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## Governing Food in the 21<sup>st</sup> Century: The Globalization of Risk Analysis

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Food is both simple — it is what we eat to sustain life — and extraordinarily complex — what we eat includes whole and processed plants, animals and fish from all over the world, produced in a bewildering variety of ways. Food presents unique governance challenges. Assuring the safety, quality, and environmental sustainability of the food supply is both a core responsibility of government, and something that requires the active engagement of everyone in the long supply chain from farm to fork. Food safety, moreover, is the latest flash point on the global agenda. It irritates transatlantic relations (e.g., beef hormones and antibiotics), Britain's relations with its EU partners (e.g., BSE), and Canada's relations with the United States (e.g., food inspection systems for meat and wheat).

Food governance is complicated by the fact that it is both a globalized commodity and a fundamental part of local human societies. Food is therefore emblematic of many contemporary policy issues, where some aspect of what is conventionally called globalization — changes in technology, transportation, and communications — challenges the social norms in our communities. The public controversies that follow the globalization of production, distribution, and regulation in this industry are at the core of this book.

The politics of governing food at first glance seems to be driven by protectionism, mistrust of modern science, lack of respect for experts, inability to understand and manage risk, dislike of big business, lack of confidence in government, or by garden variety “globaphobia.” But the political turmoil is also driven by the reality that million of people in North America and Europe suffer food-related illnesses ever year. The US Centre for Disease Control estimates that tens of millions of people in the United States alone are afflicted each year, and that thousands die of food-borne pathogens. Some of the pathogens are old and some are new while

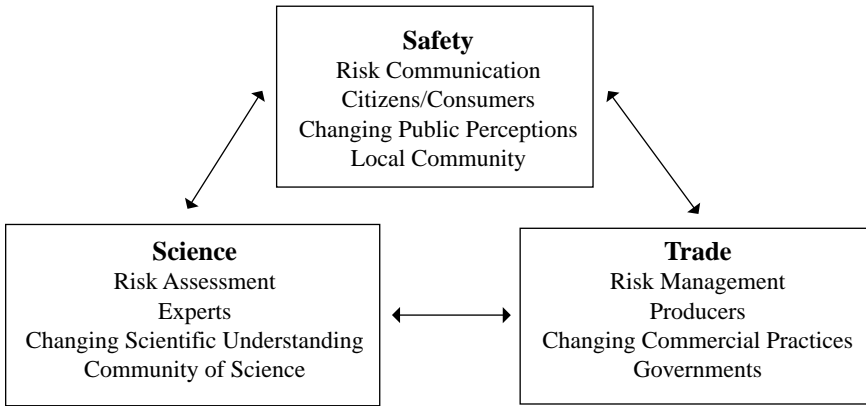
many are compounded by allergic reactions. These changes are related to where food comes from, how it is grown, the way it is processed, its packaging and marketing, and the means of transporting it to the table.

The authors of the chapters in this book have considered the challenges for governance in the domain of food safety from a variety of perspectives. These challenges involve science, safety, and trade. While these three domains are not mutually exclusive, they offer different ways of understanding the problems of food. Accordingly we have used the triangular tension between these ideas as the conceptual basis for organizing the book, relating each point of the triangle to one of the three aspects of the consensual understanding of *risk analysis*. In Part 1, George Khachatourians discusses science and the implications of changing scientific understanding for *risk assessment*. The regulatory and *risk management* implications of changing commercial practices are the focus in Part 2, with contributions by Neville Craddock, Robert Falkner, Lorne Hepworth, Anne MacKenzie, and Peter Phillips. Finally, in Part 3, Spencer Henson, Catherine Humphries, Patricia Mann, and Douglas Powell assess how changing public perceptions of risk assessment and management alter the context for *risk communications*. In the conclusion, William Leiss first discusses the contrast between “science-based regulation” and “consumer sovereignty”; and then the tension between “risk assessment” and “other factors in decision-making.”

Our conceptualization of the food safety system is illustrated in Figure 1. There we see that the tension between science, safety, and trade is replicated in a number of other ways of looking at the problem of food safety. The three points of the triangle also correspond to the tension between experts, individuals (citizens and consumers) and producers. Similarly we see different modes of reasoning deployed at the poles. Risk assessment uses science-based probabilistic reasoning where risk communications uses safety-oriented deterministic reasoning and risk management responds primarily to market reasoning. Perhaps most important for our theme, borders are least relevant at the science pole where members of the “community of science” tend to have shared views on risk assessment no matter where they live. Divergences are greater among governments on risk management, and place matters most for local communities, where we find that differences in the domain of risk communication can be a significant source of conflict. None of these perspectives tells the whole story on its own, and no neat line divides them, but these different frames of reference do help in thinking about the complex tensions in governing food.

We can visualize each of these frames as triangles of different and increasing size. Globalization — an expansion in the role of the market — extends all the lines of the triangle, enlarging the domain of potential interaction, and conflict. Globalization also creates multiple permutations and combinations of the framing

FIGURE 1: Elements of the Food Safety System



factors. For example, when we consider the key actors, the tension between experts, producers, and citizens differs from that between experts, producers, and consumers. While governance requires individuals to act collaboratively as “citizens” and not independently as “consumers,” what citizens say they want at home and the revealed preferences of consumers in the global market are not always the same. This divergence between our individual roles as consumers and citizens is at the root of many of the local and global disputes about food safety.

Similarly, the points of the triangle can change in importance in different countries over time. While expertise is increasingly questioned everywhere, Europeans are especially sceptical. The outbreak of bovine spongiform encephalopathy (BSE) or “mad cow disease” and the related rise of new variant Creutzfeldt Jacob Disease (vCJD) explains in part their scepticism. It also has contributed to a more cautious response than in North America to the development of biotechnology and the introduction of genetically-modified organisms (GMOs). The challenge of distinguishing simple protectionism from good-faith regulation in the public interest is also seen clearly in the (in)famous beef hormones case. In brief, in the early 1980s North American regulators approved a number of hormones that can be used to promote growth in cattle, allowing farmers to reduce their feed costs and the time required to fatten animals for market. The same hormones were banned in Europe, in part because of consumer concerns about safety. As long as

these contrary decisions only had local market implications, other countries were not concerned. But one consequence of the EU ban was that beef from cattle treated with the hormones could not be imported into Europe, forcing North American producers to divert exports to other markets, which increased competition for many other meat-producing countries. The resulting trade dispute is still not resolved after two decades. It has involved lengthy debates about the underlying science in technical international organizations, as the two sides have hurled opposing scientific studies at each other. This bitter trade dispute has stymied trade negotiators in the old GATT system and now in the World Trade Organization (WTO).

Government action on hormones and GMOs has been driven by different actors and different perspectives in the two markets. In North America, producer interests largely drove governments. In Canada, to the extent anybody noticed, the hormones story was about efficient production; in Europe, it was a story about food safety and consumer sovereignty. What is especially interesting, however, is the way in which the food safety concerns of consumers and the protectionist interests of producers can and do interact. Small producers in many countries, for example, do not like to see hormones used in beef or milk production because that increases their disadvantage with respect to larger and more efficient producers. Furthermore, some producers could not use the new technology because they relied on range feeding rather than rationed feed. Argentina, for example, supported the hormones ban because all of the beef they export to Europe is grass fed.

The two systems also differ in how they ensure accountability in the regulatory process. In North America, we rely on independent administrative agencies staffed by scientists to make decisions on the basis of “sound science.” The scientists are said to be objective, arm’s length, and transparent. In Europe, by contrast, politicians are ultimately accountable for regulatory decisions and they are tending to rely on the “precautionary principle” when faced with uncertainty. They justify their cautious approach by noting that experts are divided themselves, sometimes are disastrously wrong (past assurances about BSE are often cited) and often fail to address the concerns of citizens. Although independent scientists are increasingly consulted in Europe, notably in the new UK Food Safety Agency, they lack the power held by the scientists at the Canadian Food Inspection Agency or at the US Food and Drug Administration.

The interaction of science, trade and safety, and the related connections between different actors in different domains, largely defines the current set of issues facing those attempting to govern food in the twenty-first century. In the rest of this chapter, and the rest of the book, we examine the elements of each point of our conceptual triangle.

## SCIENCE

At one level, the theme for this book could be expressed as: What do policymakers need to know about the science of food safety and quality, and about new food technologies? It could equally be expressed as: What do scientists need to know about policy? In short, how do scientific controversies affect national and global governance? Answers to these questions are important for the first part of risk analysis, risk assessment, which is defined as “a scientifically-based process consisting of the following steps: (i) hazard identification, (ii) hazard characterization, (iii) exposure assessment, and (iv) risk characterization.”<sup>1</sup> But what is “a scientifically based process?” The risk assessment process engages academic and government experts who collaborate in the generation of a consensual understanding of the issues with testing organizations, national expert panels, Food and Agriculture Organization (FAO)/World Health Organization (WHO) Expert Committees, international scientific bodies such as the International Plant Protection Convention and international organizations like the Organisation for Economic Co-operation and Development (OECD). While this process depends on open dissemination of scientific information, it becomes more complex as expertise fragments and specializes, and as new products create new hazards.

The appeal to “science” does not necessarily resolve the matter. We might assume that science speaks a universal language of “truth,” but it does not. Khachatourians posits that science moves from unknown causes and effects to known causes and effects and back again, as the theory, methodologies, and evidence varies, with the result that there are few absolutes in science. Scientific knowledge is also contested, especially in such complex domains as human health. Citizens often ask questions to which science can have no answers, which simply highlights that scientific risk assessments often are forced to make implicit value judgements to come to a conclusion. Even when regulators use formal cost-benefit analysis, which involves explicit valuation of social impacts, the results must necessarily depend on a subjective valuation of things like human life and the environment. Moreover, it is not clear that there is a consensus about the science. Views often differ between countries, making it difficult for the international science community to agree on acceptable tolerances, the tests to be done and how they should be interpreted. While the community of science may not respect national boundaries, it does respond to the questions that get asked, which leads to competing scientific views. Fundamentally, what differs between countries is how we weight the information provided and how we balance competing interests, as, for instance, between consumers and producers or between human health and the environment. Some policymakers resort to using the precautionary principle as a benchmark when confronted with ambiguous scientific advice. Even if

policymakers and regulators decide based on accepted science, many consumers do not trust their own governments', let alone a foreign government's, scientific judgement to adequately protect the safety of their food supply.

## TRADE

The characteristics of food are only a governance issue when a product enters a market — if food is not being bought and sold, there is no risk to manage. Initially, when buyer and seller knew each other, they could internalize risk analysis within their relations. Governments developed as an intermediary when markets became larger and as transactions took longer to complete in space and time. Globalization is the latest stage in straining such close relationships. We are observing massive change in the industrial organization of food. Millions of small farms and stores are still engaged, but seed and other input suppliers are concentrating, many processors operate at global scale, wholesalers and distributors are growing in size, and some retail chains are enormous. When the fragmentation of production, distribution, and consumption extends beyond the domain of any one state, governments are challenged both to understand the process and to ensure that the concerns of citizens and consumers are met, at all stages of the process, without unfairly disadvantaging producers. This then is the challenge for risk management, defined by Codex as “the process, distinct from risk assessment, of weighing policy alternatives, in consultation with all interested parties, considering risk assessment and other factors relevant for the health protection of consumers and for the promotion of fair trade practices, and, if needed, selecting appropriate prevention and control options.”

Food safety is a dramatic example of the regulatory difficulty states face in the era of globalization. As Phillips notes, technological change creates new products faster than our collective ability to assess their implications while new forms of transportation and expanding markets allow these products, and related pathogens, to move rapidly around the world because of the ever-increasing exchanges of goods and services in the global economy. What is interesting about “trade,” therefore, is that it is the vector that brings pathogens and practices (e.g., regulations and laws) from different places into contact. Established products may not be understood in the new market, or may pose novel hazards for consumers based on different levels of exposure. New products may face regulatory review, but citizens are concerned about distant practices that may not be up to their standards. Information can be disseminated rapidly, but consensual knowledge does not keep up. Decisions with regulatory implications may be effectively taken within gigantic multinational firms, or within such diverse international organizations as the FAO, the WHO, the International Organization for Standards (ISO) or the

WTO, or at times be preempted by civil society organizations. Regardless of where the decisions are made, the food safety system to be effective must take account of local farming practices, slaughterhouse practices, processors' quality control regimes, distribution systems, private standards, and labelling requirements, which makes it difficult for any one group to dictate to the system.

Phillips and Falkner examine the international institutions and show that international cooperation is limited by different national views about whether trade is more important than the environment or health. Depending on one's perspective, one would look to the WTO, the Convention on Biodiversity or to the FAO or WHO. Other linked issues — including intellectual property rights in seeds and the approvals process for new pharmaceuticals — compound the complexity of international discussions. National and international provisions for labelling for food are often the ultimate battleground for these different perspectives. Some labelling regulations provide for eco-labelling (e.g., certifying that wood came from sustainably managed forests) while agreements on food inspection often set precedents for general principles under the WTO Technical Barriers to Trade (TBT) agreement (e.g., mutual recognition of testing for conformity to product standards). MacKenzie's contribution highlights the complex and arduous process required to establish standards through the *Codex Alimentarius* system.

Citizens demand direct regulation from governments while consumers implicitly drive regulation as producers respond to market signals. In these circumstances, voluntary labelling may be the best way to regulate certain food attributes. In theory this possibility is important because in such a diffuse industry, no coercive form of regulation could ever catch everything going on in the food system. Governments, however, worry about concentration in the production, distribution, or retail systems that could limit the competition that forces producers to be responsive to consumers.

While nation-states tend to be the only locus for making effective public policy, the food industry is now global. Craddock and Hepworth offer industry-based observations on the challenges facing global firms operating in this new environment. Countries have very different traditions and infrastructure for application of food regulatory regimes. Some countries use a market-based approach while others have an interventionist approach to food inspection and consumer protection generally. Now increased trade flows are exposing the problems with purely national approaches to regulation. Globalization brings national regulatory frameworks into conflict with each other, sometimes mediated by international regimes. New rules can disrupt trade, or work at cross-purposes to rules elsewhere. Phillips shows that there are currently six international institutions and various regional organizations working to manage risks in the international food system while at the same time keeping trade links open by managing disputes. The International

Plant Protection Convention, International Epizootic Organization, OECD, WTO, Biosafety Protocol, and *Codex Alimentarius* all have key regulatory roles. In addition, the international agri-food research and policy systems (FAO, WHO, the Consultative Group for International Agricultural Research and the Rockefeller Foundation) are key agencies involved in building research and regulatory capacity in countries and regions. While they provide some support, it is not clear how these agencies could most usefully work with each other and with national governments.

## SAFETY

Everyone is aware that food-related issues have a much higher political profile than they did a generation ago. People in a great many countries are worried about transgenic foods, or GMOs. They worry about food additives that may be carcinogenic and about pesticide residues on fruit. New foods, such as new varieties of rice, might be essential for enhancing food security, but possibly at the cost of decreased biodiversity. In this book we have characterized the safety point of the triangle as being about risk communication, defined by Codex as “the interactive exchange of information and opinions throughout the risk analysis process concerning risk, risk-related factors and risk perceptions, among risk assessors, risk managers, consumers, industry, the academic community and other interested parties, including the explanation of risk assessment findings and the basis of risk management decisions.”

Henson, Mann and Powell each highlight that public perceptions have changed in recent years because of increased access to information, greater awareness of food-borne disease, and — especially in Europe — reaction to food disasters like BSE. We are all both citizens and consumers, which complicates risk management because, as mentioned earlier, what citizens say they want is not always consistent with the revealed preferences of consumers in the market. Public concerns go beyond human health, the central responsibility of the food safety system, to include such consumer issues as food quality (e.g., taste, appearance, and freshness) and such citizen concerns as ethics (e.g., animal welfare), biodiversity, and environmental sustainability. That is, where consumers are concerned with product characteristics, citizens are concerned with the thorny issues of how a product was produced. Our perceptions of food safety are based on our judgement about the relative value of these concerns. No food is absolutely safe for human health or for the environment or free of social concerns about its production methods. Hence, while food safety has a material basis, it is fundamentally a social construction, as we see most obviously with GMOs.

The local community tends to be the political space in which opinion about what it is safe to eat is shaped, but information flows globally. We have seen a proliferation of non-governmental or civil society organizations that represent both consumers and citizens on issues including health, the environment, development and equity. Some are adjuncts to government or industry while others are critics of experts, producers, and officials. NGOs can be small, concerned with local issues, or large multinationals in their own right (e.g., Greenpeace and Friends of the Earth), concerned with global problems. These new forms of political engagement are being driven in Canada and the UK by declining trust in governments and in “experts.” Differential patterns of NGO activity are explained in part by past disappointments that undercut public trust in food safety institutions.

Industry and government are challenged to respond to the changed demand for and supply of risk communications. Powell examines risk communications among producers in the supply chain and between producers and consumers through direct retail sales while Humphries discusses how the retail sector in the UK has responded to regulatory and consumer pressures for more communications. Mann also offers some observations about how industry and the new Food Safety Agency in the UK have begun to communicate about consumer concerns about food safety.

## APPLYING THE TRIANGLE

One of the general phenomena associated with globalization is rising concern about the ability of social institutions to assess risks, manage risks, and communicate about risks. The authors of the chapters in this book examine each of the points of the triangles and show how science, industry, and governments have responded to the new pressures in the global food system.

As you read the chapters, keep in mind a number of key questions.

When do we expect governance to be necessary? When the science is clear, information is readily available and markets work, there would appear to be little need for formal governance structures. By induction, one could assume that when the science is uncertain, information incomplete and markets imperfect, governance may be needed.

Is there an optimal market or polity size for the functions at each point of the triangle? Risk assessment is based in the global community of science while risk management is rooted within the territorial state and risk communication may best be located within the local community. Despite the globalization of industry and information, the three poles of the triangle remain relevant, but none of the domains is self-contained. For example, risk, which is usually characterized as a measure of hazard times exposure, involves global scientific assessment but also

national or local assessments on exposure. Hence, each of these areas spills over into others. There is significant ambiguity about when assessment stops and management and communication begins, which complicates determining the optimal location for each function.

How do the conventional tasks of risk analysis change when borders intervene? Some systems are producer-driven and others are consumer-driven. The same factors in different systems can result in different decisions.

When will governance be controversial? Different countries handle the balancing act of risk analysis differently, which will inevitably lead to demands for reconciliation or harmonization of the different approaches. Given the fundamental importance of food to people and to societies, this will inevitably lead to controversies. The challenge is to be able to predict when and where those controversies will occur.

When can international efforts yield substantive results? We have a long history in the international scientific community, in the international trading world and in the social policy domain of seeking international solutions to problems facing multiple countries. International constraints on domestic policy can be helpful or disruptive. They can be explosive where the domestic standard is perceived to be higher or can be a non-issue where the international standard is higher. The authors examine a number of food issues that have been the subject of international discussion or negotiation.

There are no definitive answers to these questions, but the authors of the following chapters provide helpful insights into how risk analysis will change as food production and food governance respond to globalization.

## NOTES

1. See the Codex Alimentarius Commission “Definitions of Risk Analysis Terms Related to Food Safety.” Risk analysis itself was defined as: “A process consisting of three components: risk assessment, risk management and risk communication.”