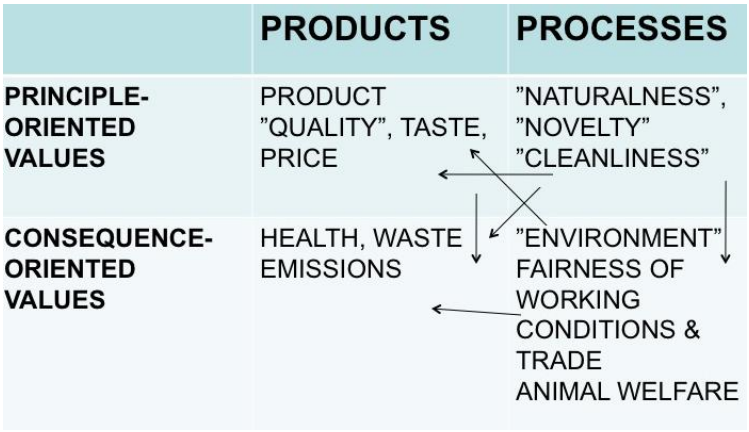
In addition to the multiplicity of concerns, each production process may be framed in different way, for strategic or less conscious reasons (*e.g.* Klintman, 2006).

For instance, several opinion polls as well as analyses of disputes that pertain to GMOs or organic food indicate that people subscribe to – or oppose – production processes on at least four grounds. Firstly, people have been shown to be in favour of organic food because they believe it to be superior in terms of the quality of the end product (quality, taste, price). Secondly, some organisations and consumers believe that organic food is better for consumer health and less harmful for the environment. Product-based arguments are typically the most powerful ones in the consumer context. As several countries do not allow claims that organic food is better for health, certain organic labelling organisations use an indirect argument contending that the psychological benefits from choosing organic (by doing something good for the environment) will indirectly be good for our physical health). Thirdly, organisations and individuals commonly claim that organic production processes are superior to conventional agriculture, for environmental reasons, because they use no chemical pesticides

and so forth. This is really the *raison d'être* of organic agriculture. Finally, some contend that organic food production should be preferred because it is "natural", close to tradition, and because it goes against the modern hubris of high-tech food production. This is the most difficult framing to debate, since it comes close to metaphysical values which cannot be contested, other than at the meta-level where criteria for "appropriate" arguments are discussed.

This palette of societal concerns in the food sectors as well as problem framings, compares with the fairly narrow range of values that constitute organic food labelling, implies that organic food labelling is unlikely (within the current structure and organisation of the schemes) to become the "super label" that cover the main parts of people's societal concerns in the food sector. Instead, Klintman and Boström (2010) have argued that future value-based food labelling schemes will need to be deliberated and developed closer to various consumer groups, in order to be able to adopt more of these values that are reflected in, for instance, societal concerns related to climate challenges of production and transportation, water use, and more fundamental issues of the rights and wrongs of using animals in food production.

Figure 5. Framings of products and production processes



Myth 4: **Downplaying the value-based conflicts that take place in policymaking surrounding societal concerns will reduce confusion and increase trust among the public**

In consumer-related policy making, values play a role on at least two levels. At the most obvious level, values play a fundamental role as they constitute the basis for the stated goals of the instruments. Reduced negative climate impact or better conditions for workers in the South are examples of goals where ethical, metaphysical, aesthetic and material values have an obvious and necessary role. At another level, there are the value-based conflicts that take place "back-stage", as criteria, methods, and priorities that are needed to reach the above-mentioned goals. There is indeed a broad array of values, politics, and ideology taking place back-stage (Boström and Klintman, 2008). Given the above-mentioned flexibility of value-based framings behind societal concerns in policy disputes, it is very tempting to try to leave value-based multiplicity and disputes aside from the front-stage, from labelling information and its related information on the Internet. And for those involved in the politics behind value-based consumer instruments, many are inclined to talk in terms of washing away the value multiplicity, and instead having science lead the way to developing these value-based standards. Phrases such as "is your organic food really organic?" (Rickardson, 2008) imply a

scientific basis of organic food, as do several claims in favour of value-based alternatives to organic.

In reality, value-based food standards and certificates are trans-scientific. This means that the value-basis of these instruments is intertwined with scientific knowledge claims and scientific methodology. Why not then spare citizen-consumers from this confusing multiplicity that exists, and that is a necessary part of policies handling societal values? The reason, in my view, concerns the issue of trust among consumers. Several studies indicate features that exist among all consumers, but are particularly prominent among the typical, broad group of green consumers, particularly inclined to base their purchasing choices on societal concerns (*i.e*. values). Firstly, these consumers are particularly uncertain and ambivalent in their choices (Connolly and Prothero, 2008), both surrounding the value-based goals, and about the roads towards these goals. Secondly, these concerned consumers have particularly reluctant attitudes towards claims among various organisations of fully meeting societal concerns (Crane, 2000). This means that this group is not likely to develop the simple (blind) trust in these information instruments, which would be the objective of downplaying or obscuring the value-based conflicts and negotiations behind the instruments. Instead, the typical, green and socially aware consumers demand that value-based conflicts be dealt with openly and, in order for the instrument to deserve a more reflective trust (phrase coined by Boström and Klintman, 2008 in the policy process). In sum, over-simplified information schemes where the negotiated and value-based back-stage politics are entirely hidden are unlikely to get the reflective, active trust of the broad group of green, socially aware consumers

Conclusions

This paper has pointed out four things to consider when it comes to values as parts of societal concerns on the market:

- The four value dimensions of ethics, aesthetics, metaphysics and materiality are always, and should be understood as, intertwined.
- For resolving controversies where there is no agreement on basic values, it is mainly frame-critical debates, reframings of the problem, and new types of facts that are useful.
- Value differences should be discussed as openly as the facts, since a clarification of value differences is often as important as clarifications of details in facts.
- The entire range of values cannot be entirely adopted into one or a few policy schemes (*e.g*. organic labelling); instead the range of values behind the long list of societal concern should be deliberated in public, and in close relation to the current schemes in a critical manner.

While the topic itself of this paper is highly relevant for issues of consumer policy and trade, this paper's conclusions raises a particularly challenging one: All values should be discussed, but should all value dimensions be seen in policy decisions? As to local and domestic products, these are often preferred over foreign products, for a number of reasons. In some cases the animal welfare record actually is better in one's own country, either due to tradition or to a more stringent regulation than in other countries. The same may be true with the environmental record. In such cases, information about local and domestic production should be able to work as a seal indicating environmental and animal-friendly performance.

Yet, information about local production becomes problematic in cases where local or domestic production is marketed as environmentally friendly simply due to shorter transportation of the product from farm to fork. As much research indicates, the transport distance — other than transportation by plane — frequently plays a less prominent role than the other steps in the food chain for environmental impacts (Carlsson-Kanyama and Gonzales, 2009). In geographically large — or long — countries, the domestic preference becomes particularly awkward in cases where food produced at one end of the country is preferred for geographical reasons over food produced across the border. Sweden serves as a good example here, where the distance from north to south roughly corresponds to the distance between southern Sweden and northern Africa. When examining in-depth studies about the common consumer preference for local and domestic products, it is frequently based on material values, in terms of a special concern for work opportunities in one's own country or region. Although such a concern is sometimes argued to go against the principle of free trade, local concern has been shown to be strong in several countries. And since it is so closely intertwined with the other values — ethical and aesthetic (the latter in different cultures of food production) — consumers ought to get information about the country of origin. Yet, at the higher societal levels there should be restrictions of marketing claims, where local and domestic food products are portrayed as corresponding better to ethical, metaphysical and aesthetic values, where there is actually little ground for this.

Notes

1.. For instance, an extensive survey carried out in 2000 by Penn, Schoen & Berland Associates indicates that 85% of Americans were in favor of mandatory labelling of GM food.

References

Batie, Sandra S. (2008), "Wicked Problems and Applied Economics". *American Journal of Agricultural Economics* 90(5): pp. 1176-1191.

Boström, M., & M. Klintman (2008), *Eco-Standards, Product Labelling and Green Consumerism.* Basingstoke, Palgrave Macmillan.

Carlsson-Kanyama A. and A. Gonzales (2009), "Potential Contributions of Food Consumption Patterns to Climate Change", *American Journal of Clinical Nutrition*, 89(suppl), 1704S–9S.

Connolly, J. and A. Prothero (2008), "Green Consumption: Life-Politics, Risk and Contradictions", *Journal of Consumer Culture*, 8.

Crane, A., (2000), "Facing the Backlash: Green Marketing and Strategic Reorientation in the 1990s", *Journal of Strategic Marketing* 8, pp. 277-296.

Ekelund L. and H. Tjärnemo (2004a), "Consumer Preferences for Organic Vegetables – The Case of Sweden" *Acta Horticulturae* 655, pp. 121-128.

Eurobarometer (2007), "Europeans, Agriculture, and the Common Agricultural Policy", 276/Wave 66.3TNS EB 2007.

Giddens, A. (1989), *Sociology*, Cambridge, UK, Polity Press.

Klintman, M. (2002), The Genetically Modified (GM) Food Labelling Controversy: Ideological and Epistemic Crossovers, *Social Studies of Science*, *32* (1), pp.71–91.

Klintman, M. (2006), "Ambiguous Framings of Political Consumerism: Means or end, product - or process orientation?" *The International Journal of Consumer Studies.* Special issue, entitled: "Promoting and Debating Political and Ethical Consumerism around the World" 30 (5), 2006, pp. 427-438.

Klintman, M. and M. Boström, (2006), 'Editorial, *The International Journal of Consumer Studies.* Special issue, entitled: 'Promoting and Debating Political and Ethical Consumerism around the World' 30 (5), 2006, 401-404.

Klintman, M. and M. Boström (2010), "Researching Transitions in Green Political Food Consumption: Looking Behind and Beyond the Organic Shelf." Forthcoming in Spaargaren, G., Loeber, A. & Oosterveer, P. (Eds.), *Food in a Sustainable World. Transitions in the Consumption, Retail and Production of Foodstuffs.* London: Routledge.

Pepper, S. (1958), *The Sources of Value.* Berkeley, CA: UCB press.

Schön, D.A. and M. Rein (1994), *Frame Reflection*, New York: Basic Books.

Rickardson, J. (2008). "Is Your Food Really Organic?" *Organic Consumers Association*, available *at* *www.organicconsumers.org/articles/article_14000.cfm*.

The Economist (2006). "Voting with your trolley", 7 December 2006, *www.economist.com/business/PrinterFriendly.cfm?story_id=8380592*.

SOCIETAL CONCERNS AND THE LAW

Bernard O'Connor[1]

Participants at this OECD workshop have been asked to address two questions. What are the characteristics of societal concerns that make them different from any other policy problem and make the task of the policy maker, including the trade policy maker, particularly difficult.

We have not been given a definition of societal concerns. The background notes for the Workshop state that there is a "sense in which every government policy initiative is a response to a societal concern". However this is not considered "a useful basis on which to delimit the scope of the Workshop. Societal concern is a term that is much used but not often precisely defined. It is often used interchangeably with consumer and citizen concerns. It is therefore proposed to delineate the scope of the Workshop by reference to a specific set of characteristics of the policy problem." The background notes go on to observe that "[a] main characteristic is that the pressure for a policy response is a bottom-up movement characterised by the presence of advocacy or lobbying groups, multiple stakeholders, often different views about desirable outcomes and active involvement of the media. Other characteristics of interest are the presence of an ethical or values dimension which may differ within and between countries; uncertainty about processes or impacts or other forms of unknown or inaccessible knowledge such as uncertainties about scientific evidence; information asymmetries; different perceptions of or aversion to risk and possible irreversibilities."

When each element set out above is examined, the possibility of defining societal concerns so as to distinguish them accurately from other policy problems remains remote. That being said, the Workshop is addressing four specific issues that are currently the subject of heated debate in agriculture and trade circles. These are animal rights or animal welfare, GMOs, Fair Trade, and bio diversity/sustainable development.

This paper looks at these issues from a legal perspective. In considering the law we have been asked to look at international law and the role that it will play in identifying the characteristics of these issues. It looks first at the law and the development of national and international law, and then looks at the four specific societal concerns discussed in this Workshop in an attempt to identify some of the general problems which arise in modern decision making. This paper also looks at the international norms that might be considered relevant and then identifies some of the characteristics of these issues which might help the policy maker in designing measures.

1. NCTM O'Connor European Lawyers.

Some initial conclusions

As the object of the workshop is to identify "characteristics" an initial conclusion as to what makes these four issues different is that there is no common consensus among people as to the weight to be given to these four values relative to other values that have been weighed up and established over time and enshrined in binding rules. In that sense, these issues could be considered as not being technical adjustments to the functioning or functionality of commonly accepted or established values (for example, the need to reregulate the financial services industry so as to make financial markets, an established value, function better) but attempts to give legal recognition to new values which are not always shared by all people and not established in binding rules. As there is no common understanding as to what the new values are, let alone the weight in public law to be given to them, policy makers need to take time to examine the value itself, to see how it might fit in with other values, to give it weight. It is the establishing of the weight and the comparing of that weight against the weight already given to other values that is difficult.

Thus the simple answer to the questions is; because there is no common political consensus as to the weight (relative to the weight given to other, established, values) to be given to the four values at issue in this Workshop, the task of the policy maker is more complex in designing rules in relation to them.

That being said, can it really be considered that these four issues raise problems for the decision maker different from many of the issues regularly debated in the body politic? There is no difference; in terms of the procedures for adopting rules in relation to them; in terms of the technical conflicts that they generate in the body politic; in the ways in which the interests of the body politic are voiced or expressed; in terms of the evolution of institutions in implementing law; or even in terms of the ever evolving concept of the rule of law and its role in maintaining social stability. Are there any generic or common characteristics that make these four issues much different from many other policy problems that have been grappled with in law? Where are these four issues in the scale of issues which law has had to resolve over the centuries? When viewed in that light, the societal concerns before us today are more technical than tectonic. And they do not have any special characteristics other than the fact that there is dissatisfaction with the way these values are reflected in legally binding norms.

To understand why it can be said that these four issues are not uncommon it is necessary to go back a bit in time.

Some thoughts on the development of law

In feudal times there was no rule of law. There was the rule of the stick. A King commanded as far as his stick stretched and he was the law. Then slowly the King had to share power. First with the existing lords (the famous Magna Carta, signed by King John at Runnymede in 1215), then with the new Lords, then with the common man (rich of course) in the "Commons" and so on. Slowly over 800 years the franchise was gradually extended down the economic ladder to cover all men, and then to include women, and then all citizens of 18 years of age (and now there is even consideration of giving the franchise to foreign residents who pay taxes). Gradually the Magna Cartas (there were many of them) were developed into constitutions which set out how decisions could be made. The rule of Judges was established to make sure the constitution was respected. So at the domestic level, over a full 800 or 1000 years we created the system that we currently enjoy in all OECD countries. The King became the State and the stick became the rule of law. It was not easy. There were many wars and civil wars and revolutions along the way. So societal concerns such as animal

welfare, GMOs, fair trade, biodiversity and sustainability are fairly minor in historical terms, if not mere technical issues. In this context, the answer to the questions asked is: there are no characteristics of these four problem areas which make them different from others or makes the role of the policy maker more complex.

However, let us go on with history. feudal times were never absolute. Man did not live isolated on the feudal estate even if the law constrained him to do so. In parallel there was the presence of towns and markets in which goods were exchanged and traded over distance. If a man could flee the estate and reach the town he was free. Towns were the jungle, not the countryside. The country side lived under strict feudal tutelage which provided stability, but towns sought and got the right to exist. There were Charters as to how they were to be run and to relate to the feudal power. Within the towns informal rules were established to facilitate exchange. There was competition among the towns as to the quality of these rules of exchange. They began to become formalised. Transport evolved and common rules were needed between towns. The King began to establish these common rules of exchange. The law of contract, damages for breach of contract, courts of law to adjudicate on disputes and the use of the King's power to punish, if necessary by death or the deprivation of liberty, failure to comply with the rulings of courts were all established. Slowly the King and then the State became essential to the idea and the functioning of markets.

No market can exist without law. At its most basic, the law provided transparency and stability in the very act of exchange. Law not only became the motor of, and the fuel for, markets, it began to define them. Rules developed as to what could be the subject of a market. Usury, condemned by Christianity, became the financial services of today. In the early stages of the development of this market, the Medici spent much of their fortune on philosophical and legal texts showing that their core business was not in breach of the rules of the Church. They spent a lot of the rest of that fortune hedging their bets with God just in case these new fangled ideas weren't sailing too close to Dante's precipice. Rules also developed as to how players could behave in markets (ultimately consumer protection rules) or what was the entry price into a market (guilds, professional qualifications, etc.). So laws involvement in markets grew all pervasive to what it is today.

Rules not only developed in relation to markets. Rules developed as to public behaviour. State rules began to develop as to private behaviour, taking over the remit of religion. The ideas of right and wrong began to be codified. And overall, the ways in which these rights and wrongs or rights and obligations were being codified, were being enforced, evolved: An ever changing tableau. Our very understanding of the idea of rights and obligations is inextricably linked to our understanding of the rule of law, the creation of laws through democratic processes, the interpretation of law by courts and their enforcement by the State. Rights cost money; and the State apparatus pays. There can be no right to free speech without the complex organs of the State to vindicate it. It is the same for all rights. The more complex the rights become the more costly they are. Rights and taxes and the State are like love and marriage. They go together like a horse and carriage. You can't have the former without the latter. And for one (rights) to grow the other (the State, taxes) had to grow. This is an ever changing tableau; how we make law, what the law is, what we think of the law, and how we enforce it.

The development of the rule of law in the domestic sphere was mirrored by its lack of development in the international sphere. Law was based on the geographical reach of the King and then the State. Outside the limits of the states there was no law. In addition, each state became sovereign unto itself and thus no other state could intervene in the domestic affairs of another state, other, of course, than through force. So there were wars; and there

are wars. Europe went on with its wars until very recently. Outside Europe the laws of Genoa, Venice, Lisbon, Madrid, Paris, and London covered trading outposts but not really the hinterland of where ever they landed to trade. Slowly, and maybe it can even be considered the situation today, the Empire created some sort of International order through force and the desire for stability. Then, at the end of the 19th century, the first attempts were made at making international order through law: the International Red Cross was the first international convention (it was an NGO). Then came the Geneva Conventions, which did not outlaw war but rather set out rules in the conduct of war. After the First World War, the first attempts to replicate the domestic order in the international sphere were attempted with the League of Nations and then the United Nations. In recent times, there has been a plethora of international conventions and treaties. All of this is very, very recent in legal terms. As our roads and rails and ships and planes and phones and internet provide more and more communication across borders (and outside the State), there is a need to examine the appropriate ways to make rules, the substance of those rules, at what level of society the rules should be set and how the rules should be enforced. *Plus ça change, plus c'est la même chose*. This is no different from what has been happening within the State over the centuries.

What this quick look at the history of the rule of law as well as the role of law in markets demonstrates is that rules and regulations are developing all the time to reflect, depending on your perspective, economic necessity or the vindication of values. It shows that the way in which norms are made is also evolving. There is a movement from the isolated territory of the State to the global territory of international law. There is the development of a mix between norms set internationally but enforced (or not enforced) locally. There are developments in the capacities of certain actors to work both internationally and locally or only to work locally. It also demonstrates that certain topics have always been difficult and have become more difficult with the integration of economic and political spaces that make up the world. Finally it shows, that for the most part, that law follows consensus and it is only on rather rare occasions that law leads from the front.

In this perspective, the legal historian must ask: do the Workshop's four issues come very high up on the scale of issues the law has dealt with in the recent and distant past: human rights, freedom, slavery?

The example of meat

Let's take a practical example of an issue which is not being discussed in this Workshop. The eating of meat is something that has significance for large parts of the global population.

- *Dog meat*: Western societies do not eat dogs and some outlaw its very use.
- *Pork*: Islamic societies forbid it for religious reasons and some prohibit trade and import of such meat subject to severe sanctions and even death.
- *Beef:* Hindu religious law forbids consumption of beef. Trade allowed in India for the non-Hindi population.
- *Whale meat*: outlawed for sustainability reasons on an international level but still the demand to consume remains.
- *Human meat*: all OECD countries prohibit and criminialise trade in human meat for consumption.

Is the issue of meat consumption a societal concern in the sense that is being addressed in this Workshop? I think not. The question is why not. I think there are two reasons. Firstly the issue is not "mature": In other words the issue of meat consumption is not an issue for which

there is pressure to change the regulatory framework. Secondly, it is not an issue which raises a conflict of current established values (until maybe we start looking at it from a global warming or world capacity to feed itself, or water resource perspective). The consumption of meat is accepted (except of course human meat) by all societies to greater or lesser degrees. It is mainly on religious grounds that consideration might be given to the banning of meat. However in the OECD countries the idea of banning meat on religious grounds is difficult to envision as collectively we have determined, from the enlightenment onwards, that the State should not regulate on the basis of religion and that religious values should remain in the private sphere. In other words the weight given to the idea or the societal value of the separation of the State and the church is so dominant that, in the absence of other non religious considerations, it is unlikely that the issue of meat consumption will arise as a societal value concern (in the sense promoted in this Workshop).

A look at the four concerns examined in this workshop

So where do animal welfare, Fair Trade, sustainable development and GMOs fit in to this evolving mix of law and the making of law? What can they show of the idea of societal concern?

Animal welfare must be distinguished from animal rights. The idea of animal rights clashes with the fundamental Judea Christian Muslim idea (or value) of man's dominion over the earth. And it also clashes with the rights in so many societies to hunt, to feed and to clothe. Then, there are the technical questions. Which animals get rights and how do individual animals vindicate those rights? Or should we properly be talking about man's obligations to animals rather than animal rights? If man is to be given obligations in relation to animals what sort of animals are covered; pests or pets, mosquitoes or mammals? The more fundamental issue is the creation of rights and obligations. Rights and obligations cost money. More rights and obligations require a more and more developed State; to determine what the rights and obligations are; to enforce those rights and obligations; to pay for them. Thus the value of these rights must be set against the collective societal costs (taxes and the growth of the State) and the inevitable restrictions on individual freedom (the core value of post enlightenment man).

The issue of GMOs raises another consideration. Plant breeding and plant and animal varieties have been a staple of agriculture since before recorded history. GMOs are a technical development in plant and animal breeding. But like many technologies it is not benign. It can do harm. So there is a necessity to regulate its use or in other words to define the market and the entry into the market. However, the debate is not in these terms. It is black and white. Should we allow GMOs at all or should we not? This polarises the debate considerably. If there are risks in the technology should they not be identified and ring-fenced? Consideration could be given to banning antibiotic marker genes, inter species breeding, terminator genes, etc. In other words, when values collide, history shows us that the outcome is rarely a complete ban on a market but a more regulated market instead.

The Fair Trade issue is part of an ongoing struggle between operators of different size in any market. In the context of this workshop it is a struggle in all countries between agricultural and artisanal production and accumulators of goods or traders. The "newness" of Fair Trade in this struggle is the cross border element. It has become an active political issue in developed economies because of communications. In essence Fair Trade is about rebalancing the economic imbalance between smaller and larger market players. In Europe one of the main ways of addressing this issue is through co-operatives and producer associations. In the US the approach was to abandon small holdings and small scale

production. But at the same time both Europe and the United States used subsidies as a major tool in this rebalancing. In terms of values, there has been the acceptance that capitalism entails economic inequalities up to a limit. What is now being seen, and what brings this issue into this Workshop, is the trade element. How do we mitigate some of the extremities of capitalism across borders, but in the issue in and of itself there is nothing new. In fact the whole Bretton Woods system was designed to address it. Bretton Woods has not worked in this respect and thus we need to find new tools.

Biodiversity and sustainable agriculture raise a number of considerations. At what level must decisions be taken; nationally or internationally; and if there is the need to close down markets or curtail them how should this be done.

The national/international debate reveals the perceived problems of fairness or democracy in decision making. Some sectors of society are concerned that the decision making is not "democratic" and the international decision making processes do not reflect the interests of the common man, and only reflect the rapacious greed of multinationals. This is particularly so when science dominates a debate and not all players are able to play fully in the game of science. Added to the complexity of the science debate, is the level at which decisions are being made. International organisations are considered to be the playground of an elite. Yet representative democracy is at the heart of national democratic systems. At the national level a parliamentarian, once elected, is free to decide in a way different from indicated during an election campaign. He or she is a representative only. In this sense, then it is clear that international decision making is representative. People elect representatives, who in turn chose representatives to act at the international level. Nothing new or strange in this! So what is happening? Are we undertaking a fundamental re-examination of the value that is representative democracy? It seems clear that there is a growing desire for more direct democracy when matters reach the international level. Perhaps the increased incidence of referenda reflects this desire at the national level. Yet at the same time the national systems of representative democracy retain the overall confidence of people in a way that the international do not.

A second issue is the management of the development or the closure of markets. How should this be done? The creation of carbon quotas, for example, creates a market. Taxation would merely stimulate the development of existing markets. The idea of quotas is based on the value known as established property rights. These are not mere economic issues. They raise concerns as to the role of the State, the value of property, and fundamental rights and obligations.

What role has international law to play in relation to these four issues

International rules are capable of dealing with both technical issues and values. The vast majority of international rules are technical. They determine how to share the costs of a letter travelling from London to Paris. They determine how telephones can talk to each other. On the setting of values we have the International Convention of Human Rights and very recently we have the phenomenal development of the international criminal court for crimes against Humanity.

We are however facing great difficulty in determining how best to make rules internationally what institutions we need, and how we enforce the rules that are created. We haven't really worked out how to move from a class of law that addresses sovereign states rather than individuals. In this situation how can we create law which impinges on individual behaviour? How do we ensure that the body of law which we are creating is perceived to be made fairly or democratically such that it attracts the support of global citizens?

Then there is the issue of what comes first. We have already established an impressive international institution that codifies in law the value known as trade. This is the WTO. It sets out the rights and obligations of states which in turn *de facto* give rights to individuals. The basic rules are well established and well supported. Each of the four issues discussed in this Workshop impinge on this established value. Trade came first. So how do these other values get recognition in law without in some way affecting the value of trade? There must be the weighing of the value and its balancing with values already established in codified law. It seems clear that if the value that has to be constrained because of the giving of value to these four issues is international, then the four issues must also be raised to the international level.

We are in the very early stages of this balancing process at the international level. For the issue of Fair Trade a review of the literature does not show any international treaties that have been signed or implemented or even that there are any under discussion. There are a number of private initiatives such as FLO in Europe and the World Fair Trade Organisation (now recognised by the EU) and both the WTO and FAO have been conducting workshops, but very little more.

The same can be said for animal welfare and/or animal rights. There are no formal treaties other than CITES which restricts trade in certain endangered species rather than promoting animal welfare *per se*. On the private level there is the Universal Declaration on Animal Welfare that is being proposed by various NGOs to the UN, the Universal Declaration of Animal Rights from 1977 or the People for the Ethical Treatment of Animals. None of these private initiatives have as yet met with widespread acceptance.

On the issue of sustainable development there is the Rio Declaration on Environment and Development which is a series of legally non binding principles. Principle 9 concerns technical and scientific co-operation to strengthen capacity building for sustainable development but does not set out any binding standards.

For GMOs there is the Cartegena Protocol on Biosafety which has been endorsed by 157 countries and it entered into force in 2003. This treaty is concerned with the transboundary movement, transit, handling and use of all living modified organisms or LMOs which are broadly equivalent to GMOs. Enforcement under the Protocol is subject to all the weaknesses in international law. The Codex Alimentarius Commission has the 2001 standards on safety assessments of GMOs and the 2003 principles on Risk Analysis. The significance of the Codex standards is that, in the context of the WTO's SPS Agreement, deviation from the standard must be scientifically based in order to avoid the possibility of trade sanctions. Thus it can be considered that the standards are enforceable in a way that the Protocol is not.

This quick overview of international law in relation to these four specific issues shows that consideration of the values that these issues represent is at a very early stage compared to the value given to the established values of trade and science in resolving certain types of trade disputes.

Conclusions

In the light of these general considerations on the nature of law at the domestic and the international level as well as the considerations on the development of law and legal institutions in general, what are the special characteristics of societal concerns which can be identified. However, whether the identification of these characteristics will help the policy maker or not is another issue.

- Each of the four issues represents the promotion of a "new" value in relation to values already established in binding rules. The values are "new" only in the sense that they have not been specifically recognised in binding law.
- The new values operate at both the domestic and the international level. To the extent that they clash with the internationally recognised value of trade, any regulation giving legal effect to the value must be established at the international level.
- As trade is the dominant value most touched by these four issues at the international level, consideration should be given to introducing the new values into the WTO framework.
- A comprehensive costing, in the widest sense of the cost of rights and the State, as well as the more traditional evaluation of the cost to consumers or business, of the four values, needs to be undertaken so as to guide the policy maker in weighting the value to be protected *vis-à-vis* other established values.
- The four values at issue raise wider considerations as to the quality of international decision making and address concerns about representative democracy and the need to evaluate the introduction of more direct democracy.

ANIMAL WELFARE SOCIAL PREFERENCES FOR BENEFITS FROM A MULTIFUNCTIONAL AGRICULTURE IN SWITZERLAND

Dr. Andreas Brandenberg[1]

As an external observer of agricultural policy, I am always surprised at how issues of products, producers, production processes and product quantities dominate agricultural policy discussion. Who are the consumers buying agricultural products whether through the decisions they make as private agents or as taxpayers who fund public spending on agriculture and what are their expectations.

All the ingredients for a consumer-driven market are present: there are saturated markets — even oversupply — and homogeneous agricultural products. It is for this reason I approached Swiss authorities three years ago to propose a project with the key question: what do Swiss citizens expect from a multifunctional agriculture? This note will presents some of the findings from that project.

How much is the Swiss tax payer spending on agriculture?

Let me first present a few figures on public spending on agriculture in Switzerland:

- Total public spending amounts to EUR 2.4 billion.
- Direct payments account for EUR 1.7 billion.
- The subsidies (overall) amount to 64% of total factor income.
- Direct payments account for 46% of total factor income.

So, the total spending per capita amounts to EUR 307 and direct payments per capita to EUR 220 per year.

What benefits does the Swiss taxpayer expect from agriculture?

It seems obvious to ask: "what are taxpayers buying when they spend EUR 2.4 billion on agriculture?" As in most countries, there is great controversy in Switzerland concerning multifunctional agriculture and the role of each element. There is a lively debate between two camps:

- one camp emphasizes the more "classical" objectives of agriculture policy, such as self-sufficiency, reasonable prices for consumers, and competitiveness.
- The other camp places a greater emphasis on various kinds of non-market outputs, such as the contribution of agriculture to the socio-economic viability of the countryside, food safety, the welfare of farm animals, and cultural and historical heritage.

1. Market researcher and lecturer for behavioural economics and market research, Centre for Consumer Insight/ University of St. Gallen, Switzerland.

The policy design perspective

My professional background is in market research-based design of products, services and business models. This is why I have sympathy for concepts that first identify citizens' preferences and then select the instruments to satisfy these preferences in the most efficient way. This is what I call the "policy design perspective". Even if a policy is well designed and implemented it is important to closely consult with citizens. Expectations may change. This may seem obvious, but in my observation it often seems that policy makers work the other way around: they begin by "engineering" a product and then find the market.

Exploring citizen expectations (method)

The design project first sought to explore citizens' expectations from agriculture. A commercial research company recruited 24 persons with very different socio-economic backgrounds. The interviews, which were recorded, were partly structured and partly open. The difficulty of consolidating hundreds of elements into a reasonably small number of objectives was tackled by means of mixed focus group sessions with agriculture and market research specialists.

Inventory of expectations

The focus groups produced 27 specific objectives that were subsequently classified into six categories with the following labels:

- Self-sufficiency and livelihood of farmers.
- Product quality and variety of domestic food.
- Environment and animal welfare.
- Viability of rural areas and appearance of the landscape.
- Tradition and cultural heritage.
- Competitiveness and technical progress.

Measuring the preferences (method)

The second step in a product design project is to measure the preferences. One way to do this is to ask citizens to rate each objective on a scale from 1-10 (for example as in the Eurobarometer surveys). However, these scores do not take into account that the achievement of one objective can reduce the possibility of satisfying other objectives. Thus, simple scoring usually reveals a high level of agreement with all objectives presented to respondents, most of them over eight points.

We used a conjoint analysis to weigh each objective. Thus, the respondents did not score the objectives directly, but made trade-off decisions by stating preferences between objectives and bundles of objectives. We worked with an adaptive method which significantly increased the efficiency of the online-interview

The survey consisted of a sample of 1 010 persons recruited by a professional market research company. They were selected on the basis of socio demographic and regional criteria. The respondents constitute a representative sample of all Swiss citizens between 20 and 65 years of age in the French and German speaking parts of Switzerland.

The highest ranked weighted objectives

The following nine objectives were the top ranked.

- To provide an adequate income for farmers.
- To achieve (especially) high levels of animal welfare standards.
- To achieve (especially) high levels of environmental standards.
- To ensure a minimum level of self-sufficiency.
- Protect traditional species (animals and plants).
- To maintain a scenic landscape with a high recreational value.
- To conserve the ecologically valuable habitats.
- To maintain the traditional appearance of the landscape.
- To provide detailed information on agricultural products (origin, production process).

Some comments on the results

- The nine top objectives come from three different categories. This suggests that society as a whole is aware of the multidimensional nature of agricultural policy.
- Swiss citizens have a high level of concern about the welfare of farm animals. This is evident not only from our study, but also from the growth in demand for so-called "animal friendly" food products.
- For those ranked within the top nine, we have two "classical" objectives of agricultural policy: to provide an adequate income for farmers and to ensure a minimum level of self-sufficiency. Swiss citizens seem to obtain utility from keeping a substantial domestic food production and are ready to pay the price for this "backup production capacity".

Ranking within the category: product quality and variety of domestic food

Another "classical" objective of agricultural policy, low prices for consumers, was not ranked within the top nine. If we are comparing the objective of low prices for consumers with the other objectives within the category "product quality and variety of domestic food", consumers request the following.

- An accurate description of products (origin, production process).
- Ensure safe and healthy food.
- Ensure a wide variety of domestic food production.
- Increase innovation in agricultural products and services.
- Guarantee reasonable prices for consumers.

Citizens may consider that prices are currently reasonable, but they may also recognize this is a trade-off between lower production costs and higher product quality (e.g. safety, taste and production standards such as animal welfare). They may even assume that prices paid to farmers are an insignificant proportion of the final price paid by consumers at the end of the complex food supply chain.

Understanding the concern about the welfare of farm animals

The Swiss have a very high level of concern about the welfare of farm animals. Our understanding of how and why these concerns have arisen, unfortunately, is limited but was nevertheless somewhat improved during the face-to-face interview process. The following theses can be put forward:

- Citizens have moral objections to animals being treated in ways that are cruel.
- Citizens view animal welfare as associated with specific qualities of animal products (e.g. safety and taste).
- Concern about animal welfare in food production is influenced by issues such as experimentation with animals in laboratories.
- The high level of pet ownership raises awareness of farm animal welfare.
- Consumers living close to areas where animals are raised are more sensitive to animal welfare issues.

Homogeneity of social preferences

In line with most international studies, it was found that there is a high level of heterogeneity amongst individual preferences concerning the objectives of animal welfare. Indeed, animal welfare has the highest level of heterogeneity amongst all objectives. This reflects the fact that there are people enthusiastically supporting the animal welfare objective, but also that there are many people who have a natural aversion to legislation that mandates changes in business practices.

The top ranked objectives ordered by homogeneity of social preferences

- maintaining a scenic landscape with a high recreation value;
- providing an adequate income for farmers;
- conserving ecologically valuable habitats;
- ensuring a minimum level of self-sufficiency;
- achieving high levels of environmental standards;
- protecting traditional species (animals and plants);
- maintaining traditional appearance of the landscape;
- detailed declaration of products (origin, production process); and
- achieving (especially) high levels of animal welfare standards

Preference clusters

A full preference file for each respondent of this study was calculated. These profiles enabled the respondents to be divided on the basis of their individual profiles. Four clusters were developed and each assigned a "label" or descriptive name. All clusters represent significant percentages of the total population.

- **Supporters of traditional agriculture:** this group is mostly comprised of people who support the classic objectives of agriculture. They give priority to classic economic

objectives, have a sectoral vision of agriculture, and consider agriculture as the pillar of rural communities.

- **Supporters of new farming** This group is mostly comprised of people who have a more "evolved" vision of agriculture, to which they assign an important territorial and ecological component. Members of this group are concerned about the livelihood of existing farms, but are open to rural development.
- **Urban ecologist**: this group is mostly comprised of people who have an "ecological" vision of agriculture. They have an especially demanding "consumer view" with high expectations concerning the quality, safety and variety of domestic food.
- **Market reformist**: this group is mostly comprised of people who have an "economic" vision of agriculture. They support **fundamental** market reform and emphasize the importance of rationalization, technological progress, and competition via imports.

Socio economic characteristics of the preference clusters

A set of statistical tests was carried out to determine the relationship between the four preference clusters and the various socioeconomic variables included in the survey. We found significant differences in their socioeconomic characteristics, particularly along the lines of gender, level of education, language region, and proximity.

The fact that consumers of meat and animal products are increasingly removed from how animals are raised will – at least in the long run - have an effect of the importance of the animal welfare issue. Although one would expect weaker ties to correspond to a marginalization, the reality seems to tell another story. Even in countries where people are increasingly removed from how animals are raised, the well-being of farm animals is becoming an increasingly important issue.

Policy game

Different objectives have different target groups. Objectives differ among the groups. Those objectives that form common ground between all four groups are those that are important to all four different opinion groups ("Important" means that the objective is in the top 13 out of 27 objectives)

- To ensure a minimum level of self-sufficiency.
- To provide an adequate income for farmers.
- achieving high levels of environmental standards;
- To maintain a scenic landscape with a high recreational value.

Three of the four clusters — the supporters of traditional agriculture, supporters of new farming and urban ecologist — agree that safeguarding traditional species (animals and plants), animal welfare, conserving ecologically valuable habitats, and maintaining traditional landscape are important objectives. Between the different groups, there are additional objectives that are important for two of the groups. An example is the common ground found between the traditionalist and supporters of new farming concerning the objective of maintaining the livelihood of existing farms. In the corners, one finds objectives that are important to just one of the clusters. As a result of this information, one obtains something approaching a "preference code" of society concerning the benefits of a multifunctional agriculture.

The "preference code" of Swiss society for a few selected objectives: conclusions

Swiss citizens are clearly aware of the multidimensional nature of agricultural policy and of certain implications of its economic, social and environmental characteristics. This condition requires a well-balanced design of the instruments that aim to achieve, according to these revealed preferences, compromise solutions.

There is no doubt that the Swiss have an exceptionally high level of concern about the welfare of farm animals. This is evident not only from our study, but also from the growth in demand for so-called "animal friendly" food products. The reason for this high level of concern is far less clear. Consumers may have moral objections to the ways in which animals are treated; they view farm animal welfare to be associated with characteristics of animal products, for example safety and taste. There is evidence that concern about animal welfare in food production is closely related to, and indeed may be confused with, issues such as animal experimentation and pet ownership.

There is clear evidence that Swiss tax payers are ready to compensate producers for increases in production costs due to higher animal welfare standards. Indeed, the growing demand for higher priced "animal-friendly" food shows that consumers in Switzerland are ready to pay the price for higher animal welfare standards. If a choice is made to impose higher welfare standards in farming, it reflects criteria that are not purely economic. This is probably the reason that the animal welfare programs obtain the lowest approval rates from citizens who have a strong economic vision of agriculture.

A BOTTOM-UP APPROACH TO ANIMAL WELFARE IN SWISS AGRICULTURE

François Pythoud[1]

In the early 1990s, there was a significant paradigm shift in Swiss Agricultural Policy to separate price policies from income policies by reducing the level of producer price support and by an enlargement of the direct payment system. Strong pressure from the Swiss population and animal rights groups in the Swiss parliament resulted in a mandate for the Swiss government to implement animal welfare programs. Consequently, in 1993 the *Regular Outdoor Exercise for Livestock (ROEL)* program was implemented and two years later in 1995 the *Particularly Animal-Friendly Stabling (PAS)* program. Finally, in 1996, the Swiss people decided to anchor animal welfare in the Federal Constitution.[1] The provisions regarding animal welfare were further fixed in the Agricultural Act from 1999.[2]

ROEL and PAS

There are basically four animal welfare needs which must be met under the REOL and PAS programs namely activity, free movement, daylight and care giving. In practice this means that under the ROEL program cattle, horses, sheep and goats must pasture 26 days per month in summer and that in winter they need outdoor exercise on 13 days per month. Moreover, swine and poultry are supposed to get daily outdoor exercise. Under the PAS program animals must be kept in groups (at least two) without any fixation. Moreover, the stable must be daylight transmissive as well as subdivided in different areas (areas for movement, activity and resting places for animals with straw litter).

Monitoring and evaluation

The criteria for determining incentives were defined in the evolution concepts in 1999: Firstly, the payments should contribute to covering additional costs arising from construction, labour and maintenance. Additional market benefits that arise from higher prices through labelling should be taken into consideration and, finally, the agricultural policy targets which are the enhancement of animal welfare should be achieved.

The targets set in the concepts of 1999 were a measurable improvement of animal welfare by 2005 and at least 50% of livestock under the ROEL and PAS programs by 2005. In order to ensure enforcement, there are regular on-farm controls (at least once every four years would be required by law). However, in practice there are controls once every two years. The inspections are undertaken by regional control bodies which are recruited by the Swiss Accreditation Service (SAS). In 2008, only 2% (or 1 301 out of 56 632 farms) had to be sanctioned which resulted in payment cuts due to non-compliance. The result of the controls are published in the annual Agricultural Report of the Federal Office of Agriculture. The control and enforcement costs of the ROEL and PAS programs amount to CHF 8-14 per livestock unit which corresponds to 3.2-7.6% of the payment.

1. Head of Sustainable Agricultural Development, Federal Economics Department, Switzerland.

Evolution of ROEL and PAS

Since 1993 the animal number kept under the ROEL program rose steadily risen up to 2007 where a tendency towards stagnation at a high level can be observed (cattle above 70%, pigs above 60%, goats and sheep above 80%). Poultry production under ROEL decreased from 50% in 2004 to less than 40% in 2009 because broilers produced under ROEL (minimal fattening time is 56 days) are getting too big and do not comply with the Swiss consumer requirements. Thus, mainly poultry for egg production is kept under ROEL. Contrary to ROEL the number of poultry kept under the PAS program increased since its implementation in 1996 to more than 80% by 2007. The share of pigs produced under PAS rose to more than 60% and cattle to 35%.

Overall, one can observe that the total number of animals kept in Switzerland has generally not risen. There is even a fall in the number of cattle and cows of about 10% from 1996 to 2007. Domestic poultry production increased during that time as well as the imports of poultry meat due to a sharp increase in consumption in Switzerland.

Effectiveness of PAS and ROEL

The effectiveness of PAS and ROEL has been scientifically proved and can be seen with cows having less signs of paralysis, injuries of teats and joints. The PAS and the ROEL programs help to significantly reduce veterinary treatments. Fattening pigs show less tail bites, injuries of dermis and joints and under these circumstances less antibiotic treatments are needed.

ROEL/PAS and WTO

Both programs (ROEL and PAS) are classified in the WTO Green Box. As they do not stimulate production, they have "no or at least minimal trade distorting effects or effects on production."

Conclusions

In summary, one can say that political concerns about animal welfare did come to the fore because of strong pressure from the Swiss population and animal rights groups resulting in the decision of the Swiss parliament to implement animal welfare programs in 1993 and 1995. By referendum the Swiss people decided in 1996 to anchor animal welfare in the Swiss constitution and to fix it in the Agricultural Act in 1999. Empirical, scientific as well as practical considerations were taken into account in the design of ROEL and PAS. Scientific evaluation in 2002 and 2003 showed high effectiveness and efficiency of both programs. Having no or at least minimal trade distorting effects and effects on production (Article 1 of Annex 2 AoA), both ROEL and PAS are classified in the WTO Green Box

Notes

1 Art.104 para.3: "The Confederation shall organize measures in such a manner that the agricultural sectors fulfils its multi-functional duties. It has in particular the following powers and duties: […] Art.104 para.3b: "encourage by means of economically favorable incentives, methods of production that are particularly near-natural and respectful of both the environment and livestock."

2. Agricultural Act 1999, Art.76a:

   1. "The federal government supports methods of production that are particularly animal friendly.

   2. "The federal government fixed the incentives so that the particular ethological efforts are rewarding, taking into consideration higher market prices".

CONSUMER PERCEPTION AND GMOS IN THE EUROPEAN UNION

Marco Valletta[1]

In response to a number of food safety scares over the past decades, the sensitivity towards food issues has enormously increased in the European Union and the use of biotechnology in food has become an increasingly important subject for consumers and policy makers. In order to better respond to the lack of consumer confidence, a range of new regulations have been developed and implemented in recent years. One of the key challenges of regulatory institutions is to strengthen consumer confidence in the safety of food, as it has been recognised that the difficulty to incorporate public perceptions into policy development has had extremely negative effects on public confidence in the past (Frewer and Salter, 2002).

GMO and consumer perception

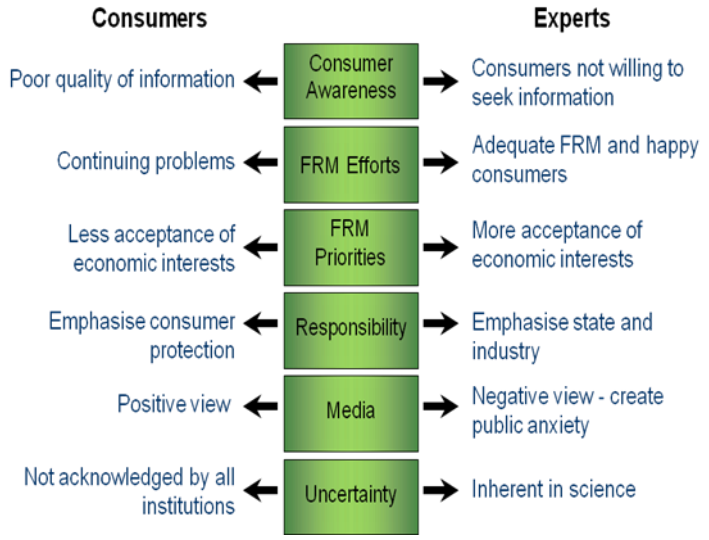
A recent study from the University of Wageningen by Professor Lynn J. Frewer provides valuable insights into consumer attitudes and perceptions concerning genetically modified organisms (GMOs). Results from analyses indicate that general consumer confidence in the safety of food consists of two distinct dimensions, optimism and pessimism, which can co-exist. Since optimism and pessimism may not be activated by the same events, or at the same time, these dimensions should be assessed and evaluated separately, in order to increase understanding of consumer confidence in the safety of food, and to develop effective food risk communication.

A study by Krystallis *et al.* (2007) contrasts consumer and expert perceptions concerning several dimensions relevant to GMOs, and finds significantly differing views and attitudes. His results are summarised in Figure 1. Clearly, consumers do not feel as confident about risk management priorities or efficiency as experts do, and give much more credence to information coming from the media. There are also strong differences of view about the quality of the information that is available.

Many studies have been done about how consumers in general perceive risk. One study (Kahneman and Tversky, 1986) shows that losses have greater impact than gains on consumer attitudes. People weigh risk information as more important than benefit information, thus the difficulty of selling benefits against possible risks. This possibly explains why Frewer (2002) and Frewer *et al.* (2004) have shown that balanced information has a much higher impact on risk perception than on benefit perception.

1. DG SANCO/EU Commission.

Figure 1.



One certainty is that consumer attitudes to food — and thus to new food technologies — have a long history. Consumers are "not starting from zero" when it comes to food, they have tradition, beliefs and even — especially in the Mediterranean countries — cultural identities built on food. This makes food a sort of "sacred area" rather different from other areas of innovation such as pharma (this might well explain the different attitude of consumers to GM food and GM drugs, European and biotechnology, 2005). It is also known that consumers make trade-offs between risk, benefit and cost (including ethical and environmental costs). Attitudes to new innovations in food technology may also be different to the extent that decisions are made on a case-by-case basis related to specific perceptions of risk and benefit. As a result of all these factors, consumer decisions and perceptions might be quite or even very far removed from a rationale science-based approach.

Eurobarometer regularly surveys consumers throughout the European Union. A survey undertaken in 2006 asked questions about attitudes to a number of new technologies, among them nanotechnology, pharmacogenetics, gene therapy, and GM foods. The results are shown in Figure 2. It is clear that consumer acceptance of GM foods is low in many EU countries, and lowest by far on average among the four novel technologies that were the subject of the survey.

This is confirmed by Figure 3 which shows a significant proportion of consumers surveyed expressing moral reservations about GM foods, and the belief that they are risky, not useful and should not be encouraged.

Figure 2. Support for four technologies

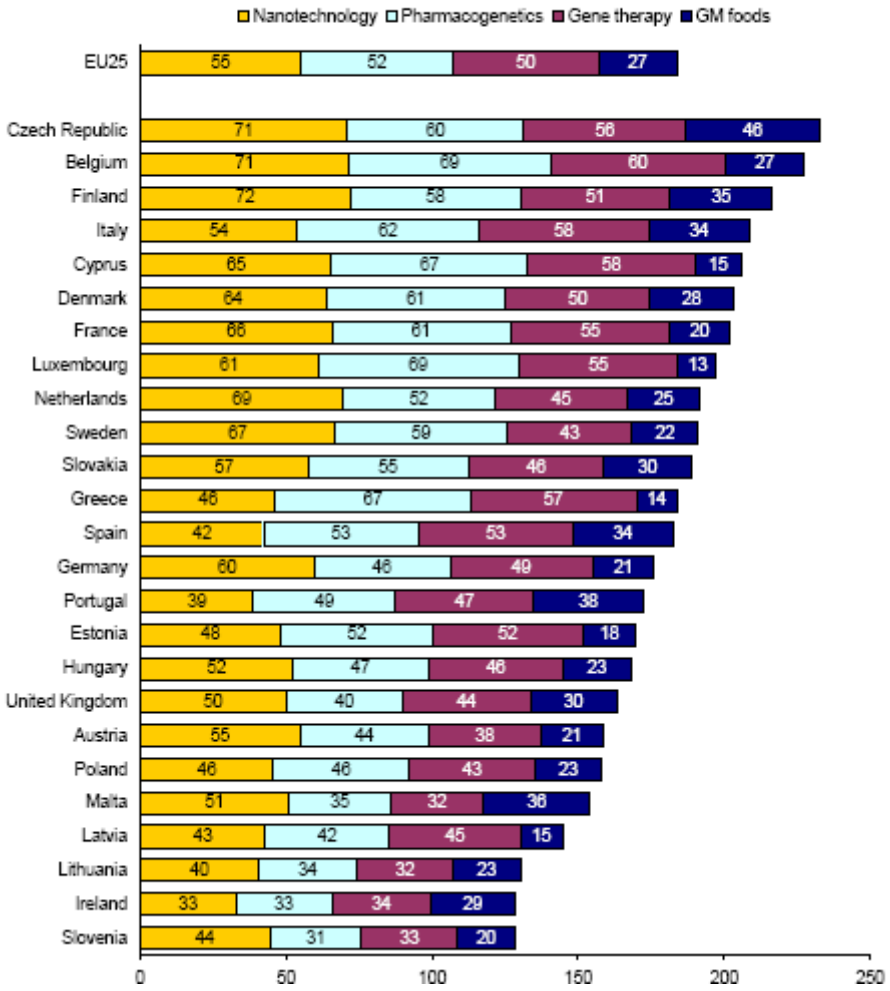
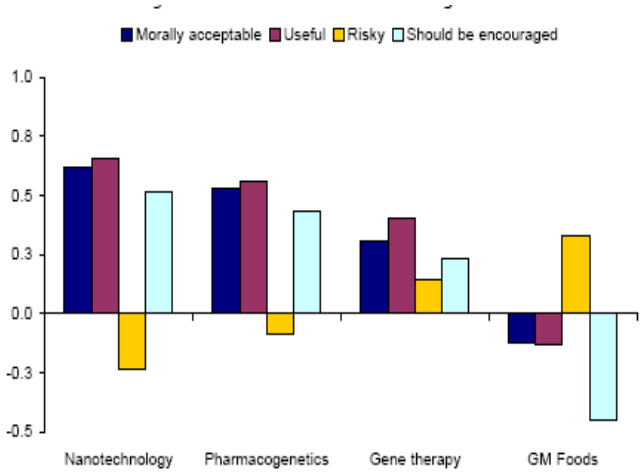


Figure 3. Evaluations of four technologies



There are several explanations for the dominance of negative perceptions and attitudes to GM foods. Sometimes resistance is based on a perceived risk which – as already mentioned – can be very far from a rational, science based assessment of the risk. For instance, sometimes GM foods are perceived by a part of consumers as unnatural and therefore risky, without necessarily a rationally defined idea of 'unnatural' and even less so of the link between "unnatural" and "risky".

Moreover there is a sentiment that the risk related to GM food cannot be controlled or that it is not controllable. Perceptions of risk may also be related to notions that food is a special cause of concern because it is taken into the body and determines health and physical well-being. Consumers are concerned that the long-term risks of GM foods are unknown and have not been sufficiently researched. Arguments of substantial equivalence — that there are no discernible differences between GM foods and conventional foods — have not been sufficient to address or allay consumer concerns, at least among this group. Finally, it is claimed that part of the problem can be attributed to the fact that risk analysis systems are opaque and decision-making practices are not transparent.

The concerns of another group of consumers (although there may be some overlap between them) are based more on values and issues concerning who benefits from GM foods. This group does not believe that there are any benefits to consumers and that all the benefits accrue to farmers or to the biotechnology companies. This same group also expresses ethical reservations and worries about the impact of GM agricultural products on the environment or on biodiversity. Some favour preserving the right of consumers to choose whether to consume GM foods or not.

The EU legislative framework as an attempt to respond to consumer resistance

The European Union has a comprehensive legal framework that regulates the production and the sale of GM food and seeds. The current EU legislation is an attempt to respond to consumers' lack of confidence towards GM food products by enhancing the effectiveness of the EU food safety system in two key aspects: 1) risk assessment and management; 2) new labelling and monitoring requirements. The European Union GM food system has certainly contributed to make the European Union one of first systems in the world for the number of GM authorisations granted in the area of GM food and feed. [1] Nevertheless, addressing the negative consumers' perception toward GM is an objective not yet fully achieved by EU regulations; for this reason EU policy makers are assessing the existing legislation.

Following the food crises of the 1990s, the European Union has completely reviewed its regulatory approach to food with the approval of the General food law[2] and has adopted a comprehensive legal framework[3] regulating the production and the distribution of GM food products within the EU single market. This legislation pursues three main objectives: protection of public health (Article 6 TFEU); consumer protection (Article 12 TFEU); to ensure the effective functioning of the internal market in relation to GM food and feed (Article 26.2 TFEU). In fact, the European Union GM food policy is an attempt at balancing the diverging interests, such as avoiding trade barriers, imposing labelling requirements, fostering innovation, managing possible risks and addressing consumer requests for a right to choose between GM and non-GM.

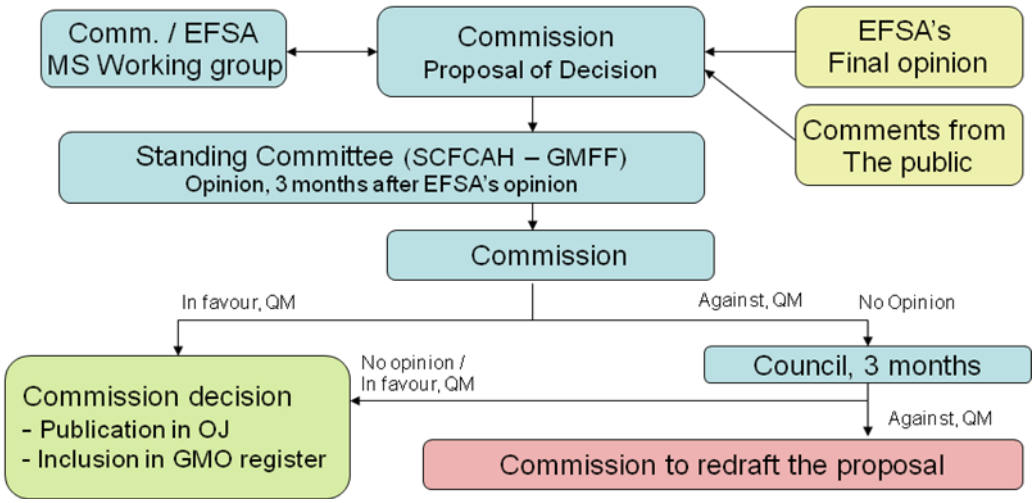
The European Union biotech regulatory framework foresees a centralised authorisation by the European Commission in the framework of a procedure involving all the 27 member states of the Union, however the risk assessment and the risk management phases are undertaken separately. The European Food Safety Authority (EFSA) is the agency

responsible for the risk assessment phase. It is an agency which guarantees independency from the EU institutions and Member states and which can consult widely with the national scientific bodies. Its research team is composed of a number of scientists from all across Europe and it can also call on external experts.

EFSA risk assessment procedures are based on international standards and are often defined in the scientific arena as the most comprehensive risk assessment procedures in the world. The three typical steps of the EFSA GM food/feed risk assessment process are: 1) Compositional analysis; 2) Food and feed safety analysis and risk evaluation; 3) environmental impact analysis.

The risk management phase (Figure 3) is managed by the European Commission, because of its extensive executive competences within the EU system. In order to obtain an authorisation for the production of GM food products, the interested parties have to submit an application to the competent national authorities, which has to acknowledge the receipt of the application and inform the EFSA without delay. Applications are sent to the European Commission and to the Member States, who are consulted on the application over a three month period. EFSA must provide its opinion within six months of receiving the application. However, if additional data is requested during the scientific assessment the time limit is extended. The services of the Commission have to take due account of the comments of the public (within one month after the EFSA opinion) and submit a proposal agreed by the different depart of the Commission (inter-services consultation) to the Regulatory Committee[4]. When a qualified majority occurs in the Regulatory Committee, the decision is adopted, published in the Official Journal of the European Union and included in the above-referred GMO register. Otherwise, the Commission must refer the issue to the Council of Ministers of the European Union, which will have a three months timeframe to adopt a decision. If no decision is taken at Council level the Commission can finally adopt the decision.

Figure 4



Authorisations, when granted, are valid for ten years and are renewable, for ten years each time. However, the decision can be reviewed and even withdrawn at any time if new elements occur that would justify such an intervention. In other words, the Commission with the fundamental scientific advice of EFSA maintains a substantial supervision power. Finally, all authorized products are entered in the EU register, which contains all relevant details and information.

To date, more than 35 GM food and feed have been legally authorised in the European Union and many more applications are pending. More than two years are usually necessary to complete the EU authorisation process which is thus regarded as one of the most demanding in the world.

Allowing consumers to make an informed choice when buying GM food and feed products is one of the objectives pursued by the European GM legislation and this is clearly one of the most important part of the what is considered an authentic and specific 'EU model' to the regulation of biotechnology. Labelling is compulsory for any food or feed containing, consisting of or produced from GMOs, regardless of the actual presence of modified DNA or proteins. However, these labelling requirements do not apply if two conditions are met: first, the GMO presence has to be less than 0.9 % of the food/feed ingredients considered individually; second, the presence has to be adventitious or technically unavoidable. National provisions complement the European legislation, covering "GM-free" labels and restaurant menus.

It is relevant to point out that products obtained from animals fed with GM feed or treated with GM medicines are not covered by EU labelling rules. Nevertheless, this issue is often addressed by firms because of the rising consumer demand toward this additional bit of information.

Conclusions

Consumer perception toward GM foods is the result of different factors, such as their previous experiences with food products or by their exposure to mass media. It is clear that consumers have radically different perspectives from experts.

The European Union example shows that when scientists can provide the best possible independent risk assessment, they contribute substantially in building consumers confidence. Also, the European Union risk management phase assigns to policy-makers the task of bridging positions between consumers, scientists and other involved stakeholders. The improved governance and transparency of the EU GM framework is leading to encouraging results: today the European Union is already one of the biggest market in the world in terms of the number of GM authorisations granted. Recent surveys show, however, that the perception of EU consumers is still rather negative, despite showing a positive trend. Finding the right balance on this and other controversial issues might imply that a re-thinking of approaches to policy making is needed.

Notes

1. For further details, see the Community register of authorised GM food and feed: *ec.europa.eu/food/dyna/gm_register/index_en.cfm*.

2. Regulation 178/2002.

3. The EU legal framework is composed essentially by three texts: a) Regulation n. 1829/2003 on GM food and feed; b) Directive 2001/18 on the deliberate release of GMOs into the environment; c) Regulation n. 1830/2003 on traceability and labelling of GMOs.

4. The Regulatory Committee is composed of representatives of the Member States and chaired by a representative of the Commission.

References

Frewer L., B. Salter, "Public Attitudes, Scientific Advice and the Politics of Regulatory Policy: the Case of BSE", in *Science and Public Policy*, Volume 29, Number 2, 1 April 2002, pp. 137-145 (9).

de Jonge, J., C.M. Hans, I. A. van Trijp, R.J.R. van der Lans, L.J. Frewer, "A scale for consumer confidence in the safety of food", *Working Paper*, Mansholt Graduate School n. 44.

Krystallis, A., L. Frewer, G. Rowe, J. Houghton, O. Kehagia and T. Perrea. (2007). "A Perceptual Divide? Consumer and Expert Attitudes to Food Risk Management in Europe", *Health Risks and Society, 9*(4), 407-424.

A. Tversky, D. Kahneman, "Rational Choice and the Framing of Decisions", *The Journal of Business*, Vol. 59, No. 4, "Part 2: The Behavioral Foundations of Economic Theory" (Oct., 1986), pp. S251-S278.

European Commission, "Europeans and Biotechnology in 2005: Patterns and Trends — Final report on Eurobarometer" 64.3, Brussels 2006.

GMO POLICY IN AUSTRALIA

Joanna Hewitt[1]

I think the most useful role I can play in the panel is to draw on my experience in policy advising and implementation, mainly for the Australian Government. For better or worse, I have had a lot of involvement in "wicked problems" with responsibilities at senior levels *inter alia* for work on trade liberalisation, climate change, food safety, soil conservation and water resource management, biofuels, pandemic preparedness, biodiversity and commercial logging in native forests. It is almost a textbook list of wicked issues. I can only be grateful for not having dealt with gun control or healthcare!

I will say a few words about how Australia is grappling with GMO policy – and as is often the case - Australia falls somewhere between the approaches of North America and Europe. I will also try to draw out some general observations about how governments might produce better outcomes in wicked policy minefields.

The overriding objective of Australia's national framework for managing and regulating gene technology is protection of the health and safety of people and the environment. No other considerations (for example, industry competitiveness) can be taken into account in the assessment process. Since the year 2000 it has been managed through an Act of the national Parliament (with complementary legislation in each of the States and Territories) and administered by the Gene Technology Regulator, an independent statutory officer. The Regulator has well qualified staff in the Office of the Gene Technology Regulator (OGTR) which has responsibility for preparing risk assessments and management plans for licensing the release of live or viable GMOs. The Regulator also works with all the other agencies responsible for managing GMO issues in food products, veterinary chemicals and human therapeutic goods regulation.

The OGTR is an admirably structured agency. It operates with open and transparent processes. It consults widely with other official bodies and an extensive network of interested non-government parties. Notice is given of applications for approval for licensing of new GMOs. Invitations to comment on risk assessments and management plans are widely published in the national press and official websites and allow sensible timeframes for this to occur. The quality of the technical work of the OGTR is highly regarded and in 2006 a very positive report resulted from a review of its first five years work.

This all sounds easy and rational. In practice, however, major difficulties emerged in Australia about commercial release of GMO canola varieties. Earlier approvals for GM cotton varieties had been relatively easily accepted and led to major environmental

1. Consultant and former Secretary of Australia's Department of Agriculture, Fisheries and Forestry.

improvements in relation to pesticide and water use as well as producing commercial benefits for growers. Winning public acceptance for a GMO food crop has been much more difficult. Approvals were granted by the OGTR in 2003 for two varieties of GM canola after extensive and careful assessment. But until 2008 all but two of the States and Territories – which have constitutional authority in Australia for land management policy - entered into a moratorium precluding commercial release.

There were no definitive statements on why the moratorium against commercial release of approved GM canola was imposed. State and Territory Governments had declared themselves satisfied with the OGTR's work. Political sensitivity was clearly a factor given strongly articulated objections from some community groups to the commercial release of the approved GM canola. Also, agricultural interests were divided over the merits of commercial release because of anxieties about the effectiveness of crop segregation methods and concerns about possible damage to established non-GM Australian canola exports to markets like Japan which took a very conservative approach. What I can say from personal experience of strenuous efforts to broker agreement among State level counterparts to phase out the moratorium, is that there was a high level of political anxiety about this issue despite clear scientific assessment that no harm to human health or the environment was at issue.

So the situation in Australia after 2003 looked a bit similar to that about which EU Commissioner Fischer Boel has expressed exasperation. Australia has traditionally been a leader in agricultural technology with a strong track record of early uptake of innovation. On GM Australia had a highly regarded regulatory agency with active communications outreach but in practice was not able to implement commercial release of GM canola authorised by its national regulator.

I am happy to say that after a lot of debate in policy and circles, farm groups and the wider community, progress appears to be on the march. The Agriculture Department at the national level took many opportunities to engage in this debate and had the strong support of its portfolio Ministers. Australia's Chief Scientist and scientific professionals in major research organisations were also extremely helpful and "stuck their necks out" in what could at times be very difficult public debates to explain the facts about the two approved GM canola varieties. A breakthrough came in 2008 when the two most populous states, Victoria and NSW, abandoned their moratoria and allowed commercial release and WA (a major grains state) has begun field trials. Hard evidence that community attitudes have shifted comes from an independently conducted survey which showed that in 2007, support for the use of GM technology for food increased to 73% from 45% in 2005 and only 54% considered the technology risky compared with 71% two years earlier.

What can we learn from this?

First, that setting up good regulatory process with highly qualified and respected staff is a vital first step. It has been important that the OGTR process was open and transparent to stakeholders representing all viewpoints. I am quite sure that GMO licensing would have been even more fraught if it had been handled directly by Ministries rather than through a competence-based body.

Second, policy leadership rather than followership can make a difference. I have enormous regard for those in industry, scientific bodies and government who thought this issue deserved attention and were prepared to accept the downside of engaging in what at times was uncomfortably heated debate.

Third, it is important not to abandon efforts at good policy outcomes even when it seems that little traction is being gained. Attitudes in these policy areas can shift – indeed

uncertainty and sharp differences in stakeholder opinions are defining qualities of wicked problems. Plugging away with new and well presented information can have an impact even though it can take time.

Finally, I would stress the importance of making sure the stakes are understood in public information efforts. In Australia, public opinion polling suggests that attitudes to GMO technology became more positive as people understood that it could help reduce environmental damage from production of traditional varieties by lowering pesticide use and water consumption at the same time as improving productivity. It is troubling to me that in the developing world where the stakes are very high indeed not enough has been done to highlight the benefits that well established GM technologies could contribute to managing food security and environmental pressures. Developing country concerns about risks to access for their food products to some developed country markets has resulted in resistance to potentially beneficial crop improvements. This deserves more of our attention.

PROTECTING BIOLOGICAL DIVERSITY

Christopher D. Stone[1]

The object of our conference is to examine the manners in which governmental policies and laws evolve from societal movements. The evolution of the Convention on Biological Diversity (CBD)[1] illustrates the process on an international scale. The parties — nation states — nominally allied to advance conservation, actually divide significantly over the balance to be struck between environment, development, and respect for sovereignty over resources. All agree there is a problem, but its measurement is elusive. Data ideally desired is inaccessible. The public tells pollsters the problem is serious. But neither resources nor stringent actions are forthcoming.

No one can say that the problem of regulating biodiversity came upon us suddenly. Efforts to preserve biological assets go back almost to the beginning of civilisation. Hammurabi's Code (Saggs, 1989), the laws of the Hittites (Saggs, 1989) and the Old Testament (*Deuteronomy* 20:19-20) laid down rules ranging from prohibitions of wasteful agricultural practices to the protection of enemy fruit trees in time of war. International agreements providing for the conservation of fish, migratory birds and marine mammals trace back at least a century (Saggs, 1989). With the passage of time, biology-regarding regulations have multiplied and expanded in scope. Recent conventions have taken several forms. Some, most notably the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES 1973) and the International Whaling Convention (IWC) seek to preserve specific stocks or species. Others, such as the Antarctic Treaty System, assume as their focus particular geographic (ecosystem) areas (The Antarctic Treaty 1959). Still other measures seek to regulate particular environment-threatening activities, such as invasion of exotic species (International Convention for the Regulation of Whaling 1946.)

The most comprehensive contemporary response was launched with the 1980 seminal report, *World Conservation Strategy*, co-produced by the World Conservation Union (IUCN), the World Resources Institute, and others. This report, more than any other, identified biological diversity itself, as distinct from particular species, as an independent global asset whose accelerating decline demanded attention in its own right. *World Conservation Strategy* and its 1992 sequel, *Global Biodiversity Strategy*[2] laid out the value of genetic resources, identified the many pressures on them (from human encroachment on habitats to pollution and the introduction of exotic species) and outlined a strategy for strengthening and coordinating global and local-level responses.

As the decade unfolded, various scientific studies — for example, satellite-generated reports of forest decline and revised estimates of species loss — confirmed the peril. By 1984 the IUCN, through its Commission on Environmental Law and its Environmental Law Centre, began promoting a series of draft articles towards a treaty.

1. USC School of Law, Los Angeles, CA, United States.

Formal, broadened efforts were initiated in November 1988, with a succession of meetings of expert groups convened by the United Nations Environment Programme (UNEP). Within the next two years a number of working groups were created to examine various subjects including conservation of wild and domesticated species; access to genetic resources and technology; safety implications of released genetically-modified organisms; and financing.

The result was the Convention on Biological Diversity (CBD), which opened for signature at the Earth Summit on 5 June 1992 and has subsequently been ratified by 193 parties. The United States is a conspicuous exception. President Clinton signed the agreement, but efforts to obtain Senate ratification, as required under the US Constitution, have stalled — and prospects for approval in the near term are poor.

The political and economic setting of negotiating and implementing biodiversity conservation

Several factors converged to make the CBD an unusually open-textured agreement dominated by commitments that are typically vague, hedged (as far as possible and appropriate) and not backed by any sanction.

First, national commitments to a truly rigorous international convention cannot move far ahead of popular support. In the total mix of global challenges, public support for biodiversity protection appears wide, but not particularly substantial. In a 1993 poll, reflecting opinion at the time of creating the convention, biological diversity ranked last in public awareness among all environmental issues, ranging from wildlife to climate change.[3] In recent polls, 68% of Americans (Belden, Russonello and Stewart 2002).and a majority of Europeans (European Commission 2007) did not recognise the term. It is true that when the term "biodiversity" was explained, a majority in both countries gave the movement nominal support.[4] But the frailty of that support in the face of other claims is exposed by the fact that most interviewees saw no immediate personal impact of biodiversity loss. The harbingers of climate change (which faces its own difficulties gathering consensus) are more threatening, imminent, and vivid. So too are the human health concerns about environmental chemicals and the economy.

Second, the CBD takes as its client biodiversity which, as more fully explained below, is a hard to measure "distance" in varieties among species or ecosystems. As such it is abstract, and hard to associate with an iconic image to match the melting glaciers and stranded mother and child polar bears, that motivate climate change. It is easier to rally support for particular biological assets — tigers or wetlands —than for biodiversity. Many may wonder why not simply protect tigers under CITES, wetlands under the Ramsar Convention on Wetlands, migratory birds under migratory bird conventions, and so on?

Third, some "softness" in the CBD's demands was inevitable — and deemed tolerable — within the ambition to produce a supple framework convention, roughly comparable to the Vienna Convention for the Protection of the Ozone Layer (1987) and to the Framework Convention on Climate Change that was being negotiated contemporaneously. The negotiators hoped that missing details and demands would be folded in over time at conventions of the parties. A fourth factor contributing to the CBD's weakness was the relative rapidity with which the text was prepared. With the Earth Summit rapidly approaching, the International Negotiating Committee (INC) was forced to race through highly complex and relatively novel issues to have a negotiating draft ready for presentation a little over a year from its first meeting.

Even if the negotiators had had more time, there is another reason why a higher than average level of obscurity and equivocation — not merely in detail but in sense of institutional mission — was probably unavoidable. The explanation is to be found in the Rich-Poor tensions which have left their mark on all the recent international environmental accords, but have perhaps affected the CBD in particular.

One hesitates to generalise about their being two sides to the negotiation: rich and poor. Many parties participated — Non-Governmental Organisations (NGOs) as well as nations — thereby assuring a wide range of multi-faceted proposals. For example, the NGOs sensitive to the needs of indigenous peoples were as staunchly conservationist of forest homesites and ecosystems as any pro-conservation rich country. But overall, and not to overlook the commonalities of interest and the willingness to seek common grounds, the rich and poor brought two different perspectives to the table. The rich have the luxury of being able to worry over the long-term dangers to the global life support system. The poor, for their part, share in these concerns but their priorities were understandably concentrated on local and immediate challenges such as eradicating poverty, reducing illiteracy and building infrastructure. The rich had become so by converting their forests to grazing land, and grazing land to factories, to the disregard of their biodiversity: why should the poor not follow the same path?

It was against this general background that the CBD negotiations took place. The rich (to pursue this coarse caricature) entered the negotiations with topmost concern for the predominantly conservationist agenda that the IUCN had outlined as early as 1980. The poor were wary. Nature had allotted them a disproportionate share of the planet's remaining biological diversity. Hence, talk of conservation threatened disproportionately to question their sovereignty over local policies on which their economic development (and debt service) depended, from forests to fisheries. Successful conclusion of a broad multilateral agreement required assuring the poor, first, that their sovereignty would not be infringed; second, that any appreciable financial burdens would be borne by the rich.

Third, winning the support of the poor required carrots. As with other framework conventions, the poor saw in the CBD a potential conduit for transferring new and additional wealth from the rich. In addition, as in so many other negotiations, the door to some sort of undefined technology transfer was opened. Perhaps most significantly, the poor were encouraged to believe that their forests were fabulously rich storehouses of genetic resources that rich-country firms, pharmaceutical houses in particular, armed with the latest biotechnology techniques and apparatus, were eager to mine to their own benefit. If the CBD were to offer the poor little else, it was seen as a way to insure that they received a goodly share of this supposedly imminent wealth.

These divergent motives, the persistent tensions, and efforts alternately to ease and ignore them, have all left their imprint on the ensuing progress of the Parties. That is, even among the parties that have signed the convention, it has been difficult to exploit the framework by effectuating shifts in biodiversity-affecting policies. These hindrances to collective action in the area of biological diversity are valuable illustrations of problems facing international collective action generally.

The lack of an agreed-upon biodiversity indicator

To understand the difficulties the CBD has confronted, it is useful to compare the convention to its "cousins". In negotiating protection of the ozone layer, the parties enjoyed the advantage of having a key focal indicator to address: The thickness of the ozone shield measured in Dobson units (DUs).[5] DUs were to be increased. Those persons negotiating

climate change could relate proposals and progress to atmospheric congestion of carbon dioxide which, with other greenhouse gases indexed to CO_2, provided a single indicator. There is, however, no comparable index no analogue to DUs and CO_2 to guide the parties to the CBD.[6] A single term "biodiversity" is being applied to many distinguishable environmental characteristics. But there is no single, satisfactory objective measure of biodiversity. The number of species, and therefore species loss, is often part of the discussion. But what we count as a species (rather than two or three species) is somewhat subjective[7] and obviously, an ecosystem containing three species of fern does not match in genetic diversity its neighbour that offers a fern an owl and a fox.

Indeed, it can be argued that, in the absence of data that would enable us to collapse all values into a unifying metric of utility we have only, at best, various measures appropriate for particular values and purposes, such as maximising our (or the total environment's) capacity to adapt to changes (Williams and Humphries 1996). Candidates include; (1) the number of species; (2) some measure of "richness" of genetic information conserved, such as the evolutionary "distance" among the pool of organisms in the portfolio (Weitzman 1992) (Solow *et. al.* 1993); and (3) some indicator of attributes the genes express, such as morphology (eyes), behaviour (burrowing), or ecosystem functions or services (carbon storing) (Martinez). Without resolving this over-arching issue, ranking policy options is bound to be controversial. If we set out, despite the objections, to maximise the sheer number of species, preserving prolific rain forests would probably be the highest priority. But some commentators champion grasslands areas, on the grounds that they are typically custodians of "higher taxonomic categories", notably mammals, which generally store, species for species, more genetic information than the "lower life" forms that dominate the rain forests.[8]

Filling the Ark

D_i = distinctiveness of *i* (a measure of *i*'s uniqueness, which captures some but not all "portfolio" values discussed in the text below)

U_i = direct utility of *i* (a measure of how much we value *i per se*)

$\Delta\rho_i$ = how much *i*'s chances of surviving are improved by the conservation measure

C_i = the cost of the conservation measure.

Then the priority ranking is:

$$P_i = [D_i + U_i]\left(\frac{\Delta\rho_i}{C_i}\right)$$

If we could come up with the relevant utility information (including that about costs and benefits of various preservation measures), we could deploy utility as the unifying metric. Explicating this conception, Andrew Metrick and Martin Weitzman ask us to imagine ourselves operating a Noah's Ark in the face of a species-depleting threat; we are subject to a "budget" in the form of the Ark's limited space. We cannot save every species. Moreover, even the conservation measure (bringing the species on board) will not guarantee that a selected species will be "saved" because it might die out irrespective of our protective efforts. The authors' optimal policy would rank the utility maximising boarding order, where *i* represents the next (*i*th) species to be boarded from among the waiting set, as indicated in the Box entitled "Filling the Ark".

Conceptually, the formula provides a useful exercise but we are far from able to provide policy makers with the required data. Some of these data uncertainties warrant elaboration.

Uncertainties as to measures to arrest the declines

It is often unclear what we can do about biodiversity loss. Some of the uncertainty is inevitable given the uncertain metric. We know how to reduce greenhouse gasses, if we had the will. But there is an independent problem with biodiversity. Even if we set out to maximise species (or species of a certain sort) there remain uncertainties about how much territory and what physical interior and boundary conditions are required to insure preservation of any given species or other coveted environmental feature. At what point of population decline, and under what conditions, will a stock "crash"?

We do not know the cost of any decline

We cannot calculate with any confidence how much the loss of a species or ecosystem costs. A major — perhaps the major —accounting problem is that we do not understand the links between the loss of any particular ecosystem feature and human well-being (Harte 2001). Some ecologists confess that "for many ecosystem functions, such as nutrient cycling and decomposition, there [is] next to no clear evidence about the role of species diversity" (Baskin 1994) (Kaiser 2000). When we exchange a tropical acre that supported one thousand species for an acre that produces one strain of barley and a few dozen species of soil life, how do we tally the apparent gains and losses?

In the face of uncertainties about the costs of losing any given species, it is tempting to raise the alarm level by claiming that "the health of the human economy is dependent" on "ecosystem integrity" (Harte 2001). But what does this really mean? Of course, one can imagine extreme changes in the ecosystem that would have cataclysmic impact on humanity, such as a radical increase or decrease of atmospheric oxygen. But fabulous cataclysms aside, invoking the health of the human economy is too easy for sceptics to turn on its head. The health of human economies appears to have depended precisely upon humankind's far-reaching revamping of ecosystems. We have reshaped the landscape, transformed microclimates, and fostered the spread of cultivated and domesticated species (whose mutations have become as dependent on us as we are on them).[9]

Conservationists — particularly those who fabricate their position on utility to humans — incline towards technological pessimism: The less adequately technology can compensate for the depletion of biodiversity (somehow measured), the higher the costs of each lost habitat. John Harte, for example, labels as "illusion" the belief that genetic engineering can wean humanity "off its historic dependence on wild plants and animals" for food and medicines (Harte 2001). But is a decline in our historic dependence really "illusory"? To a considerable extent reliance on laboratory-concocted "designer genes" is reducing the need to search for natural samples.[10] The technical advances are far from eliminating the value of

natural genetic *in situ* libraries, which offer "survival tested" templates. But there is no reason to doubt that, over time, advances in technology will reduce the costs to humankind of a dwindling biodiversity inventory that is measured in lost inputs to pharmaceuticals, cosmetics, and so on. At the least, because we cannot anticipate how far technology can substitute for natural inputs, any proposed conservation policy faces considerable uncertainty in assigning costs.

The problem requires global (or broadly multi-lateral) solutions

It is true that restraining biodiversity loss forces us to grapple with local practices and local phenomenon since the loss of the last member of a species occurs in a specific locale. But I am not sure that this feature of biodiversity loss makes it less a "global" problem than climate change. We cannot restrain greenhouse gas emissions without confronting local practices also. In some countries, heavy reliance on automobiles is the issue; in others, land clearing and agricultural practices are critical. There is a further parallel in the fact that just as carbon congestion affects the whole world, regardless of where the molecule originated, the loss of a species affects the whole world's inventory, wherever the last member died.

Indeed, there are several reasons why biodiversity loss is a global phenomenon calling for global responses. First, many species of interest, including whales, tuna, and migratory birds, move across national boundaries and global commons areas, therefore requiring international co-operation to preserve them. Second, the globalisation of trade means that the measures one country adopts with, for example, its elephants or mahogany, is affected by purchasing and import policies of other countries on the other side of the world. Third, one of the greatest threats to biodiversity, the introduction of alien species, is in many ways exacerbated by increasing trade. A mollusk hitchhiking in freighter ballast from Asia is certainly no less a threat to the Great Lakes, and quite possibly a greater one, because it is more "alien," than a cousin mollusk emigrating from the Atlantic coast. Fourth, whatever the currency favoured, the underlying goal of biodiversity policy is presumably to safeguard a portfolio (or, within budget constraints, portfolios) of areas that, taken together, most thoroughly and efficiently represent the attributes we seek to conserve. Because of regional redundancy and specialisation, it is ideal to have the whole globe as a source from which to assemble "investments".[11] As a consequence, any conservation plan that commands less than global participation will be suboptimal (see Box below).[12]

The benefits of global co-operation

World-wide cooperation reduces the land costs of assembling portfolios. And it is also required for optimal distribution of benefits. To illustrate the virtues of global participation, suppose that the currency question is resolved in favor of conserving the set of attributes {*a*, *b*, *c*, *d*, *e*, *f*, *g*, . . . *z*}. A network of areas has to be assembled and maintained that embraces, at a minimum, at least one member each of those attributes; the set has to be complete. A budget in excess of what is required for a fully inclusive set may foster subsets that account for varying values that we place on preserving different members: we may want twice as many stores of *a* as of *b*. Assume the distribution of the first seven members to be (in varying abundance): The United States {*a*, *b*, *c*}, India {*a*, *b*, *c, d*}, Costa Rica {*d*, *e*, *f*}, Greenland {*g*}. Assume that while other countries are required to fill out the full set with *h*, *i*, *j*, . . . *z*, the four named countries exclusively offer the first seven members. Given that distribution, note that participation by both Greenland and Costa Rica is *indispensable* to the formation of a fully representative set of all attributes, since *f* and *g* will go otherwise unrepresented. Although India is not indispensable, India might provide *b*, *c*, or *d* at a lower cost, and at higher levels of security and abundance than the United States and Costa Rica, respectively. If so, freeing up *b*-supporting land in the United States in exchange for securing *b*-supporting land in India is superior within the budget.

In terms of the illustration, the readiness of the United States to allocate to India the conservation of B and C (the United States conserving A) depends on whether the United States finds it credible that India will share in the benefits of B and C when and if the need for them should arise. Without strong assurances that co-operation will be forthcoming, each nation will be hesitant to accept the globally ideal land use pattern. Concerned nations will be faced with the need to establish more costly domestic portfolios, thereby producing redundancies where the optimal result would be accomplished with fewer providers. This is not to undermine the significance of local action. But it reminds us, in one more way, that an ideal response to biodiversity loss no less benefits from multilateral co-operation than does climate change. Like climate change, biodiversity is a public good: absent mechanisms that can thwart opportunistic behaviour, such as concealment of preferences, the world is not likely to get even the beggarly "supply" of biodiversity than nations (truly) desire.

The Convention on biological diversity

The chore of providing the framework for multilateral co-operation falls on the CBD. The convention that has arisen out of the conditions described undertakes three objectives; conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits.

The institutional structure

The Conventions establishes a Convention of the Parties (COP) as the crucial ongoing body with continuing powers to review data, monitor, adopt new protocols, and, by consensus or two thirds majority, amend the Convention or any of its protocols (CBD 1992, Act 28, 29). Under the COP there is a Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) to handle technical issues (CBD 1992, Act 25). The Global Environment Facility (GEF), originally designated the interim funding mechanism has been firmly established in that position. As for formal dispute settlement mechanisms, there are none. Indeed, the obligations that emerged are predominantly so aspirational and discretionary (even the interval for Article 26's periodic reports is undetermined) that it is unclear what sorts of disputes could arise; but if any do, the disputants are enjoined to seek solution by negotiation (CBD 1992 Act 27).

Convention obligations

Conservation measures

The response of the Convention to its conservationist constituencies is decidedly soft. Each Party undertakes to prepare its own national strategy plan with no further constraints than to reflect *inter alia* the measures set out in the CBD; and each undertakes (as far as possible and as appropriate) to integrate conservation and sustainable use of biological diversity in its national decision processes.

In early negotiation, the conservation forces had hopes that a list could be composed of particularly critical biodiversity areas, in parallel with CITES listings of endangered species. But some countries were leery that they might be pressured to leave listed areas untouched. Therefore, in keeping with the softer tone of the Convention, each Party was entrusted to identify and monitor important areas on their own having regard to the safely vague guidelines of Annex 1. As far as possible and appropriate each party is to establish a system of protected areas in which special measures to protect biodiversity shall be implemented. Additionally, each Party is to adopt measures to advance *ex situ* methods of conservation, such as germ storage. Each Party is to consider incentives for conservation, establish

technical and research programs, and to enlarge public awareness. Environmental impact assessments and other governmental measures to limit adverse impacts are encouraged (CBD 1992, Acts 6-14).

Resource measures

In response to the resource claims, the sovereignty of each Party that is the site of potentially valuable biodiversity resources is re-affirmed. But the resource host is at the same time encouraged to facilitate access by others. Facilitation does not extend to complete openness: Specifically, no nation may access the resources without the prior informed consent (PIC) of the host. This PIC requirement is aimed at forcing prospectors to strike a bargain with the host, and therefore to share, in some degree, the benefits of commercial exploitation. Article 16 amounts to asking the technologically advanced countries to transfer biotechnology (and Article 19, to share the benefits produced by the application of biotechnology to genetic resources) on fair and mutually agreed terms. Articles 17 and 18 encourage the exchange of information and technical and scientific cooperation.

Less developed host countries mean by fair and equitable sharing something over and above an elevated market price. They anticipate, ideally, leveraging their disproportionate holdings of biodiversity into a foundation for reducing global wealth disparities.

There are several problems, however. First, recent studies of the commercial value of biodiversity suggest that the contentiousness over equitable sharing is almost certainly disproportionate to the probable booty.[13] If these studies are anywhere near correct, and no rush of pharmaceutical houses is materialising to cast doubts on them,[14] one is reminded how the Law of the Sea negotiations were complicated and prolonged by heated efforts to divide up the riches of sea-bed manganese nodules, riches that have even today failed to materialise.

Second, whatever the actual magnitude of the wealth — only time will tell — the moral case for awarding the host countries more than the market price is uncertain. In what manner does one divide *equitably* among suppliers, processors and others? Countries that have had the good fortune to harbour biological hot spots are as entitled to some reward as are states that turned out to harbour oil and other natural resources. On the other hand, it is equally true that it is the expanding technological capacity of the DCs, specifically, the increased ability to process specimens and synthesise molecules, that is enhancing the value of the forestland. Without the DC's biotechnology, the biodiversity assets would be leaves and bark. Moreover, in exploiting genetic resources, developed country firms are hardly committing bio-piracy. The probability of any plant resulting in a marketable pharmaceutical product has been estimated at between 1 in 1 000 and 1 in 10 000.[15] Even when a promising drug has been located, the costs of bringing it to market are substantial (Dimasi *et al.*, 1991).

Hence, unlike piracy on the high seas, which involves exchanging wealth at sword point, and which can be unambiguously and universally condemned, bio-prospecting is a co-operative, wealth increasing activity. Both sides enter into the “mining” agreement willingly. Each makes a contribution it can point to. Under these circumstances, with no consensus of moral intuitions that one side is acting evilly (like mistreatment of prisoners of war, or genocide), I am not sure how one is to divide the fruits "equitably"other than by market negotiation. If one nation, A, is willing to make one of its hot spots available for bio-prospecting for USD 1/hectare per year, while others insist that nothing less than USD 10/hectare is fair, is anyone really prepared, in the name of morals, to deny A the sovereign power to strike up a deal at USD 1? The CBD, as presently written, provides no basis for forcing such a result.

In all events, realistically, the more critical moral question is the other side of the coin; not how to divide the (easily exaggerated) bounty that biodiversity will yield, but how to apportion the burden that effective biodiversity conservation will certainly require. On a theoretical level, one can put the issue of burden-sharing in its largest frame:

> …if a duty to conserve the environment exists…does it rest on all humankind as a corollary of the…Biodiversity Convention [designating] biodiversity a common concern of humankind? Or does the duty rest upon states in whose territory the biodiversity is found, as a consequence of the fact that the Convention [makes, states] responsible for conserving their biological diversity and for using their biological resources in a sustainable manner? (Yamin 1995)

Although there may be a duty to conserve, as a practical matter, in a world marked by gross disparities in wealth, the safeguarding of valuable ecosystems and species, particularly those that cannot pay their own way from bio-prospecting, eco-tourism, and other sustainable uses, will require a transfer of funds from Rich to Poor nations. Such transfers are anticipated in Article 20, which mandates that the developed countries pay the undeveloped countries the latter's agreed full incremental costs of meeting the Convention's obligations.

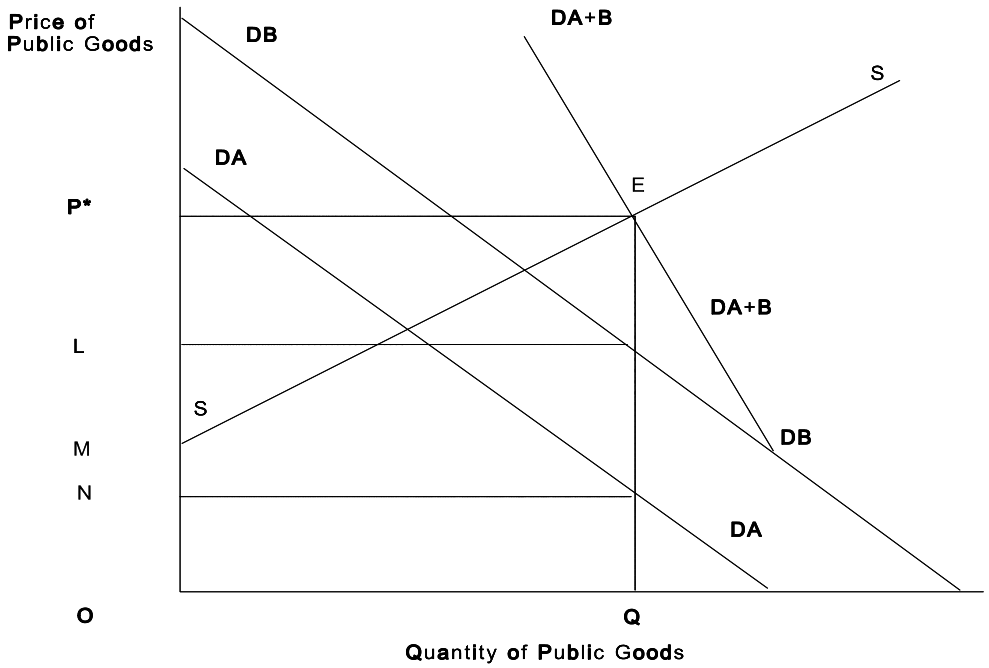
The introduction of equity in this form only raises further questions, and not merely the obvious one, how agreed full incremental costs are to be measured. Inasmuch as there are not nearly enough funds to pay for a fraction of the things that poor countries may be obliged to do, the most urgent question is on the fund-raising, not the fund-distributing side. What division of the costs is fair as among suppliers of the financial resources? How much should Germany contribute, and how much Japan?

To answer this question, imagine a particular Antarctic ecosystem inhabited by a population of penguins, seals, crabs and so on. Let us assume that there are costs to maintaining the physical extent and the somehow measured "genetic distance" of the assorted life forms in the ecosystem. (Costs presumably include opportunity costs of foregone mineral exploration and the expenses of policing invasions of tourists and ocean litter.) Assume for simplicity a world of two nations, A and B. Both value the environment in its pristine form—as measured by "existence value," "legacy value," or otherwise. But A and B value it differently: B more than A.

In the accompanying figure the line SS displays the supply schedule reflecting the marginal costs of conserving and perhaps expanding the extent and integrity of the protected area (Musgrave and Musgrave 1989). D_A and D_B represent the respective demand curves of A and B for levels of ecosystem.[16] D_{A+B} is the summation of their demand curves. OQ* is therefore the quantity/quality of the optimal ecosystem. The "price" p* (Op*) is the efficient outlay. A's share of the cost is ON, corresponding to A's benefit. B's share is OL. (ON + NL = Op*.)

Can this solution - with its optimum level and its differentiated contributions - be achieved? Even with our hypothetical world of only two persons, it is unlikely. Driving the supply of public goods by willingness to pay tilts conservation efforts towards the preferences of the wealthy, which is a sore point with the poor, Moreover, effectuation depends on both A and B revealing their true preferences. But both parties have an incentive to understate and leave the other to underwrite a share disproportionate to the true benefits it foresees. And when we consider a real world - one in which there are 193 parties to the CBD, the amount of opportunistic behaviour is almost certain to increase. The world is not likely to get even the beggarly "supply" of biodiversity that it (truly) desires.

Figure 1
Provision for Supply of Public Goods



Conclusion

It is of course premature to pass judgment on the CBD. After all, how does one gage the success of a multilateral treaty? We may come to count the CBD a success if it succeeds solely in focusing attention and forming consensus that will be important for long-term policy choices, even though the choices may be made outside the CBD framework.

On the other hand, it is fair to say that in the years since Rio, biodiversity loss has not been stanched. Habitats continue to vanish. The national commitments to identify each party's biodiversity under threat and the formulation of national responses lag. Those who viewed the CBD as providing opportunity to secure the touted riches of genetic resources have been disappointed. The riches, much planned for by the parties, simply have not materialised. It is unlikely that the CBD will become a significant conduit for the transfer of wealth and technology.

This does not mean the CBD has had no impact. It is unclear whether it has had greater impact, in the sense of establishing protected areas, managing reserves, funding *ex situ* conservation and seed banks, etc., than what has been achieved outside its agency: through other national action, multilateral arrangements and various non-public organisations such as the Rain Forest Trust Fund, and Conservation International (World Bank Environment Department Working Paper 29, 1995).

The CBD was, and continues to be, the depositary of considerable energies and hopes. Lamentably, before the CBD was formed, a viable strategic conservation plan had already been formulated by IUCN, WRI and others (World Bank 1992). If we adopt the World Conservation Strategy as the starting point, progress in the intervening thirty years has been disappointing. The question for environmentalists is thus, how to salvage and get that good and idealistic work back on track.

Patience will be required, for one thing. And some patience is deserved. In contrast with new domestic environmental legislation, which can be cloned onto an existing structure of bureaucrats, enforcement agencies, and so on, the governance of each new multilateral regime has to be built from the bottom up, on its own independent foundation, with unreliable public and national support. Long, frustrating, often windy start-up periods are the rule.

In all events, with so many centrifugal forces pulling the COP outwards from its core conservation objectives, it will be all the more important for sober forces within the regime to remind themselves, and others, of the central tasks and opportunities. A wise path for the Parties would be (1) to agree upon the highest priorities for action; (2) to rate which of them are already being moderately well-attended to by alternative regimes, such as CITES, IWC, the Antarctic Treaty System, etc.; and (3) having identified the most significant gaps, to structure their own efforts accordingly.

For example, the CBD examination of marine and coastal biodiversity might do well to avoid duplicating the work of the UNEP Regional Seas Program and of other agreements already in place, and instead seek a co-ordinating role.

In general, how can the CBD framework be steered in directions where it can do more good than the same resources channelled through alternate, existing agencies for change? In a world willing to offer dwindling resources for medicating the planet, this is a major question that remains to be answered.

Notes

1. Convention on Biological Diversity of the United Nations Conference on the Environment and Development, 3-14 June, 1992, U.N. Doc. DPI/1307, reprinted in 31 I.L.M. 818 (1992) [hereinafter CBD].

2. World Resources Institute *et al*., Global Biodiversity Strategy (1992).

3. "In a world rife with street shootings, grinding inequity and ethnic wars of extermination, it is hard to get worked up over 'ecosystems.'" Oliver Hauk, "Coming to Grips with Biodiversity", 8, *Tulane Envtl*., L. J. 3 (*preface*, 1994).

4. More than half of the interviewees in the European poll strongly agreed that it was important to halt biodiversity loss. In the US poll, 69% of Americans "strongly agreed" that they have a personal and 65% a moral responsibility to protect all animal and plant life.

5. The Dobson Unit (DU) is named after early atmospheric ozone pioneer G. M. B. Dobson. A DU measures how thick the layer of ozone would be if it were compressed into one layer at 0 degrees Celsius and with a pressure of one atmosphere (1 atm = 1013.25 millibars) above it. Every 0.01 millimeter thickness of the layer is equal to one Dobson Unit. National Aeronautic and Space Adminstration, Glossary of Terms, http://hyperion.gsfc.nasa.gov/Reading_room/glossary.html.

6. An excellent summary of the challenge can be found in Andrew Metrick & Martin L. Weitzman, "Conflicts and Choices in Biodiversity Conservation*"*, 12 *J. Econ. Pers.* 21, (1998) hereinafter (Metrick & Weitzman, *Conflicts and Choices)*; *see also* the WORLDMAP project website maintained by the Natural History Museum's Biogeography & Conservation Lab, at http://www.nhm.ac.uk/science/projects/worldmap/. Metrick and Weitzman's model, which ranks individual species, has to account for synergistic values of the services species provide in combinations, for example, of {a, b, and c} as compared with {a, e, and f}. That is, the ranking has to be flexible enough to account for variations introduced by a combination of species. The survival of a species, too, is heavily dependent on co-existent species admitted to the Ark, another factor suggesting the advisability of evaluating *sets* of species. I understand the authors to be maintaining that their individual-oriented framework is, indeed, flexible enough to account for effects of combinations. *See* Andrew Metrick & Martin L. Weitzman, "*Reply"*, 13 *J. Econ Persp*. 239, (1999) hereinafter (Metrick & Weitzman, *Reply* 1999*)* (explaining that joint serial probabilities can be handled in the Noah's Ark framework).

7. For example, "some biologists discern 200 kinds of British blackberry; others might list 20, or two or three." C. Claiborne Ray, "Q & A: The Species Census*"*, *N.Y. Times*, 30 November, 1999, at F2.

8. *See* Catherine Dold, "*To Protect Biodiversity, Expert Says, Save the Dry Land"*, *N.Y. Times*, 7 April, 1992, at C4.

9. The classic volume remains *Man's Role in Changing the Face of the Earth* (William L. Thomas (ed.) (1956).

10. *See* Colin Macilwain, "When Rhetoric Hits Reality in Debate on Bioprospecting", 392 *Nature* 535 (9 April, 1998) (slow-down in bioprospecting attributed to growing reliance of pharmaceutical companies on combinatorial chemistry).

11. This is essentially the basis of the WORLDMAP project being conducted by P. H. Williams and his team centred at the Natural History Museum's Biogeography & Conservation Lab in London. The project and its progress in sorting organism occurrence within grid cells and polygon sub-areas of the world is described at http://www.nhm.ac.uk/science/projects/worldmap/. Regarding the task of combinatorial "scoring" of efficient sets, see *www.nhm.ac.uk/science/projects/worldmap/priority/steps.htm*.

12. Suggested by the analysis of R.I. Vane-Wright, "Identifying Priorities for the Conservation of Biodiversity: Systematic Biological Criteria within a Socio-Political Framework", Kevin J. Gaston, (ed.), *Biodiversity: a Biology of Numbers and Differences* 309-44 (1996).

13. R. David Simpson, Roger A. Sedjo and John W. Reid, using what they label highly optimistic assumptions to estimate the pharmaceutical value of the world's top 18 "hot spots," conclude that some areas of Western Ecuador might be worth $20 a hectare as bio-prospecting sites, but their median is only about $2. R. David Simpson *et al.*, "Valuing Diversity for Use in Pharmaceutical Research*"*, 109 *J. Pol. Econ.* at 163-185 (1996). These, remember, are "hot spots." Using a different methodology, Robert Mendelsohn and Michael J. Balick conclude that the world's 3 billion hectares of tropical forest are worth on average $.90 to $1.32 per hectare. Robert Mendelsohn and Michael J. Balick, "The Value of Undiscovered Pharmaceuticals in Tropical Forests", 49 *Econ. Botany* 223.

14. It is common to refer to the contract between Merck & Co. and InBio as the prototype of many contracts that will follow. But thus far there are few followers; and as of July 1995 Merck reportedly had made no return on its investment. *See* V. Cheng, "Useful Drugs are Said to Lie Hidden in Tropical Forests", *N.Y. Times*, 27 June, 1995, at 4, col. 1.

15. Studies of the U.S. pharmaceutical industry indicate a commercially marketable drug requires an average USD 230 million and 12 years to develop. Walter V. Reid, *et a*l., "A New Lease on Life", in *Biodiversity Prospecting* 47, World Resources Institute (eds.) 1993.

16. Demand is expressed in "willingness to pay," which raises the objection that a stronger voice is given to the preferences of rich than of poor nations.

References

The Antarctic Treaty, 1 December 1959, 12 U.S.T. 794.

Baskin, Y. (1994), "Ecologists Dare to Ask: How Much Does Diversity Matter?", 264 *Sci.* 202. Productivity appears to peak after a relatively small number of species has been reached. See id. at 203.

Belden, Russonello & Stewart (2002), *Research & Communications, Americans and Biodiversity: New Perspectives in 2002*.

CBD (1992) Art. 6-14, 25, 27, 28, 29.

CITES Convention on International Trade in Endangered Species of Wild Flora and Fauna, 3 March, 1973, 27 U.S.T. 1087.

Deuteronomy 20: 19-20.

Dimasi A., *et al*. (1991), "Costs of Innovation in the Pharmaceutical Industry", 10 *J. Health econ*. 107.

European Commission (2007), *Attitudes of Europeans Towards the Issue of Biodiversity* (Survey conducted by the Gallup Organisation Hungary upon the request of Directorate-General Environment) available at http://ec.europa.eu/public_opinion/flash/fl_219_en.pdf

Farhana, Y. (1995), "Biodiversity, Ethics and International Law", *Int'l Affairs* 71.3, 536-537.

Harte, J. (2001), "Land Use, Biodiversity, and Ecosystem Integrity", 27 *Ecology Law Quarterly*, 929, 950-51.

Kaiser, J. (2000),"Rift over Biodiversity Divides Ecologists", 289 *Sci*. 1282 (questioning whether data on biodiversity is robust enough to inform public policy).

Martin L. Weitzman (1992), "On Diversity", 107 Q. J. Econ. 363;

Martinez N.D., "Defining and Measuring Functional Aspects of Biodiversity", in Biodiversity: a Biology of Numbers and Differences, supra note 10, at 114-16.

Metrick A.and M.L.Weitzman (1999), "Reply", 13 *J. Econ. Persp.* 239.

Metrick, A. and M. L. Weitzman (1998), "Conflicts and Choices in Biodiversity Conservation", 12 *J. Econ. Pers.* 21.

Musgrave, R.A. & P. B. Musgrave (1989), *Public Finance in Theory and Practice* 46, 5th (ed.).

Neo D. Martinez, "Defining and Measuring Functional Aspects of Biodiversity", in Biodiversity: a Biology of Numbers and Differences, supra note 10, at 114-16.

Saggs, H.W.F. (1989), *Civilisation Before Greece and Rome*, Yale University Press, New Haven and London.

Solow, A. *et al*. (1993), "On the Measurement of Biological Diversity", 24 *J. Envtl. Econ. & Mgmt*. 62.

Williams, Paul H. and C.J. Humphries, "Comparing Character Diversity Among Biotas", *Biodiversity: A Biology of Numbers and Differences* 55, Kevin J. Gaston (ed.), (1996) (citing Bryan G. Norton, "On What We Should Save: The Role of Culture in Determining Conservation Targets", in *Systematics and Conservation Evaluation*, 23-39, P.L. Forey et al. (eds.) (1994).

World Bank Environment Department (1995), "Mainstreaming Biodiversity In Development: A World Bank Assistance Strategy For Implementing The Convention On Biological Diversity", *World Bank, Environment Department Paper 29 (Biodiversity Series)* (November 1995).

THE DEVELOPMENT OF FAIR TRADE LABELS — A MARKET SOLUTION TO A SOCIETAL CONCERN?

Dr. Helena Johansson[1]

Consumers are increasingly taking an interest in how their foods are produced. Concerns are being voiced that practices that are environmentally harmful, involve maltreatment of animals, or exploit poor and vulnerable farmers, should be avoided. The term "societal concerns" has been coined for concerns that are derived from broadly shared values within a society, often entailing an ethical dimension. Many societal concerns are shared across countries, but depending on differences in, for example, development level, history, religion or risk perception, policy responses may differ or the weight assigned to a specific concern may differ. The Fairtrade labelling system addresses a societal concern among consumers in developed countries; the improvement of working and living conditions for export-oriented small-scale farmers and hired labour in developing countries. The idea is that consumers in rich parts of the world can contribute to better conditions for them by paying at least a minimum price for their produce, in addition to demanding good working conditions and sustainable production methods on farms and plantations.

Four main questions are addressed in this chapter: *i*) Is the labelling system beneficial for the farmers? *ii)* If so, can the benefits of Fairtrade be extended to the vast majority of poor farmers? *iii)* Are Fairtrade standards efficient in handling the problems that poor farmers are faced with? and finally, *iv)* How efficient is the Fairtrade scheme in transferring resources from consumers to producers?

The aim in this chapter is to discuss what can be learned from the Fairtrade labelling system when it comes to handling societal concerns through market mechanisms and consumer choice. The perspective is from both the producer and consumer points of view. In the examples given, the focus is generally on coffee. Along with bananas, coffee is the most important Fairtrade commodity in terms of value and volume (Ponte 2002a). Coffee is also one of the few agricultural commodities dominated by small-scale farmers. The principal line of reasoning, though, is valid for the broader range of agricultural products covered by the system. The chapter does not cover all potential impacts of the Fairtrade system but focuses on central aspects in the attempt to give a comprehensive picture of benefits and drawbacks in an efficiency perspective. Finally, the focus is primarily on farmers but it can be noted that goods produced by organised hired workers on plantations are also covered by the scheme.

1. AgriFood Economics Centre, Lund University, Sweden.

Fair trade background

The fair trade movement started in the 1940-50s. Various religious and political groups aimed at initiating trade co-operation with producers in developing countries, to provide market access to developed countries on non-exploitive terms. Initially, mostly handicrafts were sold by charity organisations, at church bazaars and later in so-called Worldshops. However, relying on a few, small and scattered outlets for the products meant reaching few consumers. If the goods could be on display in conventional stores, the sales potential would be much greater, but an attribute like "good working conditions" or "a fair price to the producer" is a credence attribute, i.e. it is related to the production process and cannot be discerned by the consumer by observing the final good. An item of goods traded according to Fair Trade principles simply does not look any different from a traditionally traded item. A way to handle this asymmetric information problem, in which the producer but not the consumer, knows of the underlying production process, is to label the goods as a signal to the consumers that it contains special attributes that are otherwise difficult to detect. The first fair trade label, Stiching Max Havelvaar, was introduced in the Netherlands in 1988. Several different national labels followed and sales took off.

Table 1. Developing-country problems and Fair Trade solutions

Issue/market failure	Fair Trade solution
Small-scale farmers lack information about prices.	Farmers must be organised in co-operatives; can pool resources to access information.
Smallholder farmers lack information about market requirements.	Farmers must be organised in co-operatives; can pool resources to send co-operative leaders to visit trade shows and clients to learn about quality requirements. Direct long-term relations are required; clients more likely to share information.
Smallholder farms lack access to financial markets.	Importers must pre-finance up to 60% of seasonal crops.
Smallholder farms are risk-averse and do not diversify.	No direct solution – raising income through Fair Trade may decrease risk aversion.
Weak enforcement of labour law in producing countries.	Standards require that producers adhere to ILO standards regarding minimum wages, child labour, working conditions, freedom to join unions.
World prices not covering cost of production.	Fair Trade floor price guaranteed no matter how low the world price falls.
In effort to lower costs, less sustainable production methods are used in the developing world, harming workers and the environment.	Fair Trade floor price covers costs of sustainable production. Environmental standards prohibit certain chemicals and land over-use; premium required for certified organic product.
Farmers and farm workers in the developing countries are poor.	Fair Trade guarantees minimum or regional wages for workers and price floors for smallholders. Social premium guaranteed, which must be spent on development projects to improve wellbeing of farm workers and smallholder farmers.

Source: Nic.

In 2002, the international label Fairtrade was launched by the Fairtrade Labelling Organisations International (FLO) in order to replace the multitude of national labels with one single label and one set of certification rules, the goal being increased consumer awareness and streamlined producer standards, irrespective of export market. Today, almost all national Fair Trade labelling initiatives are members of FLO.[1] The Fairtrade system is based on a number of perceived market failures that are claimed to lower the return to farmers and expose them to a high degree of price volatility (Ronchi, 2006). Table 1 presents the Fair Trade movements' conceptualisation of these failures and the corresponding Fair Trade solutions, as interpreted by Nicholls and Opal (2006). The main problems are viewed to be low world market prices in addition to low and imperfectly competitive prices paid to farmers by middlemen (e.g. EFTA, 2001).

Based on the Fair Trade principles, the Fairtrade standards are designed to address the imbalance of power in trading relationships, unstable markets and the injustices of conventional trade, according to FLO. The key objectives are stated to be (FLOa, 2010):

- to ensure that producers receive prices that cover their average costs of sustainable production;
- to provide an additional Fairtrade Premium which can be invested in projects that enhance social, economic and environmental development;
- to enable pre-financing for producers who require it;
- to facilitate long-term trading partnerships and enable greater producer control over the trading process;
- to set clear minimum and progressive criteria to ensure that the conditions of production and trade of all Fairtrade certified products are socially, economically fair and environmentally responsible.

The Fairtrade labelling system has three main components (FLOa 2010, FINE 2001): Firstly, a form of price support, which consists of a *i*) guaranteed minimum price and a *ii)* social premium. The minimum price comes into effect when world market prices are low. This means that the farmer is guaranteed a certain lowest price, irrespective of how low the world market price may be. In addition, a social premium is paid to the producer organisation to be used *e.g.*, for building schools or providing credit at a low interest rate: Secondly, different standards that regulate production conditions and the relation between the buyer and producer organisation, and thirdly, a requirement that farmers have to be organised into a democratic form as a co-operative, association or similar organisation which is democratically controlled by its members, while workers have the right to join an independent union to collectively negotiate their working conditions. Only small-scale farmers can be covered by the system.

Mainly food products are covered by the system, *e.g.* coffee, tea and bananas, but there are also standards for products like flowers, cotton and footballs. Globally, consumers spent approximately EUR 2.9 billion on products certified in accordance with FLO's criteria in 2008 (FLO 2010). In recent years, growth rates have been impressive. The sales of Fairtrade products have increased by an average of 40% per year for the last five years (FLOb, 2010). In 2008, the rate of growth was 22% (FLO, 2010). However, despite rapid growth, the share of Fairtrade goods in total production remains small. For instance, only 1% of the total yearly banana harvest is Fairtrade certified (Fairtrade/Rättvisemärkt, 2010).

Producer income perspective

In this part we discuss how farmers are affected by belonging to a certified co-operative. The first question is whether farmers gain from belonging to a Fairtrade certified organisation. If they do, the next question is whether this is a model that can be beneficial to farmers on a larger scale.

The minimum price as income insurance

An important part of the Fairtrade system is the minimum price, the purpose of which is to safeguard farmers' incomes when international market prices fall. In the last two decades, international coffee markets for green coffee have displayed considerable real price volatility and a drastic general decline in prices reaching the lowest price level in over 100 years in 2002[2] (Ponten, 2002a).

Several studies have found that farmers belonging to Fairtrade certified co-operatives receive higher prices than traditional farmers in times of low world market prices, and studies have also found a positive impact on incomes for Fairtrade certified co-operatives compared to traditional farmers (Bacon, 2005; Calo and Wise, 2005, Murray, Raynolds and Taylor, 2003; and Nicholas and Opaln, 2005). There are few studies comparing farmers when world market prices are above the minimum price, one exception being Mendoza and Bastiaensen (2003). They found no notable differences between prices received by Fairtrade certified co-operatives and traditional farmers during years when world market prices are higher than the minimum price, thus supporting the notion that the minimum price acts as an income buffer (Mendoza and Bastiaensen, 2003). However, producers rarely sell their whole produce as Fairtrade, because of the lack of consumer demand, which means that the average price received is lower than the minimum price. In fact, only 30% of the total amount of the certified production gets paid the minimum price and receives the social premium (Fairtrade/Rättvisemärkt, 2010b). This means that the income buffer effect is smaller than the level of the minimum price indicates.

Thus, the Fairtrade system functions, to some extent, as insurance for farmers belonging to certified co-operatives. FLO states that "Fairtrade is an alternative approach to conventional trade" (FLO, 2009a). To truly be an alternative, it needs to include a large share of the world's poor farmers in the system. For instance, most of the world's coffee is grown by small-scale farmers having access to only a few hectares of land. Could most of those, potentially, be covered by the scheme?

Minimum prices for all?

The answer to this question requires an understanding of why prices are low in the first place, and whether a minimum price tackles the underlying mechanisms causing prices to be low. It is also necessary to have a perspective on the full extent of poverty.

Starting with the low world market prices for coffee, the main explanation is structural changes in supply leading to oversupply.[3] In the early 1990s, the international markets for green coffee collapsed.[4] Prices recovered in the mid-1990s due to alternating droughts and frost in Brazil, but plummeted again in the early 2000s. At the depth of the crisis, Oxfam (2002) estimated that farmers received 25% of the coffee price paid in 1960, taking inflation into account. Farmers were severely hit. Oxfam (2002) reports that the incidence of poverty and hunger increased sharply among affected farmers, children were taken out of school and healthcare deteriorated.

What had happened was that several events had coincided, leading to a paradigm shift in the nature of supply (Lewin *et al.,* 2003 and Ponte, 2002a). The International Coffee Agreement (ICA) system, which had rather successfully controlled production and prices since 1962, was undermined by free-riding and disagreements about quota-sizes (Ponte 2002a). An increasing volume of coffee was traded by non-members at the same time as large coffee producers like Brazil and Indonesia turned to a more export-oriented development strategy. In addition, technical change, most notably in Brazil, led to increased productivity. As a consequence, a considerable increase in the supply of coffee followed from, most importantly, Brazil and Vietnam. A large increase in supply, combined with modest increases in demand, led to a sharp decline in price.

In this situation, a minimum price that, for example, equals the world market price before the slump, cannot cover all producers and all their output, simply because there is so much more coffee available than the consumers want, at that price. That lack of demand is a problem is illustrated by FLO estimates showing that the certified coffee export capacity in Latin America, Africa and Asia was roughly seven times greater than the actual Fairtrade exports during the depth of the coffee crisis (Murray, Raynolds and Taylor, 2003). In addition, Murray, Raynolds and Taylor (2003) noted that many producer groups, which could meet the Fairtrade standards, were not included in the system because of the lack of demand. Today, slightly more than a million farmers and workers are estimated by FLO to be covered by the Fairtrade system (FLOa 2010). To put this figure into perspective, it can be noted that there are currently 25 million producers of coffee, most of them small-scale farmers, and 880 million poor in the rural areas of developing countries, a majority of whom are directly or indirectly dependent on farming for their living (World Bank, 2007).

The minimum price and structural change

That prices should cover production costs is a chief Fairtrade concern. During the coffee crisis, Oxfam (2002), among others, found that many producers faced prices below costs (Oxfam, 2002). In the prevailing situation, this was not due to an inherent unfairness of the conventional trading system, but to the increase in supply in an inherently price-volatile market.[5] The market price is simply a clearing mechanism, falling when supply is larger than demand. A low market price forces some high-cost producers to exit, reducing the amount of oversupply, and in the longer run the market price will cover the costs of (at least) the low-cost producers. That high-cost producers are replaced by low-cost producers is not a problem *per se*. On the contrary, it results in more efficient production and lower prices for consumers. Such structural change is constantly taking place to the benefit of society. Instead, the problem is the high adjustment costs faced by deprived high-cost farmers living in countries with poor safety nets. Structural change is often very hard on the poor.

For some farmers, it could be a good idea to continue to grow a crop, despite low prices. That is the case for farmers having a potential to be successful. Berndt (2007), however, indicates that several of the Fairtrade certified co-operatives in Costa Rica are situated in Zona Norte, an area with inferior conditions for coffee production, while only one Fairtrade co-operative is located in Los Santos, which is the best area for coffee production in the country. Instead, it is better to support those having the best prospects for success to remain in business, and instead help farmers with less good prospects to find new income sources. For them, to remain in a sector with low returns may not be a good long-term strategy. Lewin *et al.* (2004) note that, between 1998 and 2001, poverty rates increased by more than 2% among those farmers who remained in the coffee sector. At the same time, rural poverty rates as a whole fell by more than 6%.

This is not to say that it is easy for farmers to find new income sources, on the contrary. Difficulties to obtain loans, low levels of education and lack of safety-nets, for instance, are important obstacles (McCulloch, Winters and Cirera, 2001). In general, however, to achieve long-term income growth for farmers in developing countries, a transformation towards fewer, larger and more efficient farms is needed. It is important to facilitate structural transformation so that less productive farmers may find new income sources, while more productive farmers may expand.[6] From this perspective, a minimum price has its drawbacks. Most importantly, the income support is linked to production, *i.e.*, the farmers must grow specific crops, like coffee or bananas, to be eligible for the Fairtrade certification. This may create lock-in effects as the farmers cannot change crops if they want to keep the premium.

If the objective of Fairtrade is to include many farmers, the principle with a minimum price linked to production is particularly problematic as it hinders overall structural change. Conserving a situation with many small-scale farmers means that their income growth will continue to be slow. As discussed above, however, it is not even possible to provide a minimum price to a major share of the poor farmers in developing countries. A main problem is how to reconcile the future gains of structural change with the current costs that poor farmers face. The Fairtrade system can be said to try to reduce the consequences of structural change and low prices, by providing the minimum price. The objective as such is good, but the remedy is problematic.

If, instead of having the intention of being an alternative system to conventional trade, the objective of Fairtrade is to create a niche-market for a limited number of farmers, the situation will be different. Then, it will be possible to give some farmers the opportunity to benefit from the minimum price and the social premium, without having to worry about how incomes are to be enhanced for the majority of poor small-scale farmers. It is possible to have a price higher than the world market price for a limited number of farmers and for a variety of a product.

To conclude, rather than being an alternative to conventional international trade, the Fairtrade labelling scheme may be seen as a differentiated good with certain attributes that some consumers are interested in, *i.e.* a niche-market. In effect, as the Fairtrade label is constructed and actually works, it is a niche-market. As such it is not a means to combat poverty to any significant extent, neither is it an example of an alternative and fairer trading system. This is not to say that the farmers included do not benefit from the scheme, but simply that it is not a large-scale alternative. If Fairtrade would like to make a difference for a large number of farmers and workers, a different strategy is needed.

Agriculture and development in a wider perspective

When discussing and assessing the potential contributions of Fairtrade to development and poverty reduction, it is essential to understand the mechanisms that contribute to income growth in rural areas.

Agriculture has a crucial role in promoting economic development in developing countries. This was highlighted when the World Bank devoted its World Development Report 2008 fully to the role of agriculture in development, and emphasised that agriculture is central for meeting the United Nation Millennium Goal of halving poverty and hunger by 2015. One reason is that so many poor people depend on agriculture. Of the 5.5 billion people living in developing countries, 3 billion, nearly half of humanity, live in rural areas (World Bank, 2007). Another reason is that farm households generally are poorer than urban households in developing countries (Aksoy and Beghin, 2005).

The early development in Europe, the United States and Japan shows that increased productivity in agriculture was a catalyst to industrialisation and economic development. The surplus from agriculture was invested in other sectors and over time the share of agriculture in the economy decreased as other sectors developed. The World Bank shows that GDP growth originating in the agricultural sector is at least twice as effective in reducing poverty as growth originating in any other sector. In China and India, for example, rapid growth in agriculture due to technological innovation and market liberalisation lead to considerable decline in rural poverty (World Bank, 2007). The World Bank concludes that a combination of underinvestment in productivity enhancing measures combined with policies that excessively tax agriculture, is the main explanation for slow per capita growth and little structural transformation.

Producer socio-economic perspective

In addition to the direct income effects, Fairtrade aims to achieve supplementary socioeconomic goals. Incomes are expected to be influenced, e.g. by strengthened bargain power, but also additional effects are expected. The problems that have been highlighted by the Fair Trade movement are, for example, that farmers have difficulties obtaining credit, that there are too few public goods such as schools, that farmers have a weak negotiating position *vis-à-vis* domestic middlemen and that weak legislation leads to low environmental responsibility and poor working conditions for hired labour. The Fairtrade means are standards, the social premium and the requirement of democratic organisation of farmers or workers. The question is whether Fairtrade has a positive impact on those problems and whether the suggested solutions are efficient? To begin with, we start by looking at the transfer efficiency of the Fairtrade system; how large a share of the price premium paid by the consumer does the intended recipient benefit from?

Transfer efficiency

When a sum of money is to be transferred from consumers via a shop, wholesaler, buyer, roastery, and co-operative to finally reach a coffee farmer, costs are incurred for maintaining the system. The costs of certification raise the production costs of Fairtrade products; costs that burden the farmers and reduce the income effect of the minimum price. Small volumes also mean that the production cost per unit can be higher than conventional production, because of the lack of economies of scale. There is also a risk that others, not the intended recipients, are enriched along the way. If farmers are tenants, some of their additional income may for instance go to the landholder in the form of increased rent.

In the market place, retailers or cafés can charge consumers a higher price than justified to cover the costs for the system. This is a form of price discrimination, *i.e.* that retailers sell varieties of a product to consumers at different prices (Harford, 2006). For example, Zehner (2002) estimates that Transfair[7] producers receive 45% of the increment in price paid for a Transfair good compared with a conventional alternative, while Harford (2006) shows that only 10% of the price increment for a cup of a Fairtrade coffee in a café goes to the farmer. In the case of bananas sold in the UK, Oppenheimer (2005) finds that only 6% of the price increment for Fairtrade bananas goes to the farmers.[8] There are also examples where there is no price premium for the Fairtrade alternative compared with a conventional alternative. For instance, when Nordic Sugar introduced the Fairtrade mark on cane sugar cubes in Sweden, they left the consumer price unchanged. In such a case price discrimination is not a problem. In comparison, Swedish authorities demand that 75% of the amount collected for charity is to reach the intended recipient, if an organisation is to be allowed the use of a charity bank account number for their transactions. Low transfer efficiency means that a small share of

the donation made by the consumer reaches the farmer. Hence, buying a Fairtrade product can be an inefficient way to support the incomes of poor farmers and the construction of schools in developing countries.

It is sometimes argued that the issue of transfer efficiency is irrelevant as the Fairtrade system guarantees a minimum price, not that a particular share of the price premium is to reach the farmer. It is also argued that Fairtrade cannot be compared with charity, since Fairtrade is a trading arrangement. However, for the social premium the comparison is directly relevant, as it is aimed for investments akin to those intended by aid or charity. Also, if consumers decide to spend less money on charity when buying Fairtrade goods, the poor lose in total if the Fairtrade system is less efficient than the charity system. Finally, it can simply be argued that a system with the objective to transfer resources from rich to poor should be as efficient as possible. Hence, the issue of efficiency cannot be irrelevant.

Socioeconomic effects

A key Fair Trade movement assumption is that producers have a weak negotiation position vis-à-vis middlemen and, therefore, face a low share of returns. This assumption forms the ideological support of co-operative organisations (Ronchi, 2006). The market power assumption is tested by Ronchi (2006) in an informative study using data from coffee cultivation in Costa Rica. There are three types of ownership of mills to which the producers in Costa Rica can deliver; co-operative, private domestic or private multinational processing mills. She found evidence of market power, *i.e*. that a group of mills pay lower producer prices than explained by cost recovery and scale inefficiency. Co-operative mills were found to exercise lower market power than private domestic mills and she also found evidence of an additional and reinforcing "Fairtrade effect". It was further found that multinational mill/exporters also exercise less market power than private domestic mills, and that the sum of the coefficient quantifying the impact of co-operative organisations and the separate "Fairtrade effect" on markdowns was not statistically distinct from the estimated coefficient on the effect of multinational firm. Ronchi suggest that "[o]ne interpretation is that Fairtrade does for co-operatives what vertical integration into multinational firms does for the non-co-operative, domestically owned firm". That is, to strengthen their position towards domestic middlemen, it is important for local producers to link to the world market; one way is to belong to a Fairtrade certified organisation, and another way is through direct interaction with multinational firms.

A second key Fair Trade movement assumption is that farmers face credit constraints. Therefore, Fairtrade standards require buyers to give a financial advance on contracts, called pre-financing, if producers ask for it (FLO, 2010). Similarly, the income generated by the minimum price can be used to develop or diversify production. The underlying main problem, though, is a malfunctioning local credit market. Instead of providing conditioned credits tied to the growing of a specific crop; a much more viable solution in the longer run would be to provide micro-credits without formal collateral for the poor to spur entrepreneurship. The rise of microfinance has given millions of poor people access to loans, but the World Bank (2007) notes that it has not yet reached small-scale farmers to any significant extent. As pointed out above, the best business opportunity for a farmer in the longer run may not be to continue with the current crops, but to diversify or to find non-agricultural incomes.

A third Fair Trade movement key assumption is that low prices may harm workers and the environment if less sustainable production methods are used in an effort to lower costs of production. The Fairtrade requirements for hired workers follow the ILO-standards.[9] The

Fairtrade standards also include basic environmental requirements; minimised and safe use of agrochemicals, a proper and safe management of waste, maintenance of soil fertility and water resources (FLO, 2010). The standards also include requirements regarding how the price support shall be used. In countries with a weak environmental and labour legislation, or a weak control of compliance with existing legislation, the Fairtrade standards can improve conditions. There is, however, an inherent risk of corruption due to the combination of money to be earned and costs of compliance. Hence, an independent agency, in this case FLO-CERT, is needed to control that Fairtrade marked goods are in fact produced and traded in accordance with the requirements. If the goals of Fairtrade are to be reached, a necessary condition is that the control system actually works and that the standards are followed

In an article in the Financial Times, which received much attention, the certification and control process was questioned as labour hired by farmers to pick coffee were found to be paid below the minimum wage (Weitzman, 2006). Also, in a Danish documentary "The Bitter Taste of Tea", the journalists visit tea plantations in Sri Lanka, Kenya, India and Bangladesh with the purpose of exposing unsafe work environment and labour exploitation.[10] They claim to find little meaningful difference between conventional plantations and Fairtrade certified plantations in this respect.[11] It is beyond the scope of this chapter to determine whether the control process works or not. What is worth noting is that effective control and enforcement can be difficult to obtain.

The Fair Trade movement focuses on poverty alleviation and improved living condition. A key component is the social premium that the farmer organisations receive in addition to the minimum price. The idea is that the premium is to be used for building schools, healthcare, infrastructure such as irrigation systems, to provide loans at a low interest rate to farmers and suchlike. There are several examples of successful projects, for example Transfair reports that the AGOGA co-operative in Papua New Guinea has invested in a medical team, and that the CECOVASA co-operative in Peru is assisting members from indigenous groups in raising coffee quality and transitioning to certified organic production. The drawback of the system is inefficiency, as pointed out above. It is simply an inefficient way of transferring money to these types of projects. A direct financial contribution or aid would be more efficient, as a larger part of the consumers' donations may reach the recipient. Also, the costs of maintaining the Fairtrade system would be avoided.

High quality is an important attribute for many consumers. An interesting question is therefore whether Fairtrade supports attempts to enhance the level of quality. Both the minimum price and the social premium provide earnings that potentially could be invested in quality enhancing measures, implying a positive impact. For instance Calo and Wise (2005) found that Fairtrade certification has facilitated organic certification in Mexico. However, it has been noted that Fairtrade inadvertently can encourage low quality. Berndt (2007) points out a potential free-rider problem as farmers sell their produce both as Fairtrade marked and at the conventional market. He notes that when a farmer delivers his beans to the co-operative for milling they are mixed with everyone else's beans. Berndt points out that any advantage in quality the farmer might have is diminished by the quality of the rest of the coffee; it therefore pays to keep the better beans for the conventional market and deliver the lesser beans to the Fairtrade mill. Whether a positive or a negative effect on quality dominates is, however, not possible to determine.

Non-certified producer perspective

An important question is how non-certified farmers are affected by the certification scheme. According to Consumer International (2005), most commentators support the notion

that oversupply is a main factor behind poverty among coffee farmers. Hence, if being Fairtrade certified stimulates production among the certified farmers, Fairtrade can aggravate the situation for other poor farmers, as the level of output increases (see for example the discussion in The Economist 2006a, 2006b).

There are two general arguments against a link between certification and production: First, that the output level is unaffected since only the volume that consumers buy receives the Fairtrade price. Hence, there will be no contribution to coffee oversupply from Fairtrade production (Steinrücken and Jaenichen, 2007): Second, that conventional coffee and Fairtrade coffee are goods with different attributes, thus belonging to separate market segments with different and uncorrelated prices (Hayes and Moore, 2005).

The arguments, however, fail to take into account the fact that a minimum price can subsidise production sold at the world market price. It is common that Fairtrade certified farmers sell part of their output in the conventional market. If some fixed costs for coffee production are covered by the minimum price or the social premium, the conventional part will be cross-subsidised. Lower costs mean higher profitability, which in turn encourages production. Moreover, in this case conventional farmers are at a cost disadvantage, making them less competitive, which means that some producers selling conventional coffee are favoured at the expense of others, with a sub-optimal mix of producers as a result.

Further, Fairtrade goods are sometimes more expensive than conventional alternatives. Consumers have a restricted budget; if they spend money on a more expensive Fairtrade variety of a good, they will have less money for savings or consumption of other goods. An alternative is to buy a lesser quantity of the more expensive Fairtrade good, but it is also possible that the consumer buys less of something else, for example other goods that are exported from a developing country.

Altogether, poor farmers not covered by the Fairtrade system may be negatively affected by reduced demand for conventional alternatives. They may also suffer from a downward pressure on prices of conventional alternatives, if the minimum price has a production-stimulating effect. Whether or not this is the case, has to be empirically verified, but few such studies are made. There are some case studies showing that certification has led to increased production. For example, Imhof and Lee (2008) find that coffee producers in Bolivia have increased the number of hectares with coffee after certification. Pérezgrovas and Cervantes (2002) also find increased production in the co-operatives they have studied. However, an important argument against any significant impact on prices, or demand for conventional varieties, is that the Fairtrade market shares are so small that the world market prices of conventional varieties are probably not affected.

There are also arguments that the minimum price has a certain positive effect on local prices. In a study on coffee producers in Mexico, Milford (2004) found that non-certified farmers receive a higher price from buyers in areas where there are Fairtrade-certified co-operatives present. She interprets this as a positive competition promoting effect of the co-operatives' presence. In general, though, she concludes that there are few studies showing any direct positive effects on non-certified farmers.

A more wide-ranging positive effect of all certification systems with socioeconomic and/or environmental protective objectives, however, can be increased awareness among consumers, creating a demand for social responsibility among multinational firms that are active in developing countries (Becchetti, Frederico and Solferino, 2006). Hence, a potentially much larger number of farmers and workers may indirectly be affected by the movements. However, the downside is that consumption of goods originating from

developing countries may be stigmatised, leading to an overall reduction in demand. An alternative of this argument is that consumers may start to regard varieties produced in developed countries as a viable alternative to expensive Fairtrade products or socially unacceptable non-certified alternatives (Lindsay, 2004).

Consumer perspective

The evolution of fair traded goods is part of a larger trend incorporating organic food, high quality alternatives or differentiation according to origin (Boström and Klintman, 2008). The Fairtrade label gives the concerned consumer an opportunity to support certain production processes by providing information about credence attributes. This opportunity can be compared with demands sometimes raised e.g. by trade unions that the World Trade Organisation (WTO) should include minimum standards for labour, allowing for trade boycotts of non-abiding countries. The Fairtrade system enables positive action; to buy good alternatives instead of boycotting bad ones, which has several advantages (The Economist, 2006). Those consumers who cannot afford to pay a higher price (if a Fairtrade good is more expensive than a traditionally traded alternative), or do not share the underlying concern, have the alternative of buying a conventional alternative of the good instead. Furthermore, the producers do have a choice as the standards are voluntary; those who cannot abide by the rules are not forced to exit the market, which could be the case if the standards were mandatory.

How then are consumers affected by the possibility of buying goods incorporating ethical values and attributes? There are several possible effects. One is the so-called warm glow effect, the feeling of moral satisfaction obtained when contributing to a better world (Nunes and Onofri, 2004). The concept of a "fair price for work done" rather than charity may be appealing to both consumers and producers. There is also an increased consumer demand for goods with a "story" attached to them (Berlan, 2008). It may finally be seen as easier by the consumer to contribute when shopping rather than going to the trouble of making a monetary donation to a charity organisation (Steinrücken and Jaenichen, 2007). However, the fact that only a very small share of poor small scale farmers is embraced by the Fairtrade system has generated concerns pointing out that consumers may be led to believe that they are making much more of a difference than they are. See for example Sidwell (2008) who points out that the focus in the Fairtrade marketing material is on anecdotal evidence and growth rates, information which says very little about the total impact of the system.

Conclusions

Fairtrade has positive effects. For the consumer, the system provides an opportunity to actively contribute to a better world. For producers, the price fall during times of low world market prices is limited. Fairtrade may also have positive socioeconomic effects, for example in financing schools and contributing to a strong negotiating position vis-à-vis domestic middlemen for the farmers. It is also psychologically more attractive to achieve a higher price for something one has produced than to receive charity assistance. There are several weaknesses, though. Above all, the Fairtrade minimum price can never be extended to a larger number of poor farmers. There are simply too few rich consumers compared with poor farmers, to make an income transfer really matter. Fairtrade is, and will remain, a niche market for relatively few producers. Hence, the Fairtrade system as currently constructed cannot have a significant role in combating world poverty. In addition, Fairtrade is generally inefficient in transferring resources between consumer and producer, or dealing with other problems like lack of micro-credits or too few schools.

Insufficient policies and underinvestment in agriculture is a main problem in many developing countries with a large agricultural sector and slow economic growth. Higher agricultural productivity and, in the longer run, fewer, larger and more efficient farms are needed to raise rural incomes. In this perspective, the way forward for the agricultural sector as a whole in developing countries is not a minimum price and a social premium conditioned on the continued production of a specific crop, as structural change would be substantially slowed down if many farmers were to be covered by such a scheme.

It is, finally, important that the Fairtrade initiative does not mislead people into thinking that conventional international trade is exploitative and unfair in its nature. Instead, conventional trade has a large potential to promote prosperity among poor people. If consumers cut down on their purchases of labour-intensive goods from developing countries, it will have a negative impact on the income levels of farmers and employees living in those countries.

Notes

1. Note that the term Fairtrade as one word is used to describe the certification and labelling system governed by FLO, while the term Fair Trade as two words is used to refer to the Fair Trade movement as a whole and can be used to describe both labelled and unlabelled goods and the work of Alternative Trade Organisations (ATOs), Fair Trade federations and networks such as NEWS, EFTA, etc. (FLOa)
2. Green coffee consists of dried but unroasted beans.
3. In addition, the international coffee market is also subject to high price volatility, as the market is characterised by low price elasticity of both supply and demand, which aggravates the problem. It takes several years for a tree to reach its full productive capacity, which means that the productive area cannot increase in the short run. Because of the investment, farmers are reluctant to replace the trees with other crops in the short run. Coffee demand increases as incomes rise, levelling off at higher income levels, which results in low price elasticity. Overall demand drops only significantly when large price increases occur. Large price falls induce only small increases in demand.
4. Green coffee consists of dried but unroasted coffee beans.
5. The impact on prices of weak farmer barging-power vis-à-vis middlemen is discussed below.
6. At the national level, structural transformation implies that the share of agriculture in GDP decreases while the share of industry and services increases as GDP per capita rises.
7. A US-based system that is a member of FLO.
8. When large price differentials between Fairtrade and conventional alternatives are presented in a study, the Fairtrade price is often lowered as a consequence. This happened in the studies mentioned above.
9. The International Labour Organisation (ILO) is a UN agency promoting decent working condition throughout the world. They demand, in essence, that workers shall have the right to join an independent union, salaries must be equal or higher than the regional average or than the minimum wage, absence of child labour and equitable working conditions for all workers.
10. A film by Tom Heinemann and Erling Borgen, Denmark, 2008; Heinemann (2008) comments on this film.
11. Responses to these criticisms can be found in Fairtrade Foundation (2006) and Fairtrade/Rättvisemärkt (2010a).

References

Aksoy, M. A. and J.C. Beghin (eds.) (2005), *Global Agricultural Trade and Developing Countries*, World Bank, Washington DC.

Bacon, C. (2005), "Confronting the coffee crisis: Can Fair Trade, Organic and Specialty Coffees Reduce Small-Scale Farmer Vulnerability in Northern Nicaragua?", *World Development*, 33:3.

Becchetti, L. G. Frederico and N. Solferino (2006), *The game of Social Responsibility: A Product Differentiation Approach*, Universita Tor Vergata: Rome.

Berlan, A. (2008), "Making or Marketing a Difference? An Anthropological Examination of the Marketing of Fair Trade Cocoa from Ghana", *(i) Hidden hands in the market: Ethnographies of Fair Trade, ethical consumption and corporate social responsibility, Research in economic anthropology*, 28, pp. 171-194. Emerald Group Publishing Ltd.: Bingley.

Berndt, C.E.H. (2007), "Is Fair Trade in coffee production fair and useful? Evidence from Costa Rica and Guatemala and Implications for Policy", *Mercatus Policy Series, Policy Comment* 11, Mercatus Centre, George Mason University, Washington DC.

Boström, M. and M. Klintman (2008), *Eco-Standards, Product Labelling and Green Consumerism*, Palgrave Macmillan: Basingstokes.

Calo, M. and T.A. Wise (2005), *Revaluating Peasant Coffee and Production: Organic and Fair Trade Markets*, Global Development and Environment Institute, Tufts University: Medford, MA.

Consumers International (2005), *From Bean to Cup: How Consumer Choice Impact upon Coffee Producers and the Environment*, London.

De Ferrant, F. and K.G. Grunert (2007),"French Fair Trade Coffee Buyers' Purchasing Motives: An Exploratory Study using Means-end Chains Analysis", *Food Quality and Preferences*, 18.

The Economist (2006a), "Voting with your Trolley", 7 December 2006.

The Economist (2006b), "Good Food", 7 December 2006.

EFTA (2001), Fair Trade Yearbook, "Challenges of Fair Trade 2001-2003", Salzburg: European Fair Trade Association.

Fairtrade Foundation (2006) http://www.fairtrade.org.uk/press_office/press_releases_and_statements/archive_2006/sept_2006/response_to_ft_article.aspx.

Fairtrade/Rättvisemärkt 2010a, http://www.rattvisemarkt.se/cldoc/96.htm (in Swedish).

Fairtrade/Rättvisemärkt 2010b http://www.rattvisemarkt.se/cldoc/593.htm#hurmycketmerbetalt (in Swedish).

Fairtrade/Rättvisemärkt 2010c, *Svar på kritik mot Rättvisemärkt te i Uppdrag Granskning*, www.rattvisemarkt.se (in Swedish).

FINE (2001), "Fair Trade Definitions and Principles", as agreed by FINE in December 2001. http://www.fairtrade-advocacy.org/documents/FAIRTRADEDEFINITIONnewlayout2.pdf (2009-07-01).

FLO 2010a, http://www.fairtrade.net/what_is_fairtrade.html?&L=1Kram.

FLO 2010b, http://www.fairtrade.net/facts_and_figures.html.

Harford, T. (2006), *The Undercover Economist*, Little, Brown, London.

Hayes, M. and G. Moore (2005), *The economics of Fair Trade: A guide in plain English*, http://www.fairtraderesearch.net/ (2009-07-01).

Henderson, D. (2008), "Fair Trade is counterproductive and unfair", Economic Affairs, 28:3, 62-64.

Heinemann, T (2008), Tom Heinemann comments on "A Bitter Taste of Tea", posted on 10 December, 2008, http://www.flipthecoin.org/?p=56 (2010-01-31).

Imhof, S. and A. Lee (2007), *Assessing the Potential of Fair Trade for Poverty Reduction and Conflict Prevention: A Case Study of Bolivian Coffee Producers*, Europainstitut, University of Basel, Basel.

Krier, J.-M. (2008), *Fair Trade 2007:New facts and figures from an ongoing success story. A report on Fair Trade in 33 consumer countries*, Survey prepared on the behalf of DAWS - the Dutch Association of Worldshops, Netherlands, Culemborg.

Lewin, B., D. Giovannucci and P. Varangis (2004), "Coffee markets: New paradigms in global supply and demand," *Agriculture and Rural Development Discussion Paper* 3, World Bank: Washington DC.

Lindsay, B. (2004), *Grounds for complaint? Fair Trade and the coffee crisis*, Adam Smith Institute: London.

McCulloch, N., L.A. Winters and X. Cirera (2001), *Trade liberalisation and poverty: A handbook*, Centre for Economic Policy Research: London.

Mendoza, R. and J. Bastiaensen (2003), "Fair Trade and the coffee crisis in the Nicaraguan Segovias*," Small Enterprise Development*, 14(2): 36-46.

Milford, A. (2004), "Coffee, co-operatives and competition: The impact of Fair Trade", *CMI Reports* 2004:6, Chr. Michelsen Institute: Bergen.

Murray, D., L.T. Raynolds and P.L. Taylor (2003), *One cup at a time: Fair trade and poverty alleviation in Latin America*, Fair Trade Research Group, Colorado State University: Fort Collins.

Nicholls, A. and C. Opal (2005), *Fair Trade: Market-driven ethical consumption*, Sage: London.

Nunes, P.A.L.D. and L Onofri (2004), *The Economics of Warm Glow: A Note on Consumers' Behaviour and Public Policy Implications*, Fondazione Eni Enrico Mattei, Venedig and Milano.

C. Gresser and S. Tickell (2002), *Mugged: Poverty in your Coffee Cup*, Oxfam International: London.

Perezgrovas, V. and E. Cervantes (2002), "Poverty alleviation through participation in Fair Trade coffee network: The case of Unión Majomut, Chiapas," Mexico, *Colorado State University Fair Trade Research Group Report*, Colorado State University: Fort Collins.

Ponte, A. (2002a), "The Latte Revolution? Regulation, Markets and Consumption in the Global Coffee Chain," *World Development*, 30:7, pp. 1099-1122.

Ponte, S. (2002b), "Brewing a Bitter Cup: Deregulation, Quality and the Re-organisation of the Coffee Marketing in East Africa*", Journal of Agrarian Change*, 2(2), pp. 248-272.

Ronchi, L. (2006), "Fairtrade and Market Failures in Agricultural Markets", *World Bank Policy Research Paper* 4011, World Bank, Washington DC.

SCB, http://www.scb.se/default____2154.aspx 2010-01-20.

Sidwell, M. (2007), *Unfair Trade*, Adam Smith Institute: London.

Steinrücken, T. and S. Jaenichen (2007), "The Fair Trade Idea: Towards an Economics of Social Labels", *Journal of Consumer Policy*, 30, pp. 201-217.

Transfair http://www.transfairusa.org/ 2010-01-20.

Weitzman, (2006), "The Bitter Cost of 'Fair Trade' Coffee", *Financial Times*, 8 September 2006.

World Bank (2007), *World Development Report 2008: Agriculture for Development*, World Bank, Washington DC.

FAIR TRADE LABELLING: WILL THIS WORK?

Yanghoon Song[1]

Fairtrade™ is supposed to help poor farmers in developing countries to receive a 'fair' price for their agricultural products such as coffee. Even though it is claimed that the estimated retail value of Fairtrade goods reached 2.38 billion euros in 2007, a 47% increase from 2006, it is not clear whether Fairtrade will ever gain enough volume for a significant impact in correcting 'un-fairness' in international food market.

Fairtrade labelling may not reach a critical volume and may remain as a niche market for the following four reasons. 1) Fairtrade may not be so fair in a Utilitarian sense, which is the philosophical foundation of market economy and capitalism. 2) Fairtrade may be "fair" to producers in developing countries but will hurt consumers in developed and/or developing countries because Fairtrade will raise the price of Fairtraded goods. 3) Fairtrade distorts the price, which distorts allocation of resources, which in turn hinders growth of developing countries. 4) Any labelling system, including a Fairtrade labelling system, suffers from an inherent information asymmetry problem which cannot be fully overcome. .

In the following sections, the above problems associated with Fairtrade labelling are discussed.

"Fair" in What Sense? A Simple Test

Fairtrade may not be so fair in theUtilitarian sense, which is the philosophical foundation of the market economy and capitalism. To grasp the idea of what Utilitarianism is, one can use the following example by Sen (1970, 1973).

There is a small gift that can be given to either Boy A, who is born to be happy and even a small gift will please him, or Boy B, who is born to be unhappy and even a big gift will hardly please him. If you are supposed to give the gift, to whom should you give the gift to make the allocation fair? If you think you *should* give your gift to Boy A, you are a Utilitarian. If you give it to Boy B, you are an Egalitarian. The question is, which is a superior value judgment system?

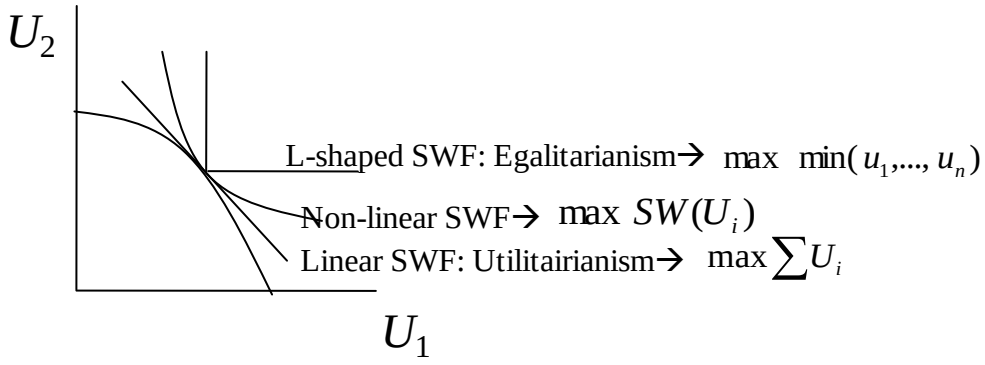
Harsanyi (1975a, 1975b, 1976) advocated Utilitarianism and Rawls (1958, 1971) advocated Egalitarianism, whereas Sen (1970) chose between the two.

The implication of value systems such as Utilitarianism and Egalitarianism for economic theory is that different value systems lead to different shapes of the social welfare function (SWF) as illustrated in Figure 1 (Song, 1998). As shown in Figure 1, the virtue of Utilitarianism is to maximise the *linear* summation of interest groups. Thus, if the increased utility(or happiness) of Boy A is greater than the increased utility of Boy B, Utilitarianism suggests that the gift should be given to Boy A because by doing so the summation of social

1. Department of Agricultural Economics, Chungbuk National University, Korea.

welfare will be greater. Also, Utilitarianism assumes that welfare can be transferred to the other group without additional loss when more welfare is transferred (constant marginal rate of substitution). In the Egalitarian sense, however, the virtue is to maximise the welfare of the least satisfied (or who has the least) because the L-shaped SWF will not allow the social welfare move north-east (welfare gains for both) without improving the welfare of the other. Thus, Egalitarianism serves as a philosophical foundation of communism. Sen's general non-linear SWF may reflect the reality where both positions are taken by most of us.

Figure 1. Value Judgment Criteria and Social Welfare Function



Therefore, Fairtrade may be "fair" in the Egalitarian sense but not fair in the Utilitarian sense. The problem is that the dominant value judgment in the market economy is closer to Utilitarianism, in which value system Fairtrade transactions may have a natural growth limit.

Fair to whom ? Identification Problem of Stakeholders

Fairtrade may be "fair" to producers in developing countries but will hurt the consumers in developed and/or developed countries who don't purchase Fairtrade goods because Fairtrade raises the price of Fairtraded goods. In discussing Fairtrade associated issues, it is frequently disregarded some are better-off from Fairtrade transaction and others are worse-off from it. Even though we accept the idea of fairness in Fairtrade transactions, there should be someone who loses in these transactions as shown in Table 1.

Table 1. Focus of Fairtrade Labelling Scheme

Welfare Changes of Stakeholders		Farmers	
		Developing Countries	Developed Countries
Consumers	Developing Countries	Worse-off, Better-off	Worse-off, Better-off
	Developed Countries	Worse-off, ***Better-off*** ***(Focus of Fairtrade)***	Worse-off, Better-off

*Following convention of game theory, change in pay-off of the row player is presented first.

For example, consumers who are not willing to pay higher prices will be worse-off because Fairtrade will raise food prices not only in developing countries but also developed countries. This problem may be more severe in developing countries because the share of food expenditure in total expenditure is greater than in developed countries. In short, Fairtrade may protect the poor farmers in the countryside in developing countries but the

poor urban workers may have to pay higher food prices due to Faritrade. This is not fair to poor urban workers.

The limitation of Fairtrade is that it focuses only on farmers' welfare gain in developing countries. It needs to broaden the perspective to the other stakeholders.

Impact of Fair-Trade Labelling on Growth of Developing Countries

Another issue associated with Fairtrade labelling is that it will distort the price and therefore may lead to inefficient allocation of resources. Inefficient allocation of resources will result in unbalanced, inefficient growth of economy. For example, as happened in many Asian countries, economic growth has been driven by growth of the non-agricultural sectors. If prices of agricultural products are raised artificially, farmers have more incentive to stay in the agricultural sector. If this happens, labour and capital costs will rise elsewhere in the economy. That is, Fairtrade may propose to help poor people in developing countries, but actually in the long-run, it may slow down growth.

Limitation of Labelling – Information Asymmetry

Information asymmetry can be roughly defined as an unbalanced amount of information possessed by players in the game. In our context, providers of Fairtrade labelled food have more information than consumers. This is an ubiquitous problem for any credence goods such as organic food, imported meat *vs.* domestic meat, for example. This problem is well defined and dealt with in game theory and institutional economics[1] such as in Becker (1968).

To enforce a labelling system, three measures to decrease information asymmetry can be used. 1) increase the fine for cheating, 2) increase the probability of being caught when cheating, 3) decrease the price gap between the truly labelled and falsely labelled. Among three measures, we usually can't use 3) because prices are given exogeneously. In a recent study (Song, 2009), using Bayesian game theory and information entropy, it is found that measures 1) and 2) may work, but information asymmetry can't be solved beyond a certain level in the Korean beef market where the issue is differentiating imported from domestic beef. For Fair-Trade labelling, 1) can't be used because the enforcing organization is private. 2) could be used but may not be so effective. Thus, how cheating can be controlled for Fairtrade goods is an issue.

Research Question for Further Studies

Several research questions follow. First, why grains and meat products tend not to be Fair-Trade-labelled? Most Fairtrade-labelled products such as handcrafts, cotton and coffee are labour-intensive. Is there a particular reason? Is this because grain and meat products are more capital intensive and developed countries dominate the world grain and meat markets? Will Fairtrade meat and grain products emerge in Fartrade shops soon?

Fairtrade seems to be a fine private effort to correct unbalanced welfare distribution but will people care as Craswell (1989) elegantly put it in a poem?

Note

1. New Political Economy, noticeably led by Chicago School economists.

Appendix

Ballad of Distributional Considerations

(Craswell, 1989)

What do economists study today?
Anything anyone wants to pursue:
Monarchs of all that they care to survey,
Subjects beyond their dominion are few.
Still, there is one that they often eschew,
Leaving this caveat standing astride
Much of what legal economists do:
"All distributional issues aside."

Where is the person who acts in this way?
Where the consumer or business who
Works without caring who pockets his pay,
Shunning discussion as strictly taboo?
Search from Australia to Kalamazoo;
Journey to anywhere humans abide:
No one (in practice) could live by the view,
"All distributional issues aside."

Still, the economists hold to their sway:
Still the old litany echoes anew,
Making conditional all that they say;
Keeping them fixed in the orthodox pew.
Open a page of some learned review;

Look to the footnotes, and one will provide,
"So-and-so proves that this statement is true,
All distributional issues aside."

Envoy

Sir, if I earned just a dollar or two
Each time I heard that expression applied,
Life would be bliss with the wealth I'd accrue
(All distributional issues aside)

References

Becker, G. S. (1968), "Crime and Punishment: An Economic Approach," *Journal of Political Economy*, 76(2).

Craswell, R. (1989), "Balladeof Distributional Considerations," *Journal of Legal Education*, 39(1), p54.

Harsanyi, J. (1975a) "Can the Maximin Principle serve as a Basis for Morality? A critique of John Rawls theory," *American Political Science Review*, 59, pp.594-606.

Harsanyi, J. (1975b) "Nonlinear Social Welfare functions: Do welfare economists have a special exemption from Bayesian Rationality?", *Theory and Decision*, 6, pp.311-332.

Harsanyi, J. (1976), *Essays on Ethics, Social Behavior and Scientific Explanation*, Dordrecht, Holland/Boston-U.S.A., D. Reidel Publishing Company.

Rawls, J. (1958), "Justice as fairness," *Philosophical Review*, 67, 164ff.

Rawls, J. (1971), *A Theory of Justice*, Harvard University Press, Cambridge, Mass.

Sen, A. K (1970), *Collective Choice and Social Welfare*, Holden-Day, San Fransisco.

Sen, A. K (1973), *On Economics Inequality*, Clarendon Press, Oxford.

Song, Yanghoon, (1998), *A Game Theoretic Approach to the Political Economy of the Korean Rice Market*, Ph.D. Thesis, Dept. of Agricultural and Consumer Economics at the University of Illinois at Urbana-Champaign (UIUC).

Song, Yanghoon, (2009), "Information Entropy as a Measure of Information Asymmetry: A Composite Approach of Bayesian Game Theory and Information Theory", *Working Paper*, Dept. of Agricultural Economics, Chungbuk National University, Korea.

Annex

Workshop on the Economic and Trade Implications Of Policy Responses to Societal Concerns

2-3 November 2009, OECD Conference Centre
Programme

2 November 2009

09:30 Welcome, Introduction by Ken Ash, Director, Trade and Agriculture Directorate, OECD

Session 1 – Identifying What Makes Societal Concerns Different from Other Policy Problems

10-11:15

- Why are societal concerns different from other policy problems – tame versus wicked problems and the role of economic analysis in providing solutions?

***Speaker*:** Professor Sandra Batie, Michigan State University
Panellist: Professor Mikitaro Shobayashi, Gakushuin Women's College, Department of Intercultural Communication, Tokyo, Japan

11:45-13:00

- Institutions and stakeholders — developing responses to societal concerns as a social, political and scientific process, the role of advocacy, lobbies, and media.

***Speaker*:** Professor Dan Bromley, University of Wisconsin, Madison
Panellist: Professor Darren R. Halpin, Robert Gordon University, Aberdeen

Session 2 – Identifying the Corresponding Policy Dimensions

14:30-15:30

- Dealing with uncertainty, precaution versus science – polar opposites or a continuum

***Speaker*:** Professor Peter Saunders, King's College London and Institute of Science in Society
***Panellist*:** Dr R Von Schomberg, EU Commission DG Research

15:30-16:30

- Dealing with values that differ within and between countries – ethics/values as elements in societal concerns

***Speaker*:** Professor Mikael Klintman, Research Policy Institute (FPI), Lund University, Sweden
***Panellist*:** Dr Linda Fulponi, Trade and Agriculture Directorate, OECD

17:00-18:00

- The international dimension- the role of multilateral trade and environmental agreements

***Speaker*:** Mr Bernard O'Connor, NCTM O'Connor European Lawyers
***Panellist*:** Dr Norbert Wilson, Auburn University

3 November 2009

Session 3 How Have Governments Responded to Societal Concerns? A Selection of Case Studies

9:30-10:30

- Animal welfare – different policy responses to a values based societal concern

***Speakers*:** Dr. Andreas Brandenberg, Institute for Consumer Insights, University of St. Gallen, Switzerland and Mr. François Pythoud, Head, Sustainable International Agriculture, Office Fédéral de l'agriculture, Switzerland

Panellist: Mr. Eran Ettinger, Legal Advisor, Ministry of Agriculture and Rural Development, Israel
Panellist: Dr. Monique Eloit, OIE (World Organisation for Animal Health)

11:00-12:00

- GMOs – Scientific disagreement or differing societal perceptions?

***Lead Speaker*:** Mr. Marco Valletta, DG SANCO/EU Commission
***Lead Speaker*:** Dr. Michael Schechtman, Biotechnology Coordinator, USDA
***Panellist*:** Ms Joanna Hewitt, Consultant
Panellist: Mr Conrad Von Kameke, Monsanto and BIAC

12:00-13:00

- Biodiversity – when societal concerns go global as in the case of tropical forests, protection of semi natural habitats or endangered species

Speaker: Professor Christopher D. Stone, USC School of Law, Los Angeles, CA, United States

14:30-16:00

- The development of "Fair Trade" labels – a market solution to a societal concern

***Speaker*:** Dr. Helena Johansson, Agri-food Economics Center, Lund University
***Panellist*:** Professor Yang-Hoon Song, Chungbuk University, Korea
***Panellist*:** Dr. Monika Tothova, DG Agriculture and Rural Development, European Commission

Session 4 – Wrap-Up and Conclusions

16:30-17:00

- Preliminary wrap-up from the rapporteur and discussion.

***Speaker*: Professor Stefan Tangermann**