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Elements of public trust in the American food system: Experts, organizations, and genetically modified food

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ABSTRACT

The increasing scientific and technical complexity in the American system of food production, exemplified in this article by genetically modified food (GMF), provides a useful case with which to understand public trust in experts and organizations involved in an emerging technology. Stating that the public will judge claims about GMF based on trust in their sources brings about the question of how the public decides to trust particular sources. I use data from a mail survey to evaluate the elements of trust for a range of groups connected to the U.S. food industry. The results point to organizationally variable and dependent perceptions of trust rather than a stable set of elements, suggesting that scholars might focus productively on the ways elements of trust are distributed.

Introduction

Reliance on sophisticated technologies in our daily lives forces us to come to terms with problems of institutional legitimacy and trust in myriad organizations and experts. Social scientists have repeatedly recognized that the uncertainty and vulnerability of social interactions becomes paramount without trust between social actors (e.g., Lewis and Weigert, 1985; Mollering, 2006; Seligman, 2000). Moreover, trust becomes more urgent in "contingent, uncertain and global conditions" (Misztal, 1996, p. 9) because people rely on trusted relationships to deal with "uncertainty and vulnerability" (Heimer and Cook, 2001). The increasing scientific and technical complexity in the American system of food production, exemplified in this article by genetically modified food (GMF), amplifies public reliance on the trustworthiness of a complex set of institutional actors.

Scientific and technological developments produce benefits, but they also produce uncertainty, potentially disastrous failures, and harmful side effects (Erikson, 1994). While trust may increase tolerance for ambiguity and open new possibilities for cooperative interactions (Luhmann, 1979), the more that industry produces using advanced technologies, the higher the potential for institutional failure resulting from lack of competence or lack of social and fiduciary responsibility (Clarke and Short, 1993; Freudenburg, 1993; Sapp et al., 2009). Indeed, failures have resulted in severe consequences even when experts and organizations take great care (Clarke, 2006; Weick and Sutcliffe, 2001). Because key institutional actors occupy a crucial link between trust and risk, and between acceptance and uncertainty, they shape how science proceeds. Furthermore, the increasingly global scope and complexity of institutions, organizations, and technological systems make them impenetrable to experts as well as ordinary people (Perrow, 1999; Sztompka, 1999). As a result, trust in "expert systems" is an ever-present requirement of modern societies (Giddens, 1990). It is, however, particularly tricky for novel or emerging technologies because expectations about the future performance of institutional actors often cannot be based on prior experience. This form of trust requires the public to trust experts and organizations using uncertain criteria, not based on interpersonal experience or direct knowledge.

From the public's point of view, emerging technologies add uncertainty. For example, people wonder if the innovation process really reflects their values and interests (Earle and Cvetkovich, 1995; Siegrist et al., 2000). People also become concerned that the technology developers, users, and regulators might not be competent enough to make the right decisions and that the wrong decisions will cause harm (Sjoberg, 1999). Moreover, key institutional actors might communicate overly biased information and sway public opinion (Freudenburg, 1992; Rousu et al., 2007). For the general population, therefore, part of the hesitation related to innovation may be uncertainty about the behavior of the social systems, organizations, and experts involved with the technology.

Moreover, debates about appropriate public engagement strategies and the role of moral, ethical, and social considerations in

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scientific decision-making bring forward a wide-range of actors. In this sense, where there are competing claims, people must decide whose scientific claims to accept and whose claims to reject. For example, scientists devise and evaluate the technology used to help farmers grow crops. Food manufacturers use these crops to produce marketable food products. Grocers and grocery stores sell these products to the public. Myriad, and often disjointed, government agencies attempt to regulate the quality and safety of food. Environmental organizations act as watchdogs trying protect public health and the environment and are likely initial sources of information for many. Because of the multitude of institutional actors with a claim about GMF, how and why people trust those involved with this emerging technology is an important and interesting avenue of exploration. All of this raises the question of how the public will judge genetically modified food, particularly when there are contradictory claims about the technology. One plausible answer is that they will judge such claims, at least in part, by the extent to which they trust their sources (Freudenburg, 1993).

So, what are the key elements of public trust in the American food system? And, are the key elements of public trust in the American food system the same for all institutional actors? In this article I attempt to answer these questions by reporting which of six organizational actors the public trusts regarding GMF, examining how public judgments of trust vary across each of the six actors. Second, I explore if and how elements of trust vary by actor. This article makes a contribution by testing potential variation in the elements of public trust in the U.S. food system. The uneven findings across actors suggest that the relationship between trust elements and social actors is more complicated than previously thought.

Background: genetically modified food

The genetic modification of food has rapidly progressed from experimental crop science to a commonplace foodstuff. In 1996, the first year of commercialization, six countries grew genetically modified food crops; by 2010, twenty-nine countries grew genetically modified crops (James, 2010). Worldwide, more than three-quarters of all soybeans, more than half of cotton, more than a quarter of maize (corn), and one-quarter of all canola grown is genetically modified (James, 2010). U.S. farmers have embraced genetically modified crops at an even higher rate. Roughly 90% of all soybeans, more than three-quarters of cotton, and more than 80% of maize planted in the United States is genetically modified (United States Department of Agriculture, 2011). Food manufacturers use these commodity crops and their derivatives – such as high-fructose corn syrup, cornstarch, soy lecithin, as well as canola, soybean, and cottonseed oils – as ingredients in a vast array of processed foods. As a result, the Pew Initiative on Food and Biotechnology (2005) estimated that three-fourths of all processed foods in the U.S. contained a GM ingredient. Given that the genetic modification of key commodity crops used in the majority of processed foods has greatly increased since that report, the three-fourths estimate is likely conservative. Because the United States does not require labeling genetically modified food as such, estimates that are more recent and more accurate are not available. Moreover, the lack of labeling makes GMF "invisible " leaving the American public unaware or unsure whether they are consuming GMF (Pew, 2005; Einsiedel, 2009).

It should not be surprising that the American public remains unaware of the presence of genetically modified ingredients in their food. In general, most Americans know little about how many or what kinds of organizational actors produce, process, transport, or prepare their food for sale (Vileisis, 2007). That is not to say that the public is entirely ignorant. Rather, knowledge is partial and imperfect because, given their displacement from the food system, the public relies on numerous institutional actors for their daily sustenance. The public has little choice but to trust the system of food production that involves "whole armies of specialists, most of whom have areas of expertise that we may not be competent to judge, and many of whom we will never even meet, let alone have the ability to control" (Alario and Freudenburg, 2003, p. 200).

The lack of a unified, hierarchical command structure to delineate authority and power among these specialist organizations likely also means that the public will sometimes perceive some groups as competing actors; other times the public may see them as coordinating. For example, the United States Department of Agriculture (USDA) has a dual mandate. Its first duty is to support the agricultural community and promote their products in the United States and abroad. Its second duty is to ensure the safety of the American food supply. Having to promote an industry while also policing it is a precarious position; the USDA is sometimes aligned with food producers and is sometimes placed in opposition to them. Assumptions that organizations influence trust judgments in isolation from one another appear overly deterministic; so does the assumption that the public should trust institutional actors based on identical criteria. For example, we may trust scientific knowledge about genetically modified food, but might believe that scientists value scientific knowledge and novelty differently than the public. Or, we may believe that farmers are honest, but they might not have the competence to predict potentially negative effects of GMF.

Despite a relatively muted response in the United States, there has been some consumer concern and backlash, particularly in Europe, surrounding GMF (Schurman and Munro, 2010). Although typically presented as a scientific issue, GMF tends to inspire emotional reactions that speak to global issues of economic and cultural power (Annear, 2004; Falkner, 2007). Social activism and political–cultural context may help explain the efficacy of anti-GMF strategies in some locations (Schurman, 2004) but there is more to it. The controversies surrounding GMF are, in many ways, a proxy debate for broader issues of social and political power, democratic practice, and corporate responsibility (Jasanoff, 2005). In many ways, the issues surrounding genetically modified food presents a useful case study of public trust in experts and organizations involved in an emerging technology.

Experts and organizations

Given the complex range of scientific, structural, and organizational barriers to understanding GMF, it is nearly impossible for an ideal–typical rational person to decide whom to trust. As such, the risk involved in genetically modified food is related to the social and institutional organization surrounding its production (Allum, 2007). This is consistent with the view that new technologies are more than more than a collection of scientific and technical advances. In many ways, new technologies are represented more completely as sociotechnical systems incorporating social institutions that develop, implement, operate, monitor and regulate these systems (Bijker et al., 1989). These systems, even for something as mundane as breakfast cereal, are spread out across global commodity chains involving an extensive network of actors and institutional actors (Schurman and Munro, 2009).

In contrast to the non-expert public, experts and organizations maintain a crucial position in these global arrangements as the link between trust and risk, where they frame social problems, defining potential risks and imagined responses (Clarke, 1999). These actors help decide which research questions to ask and answer. In their risk communication messages, the organizations take on social