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> Mr Hilgartner, you are a Professor at the Department of Science and Technology Studies at Cornell University and you examine the social dimension and politics of contemporary and emerging science and technology, especially in the biosciences. Now, in Europe, we sometimes have the feeling that the relationship between science, technology and society is not quite an issue in the United States of America. It is seen from Europe that the population broadly accepts the innovations in science research and technology, but is it true? Is this an idealistic view? Ms Guivant told us that there was no significant reaction from the public on GMOs in the US. <

Debating the life sciences

US experiences

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It is difficult to succinctly represent US experience with the politics of the life sciences. The country has some 330 million people, 50 states – each with a separate representative government – and also a federal government, not to mention constant interactions between the federal and state governments. There are also a wide variety of different life science issues to consider. So here my focus will be a specific case: US policy making on the labelling of GMO foods.

Let us begin with an observation related to what Paul De Brem just said, that in comparison to Europe, the US seems to have less debate about science and society issues. And if you look worldwide, the US also is quite exceptional among developed countries because it does not label GMO foods as such. So the question is, why is the US different? Could we say that US is exceptional on GMOs because there is, for example, far-reaching deference to the authority of life sciences? Or could the lack of debate reflect the success of American democracy? Did the United States already have a full public debate about genetically modified entities in the 1970s and 1980s, and settle the issue permanently?

None of these explanations is correct, and I will offer an alternative account, one that suggests that the lack of debate about GMOs is not a success of US democratic institutions but an expression of their limitations. I do not have time for a full analysis, but will make a few key points.

First, the question of deference to expertise. If there were a generalised deference to the expertise of life scientists in US society, you would expect it to apply to many different issues. Instead, public opinion polls among representative samples of US adults show significant questioning of expert consensus in several areas. Consider the embryonic stem cell debate. Here, 65% of people believe that medical research using stem cells obtained from human embryos is morally acceptable, compared to 27% who believe it is morally wrong. Another contested issue concerns a fundamental tenet of the modern life sciences: evolution. In US surveys, 42% of people agreed with statement that 'God created human beings pretty much in their present form at one time within the last 10,000 years or so'. This high level of support for Young Earth Creationism in the United States has been replicated repeatedly in polls. One more example: climate change, a life science issue because of the entanglement of biological life with atmospheric phenomena. In the climate case, 57% of people attribute increases in the Earth's temperature over the last century to human activities, whereas 40% blame natural causes. These three examples do not support the idea of generalised deference to expertise. So it seems unlikely that a broad deference to expertise could account for US exceptionalism with respect to GMOs.

Another possibility is that the US already had a full and engaging debate early on and produced a durable consensus. In fact, there is little the evidence of an extensive early debate in the United States



about agricultural biotechnology, as shown by a number of studies, including Sheila Jasanoff's 2005 book on biotechnology regulation. A durable settlement stemming from a high-quality early debate cannot be the explanation. Moreover, opinion polls find that large numbers of people support the labelling of GMO foods – fully 93% in a recent *New York Times* poll. Other recent surveys are similarly lopsided. Whatever you personally think about a specific issue, no matter how misguided you may think some particular policy might be, once 93% of the people support it, it seems that in a democracy, there is a strong *prima facie* case for implementing it. Can failure to implement something with such strong public support be presented as a strength of American democracy?

But perhaps the most serious problem with the argument that the issue was permanently settled early on is that debate about labelling GMO foods is intensifying in the United States. As I will show, that debate is now being contested in legislatures, ballot measures, and lawsuits, and the trend has been toward increasing support for labelling. Before examining this debate, it is helpful to look briefly at how the food label is presently regulated.

The promotion and marketing of foods in the United States has for many years involved three different agencies. The Food and Drug Administration (FDA) regulates the food label and it does not require labelling of GMO foods. It also discourages the use of labels stating products are GMO free, saying that such labels could be considered misleading if they suggest that there are any substantial differences between GMO foods and non-GMO foods. The FDA has the legal authority to stop misleading labels. The concept of “substantial equivalence”, which is the basis of the regulatory framework, suggests that you should not be able to label foods as GMO free. Some smaller companies do use a GMO free label, however, and they are vulnerable to private lawsuits (for example, filed by competitors) arguing that they are improperly promoting their products.

The US Department of Agriculture (USDA) allows food that meet a set of criteria – one of which is being GMO-free – to be labelled “organic.” As a result, consumers can find food that contain no GMOs by buying “organic” foods, even though the packages are not explicitly labelled GMO free. The Federal Trade Commission (FTC), which regulates advertising, albeit loosely, says you cannot promote GMO-free products as superior to GMO products.

The stability of the federal policy about GMO labelling raises a question. Why, when the polls express very high levels of support for labelling, has the policy remained unchanged? One likely reason is that this issue is simply not a very important one for most people. Many people's answers in the opinion surveys probably express general agreement with the idea that “It is a good idea to provide consumers with information” rather than a deep commitment to a cause. On the other hand, from the point of view of companies like Monsanto and Syngenta and of politicians from heavily agricultural states, avoiding labelling is crucial, and the strong commitments of these powerful actors stabilized things.

A second reason the policy has been stable, in my judgment, is that the availability of organic food has provided sort of an escape valve.

It has let some of the pressure out. The people who care the most about avoiding GMOs can go to stores that sell organic foods and avoid them that way. This “escape valve” has limits, however, such as the possibility of gene flow from GMO crops to organic ones.

But the issue has not rested there. Many US states have provisions in their constitutions that allow groups of citizens to organize and put a legislative question directly on the ballot. If a majority of voters support such a ballot initiative, it becomes the law in that state. In the last few years, activists across the United States have mobilised at the state level to push for labelling, pressuring state legislatures and launching ballot initiatives.

Here are the outcomes of some of this recent balloting. In California in 2012, the side in favour of labelling lost 46% to 53%. This was an expensive election, with the pro-labeling side spending \$9 million and the anti-labelling spending \$46 million. This was not the most expensive ballot initiative ever in California, but a similar measure in Washington State in 2013 was the most expensive one ever there. The Washington vote was considerably closer, with 48.9% supporting labelling and 51.1% opposed. More recently, in Colorado in 2014, the pro-label forces ran a poorly organised campaign and lost heavily to one strongly financed by what the activists describe as “out-of-state money.” The pro-labelers spent \$700,000 and the anti-label side spent \$12.6 million. In Oregon in 2014, the vote was incredibly close: 1.5 million people voted and the pro-label side lost by a mere 809 votes. The relative expenditures on the two sides were lopsided: \$8 million for the pro-label side and \$22 million for anti-label side. In addition, there were 4,600 ballots that were not counted because of questions about the validity of the voters' signatures. This, in turn, led to a lawsuit about the recount. In some ways, the spectacle looked like a repeat – on a much smaller scale – of the 2000 US presidential election and the contested Florida vote.

It is worth looking at the arguments made by the different sides in Oregon. Rather than resembling an idealized image of deliberative democracy, the campaign looked like a war of oversimplified advertising messages. The pro-label group focused on the right to choose. They did not heavily promote the idea that GMO products were terribly dangerous. Those concerns were sort of floating around in public discourse anyway, and they stressed that they were not proposing a ban, making the campaign about transparency, about empowering the individual shopper. They also would say this is not a debate on science. It is a debate on choice. This argument resembles one that the tobacco industry

makes in the United States when it is trying to deal with restrictions. 'We no longer argue about the science. We argue about choice.' The issue is thus framed in terms of individual rights, which are central to American political culture.

The anti-label campaign argued that there should not be a whole separate food labelling system just for the state of Oregon, and that such a system would increase grocery bills by hundreds of dollars per year. Moving to arguments about cost is a very common strategy generally in the United States. Worries about the costs of policies partly stem from a desire for efficiency. But they also reflect a political culture in which any governmental expenditure can be framed as an infringement on individual rights because taxes represent confiscated property, thus reducing the individual choice of the taxpayer.

In Oregon, the actual costs of labeling, as one might expect, were contested. There were several economic studies of varying quality that estimated the annual increase in grocery costs for a typical family. The predictions ranged from an increase of 32 cents a year to the hundreds of dollars per year promoted by the anti-label campaign. The anti-label campaign also argued that the measure was arbitrary because it exempted 'two-thirds' of the foods that people buy, such as restaurant foods, certain pre-packaged foods, and alcoholic beverages. This argument – that the proposed law was ill conceived and would be ineffective – seemed designed to lead some people who might favour labelling to vote against the ballot initiative.

The final anti-labelling argument was that consumers already can choose organic foods, so we do not need a GMO-free label. This point raises interesting questions about coexistence. What constitutes adequate coexistence and how is that going to be decided and by whom? What is going to be the default position in a system where you allow multiple forms to operate?

No pro-labelling ballot initiatives have passed, but a few states have enacted GMO labelling legislation. Connecticut passed a labelling law with a 'trigger'. The idea is that as soon as states with populations adding up to 20 million people have passed a similar pro-labelling law, then the Connecticut law will go into effect. There is similar law in Maine. Monsanto says it is going to challenge those laws in court if they go into effect. Vermont passed a law with no trigger in May and the Grocery Manufacturers Association, which is a trade organisation, has filed suit against the Vermont law. These lawsuits are going to focus on two issues: freedom of commercial speech and whether federal or state authority should control the food label. Federal/state conflict in the United States is an ongoing issue of constitutional law. It is not possible to be certain how those issues will play out. In some ways, the legal question about federal or state control of the food label mirrors what happened with nuclear power. After enjoying widespread acceptance in the 1960s, nuclear energy encountered much opposition in the 1970s. In the nuclear case, when Vermont passed a law restricting nuclear development, the US Supreme Court overturned that law on the grounds that the US federal Nuclear Regulatory Commission (NRC) should preempt all state law on nuclear matters. A similar court decision is possible in this case.

Let me conclude with several observations. First, as we have seen, debate about the food label is clearly not over but is developing and intensifying. It is hard to predict the outcome at this point, but the situation looks quite different than it did in the middle of the last decade. Second, the labelling debate reflects some durable patterns in US politics. These include federal/state conflicts, American individualism, and concerns about costs. These issues are linked in specific ways in the United States. For example, high costs may be framed not only as inefficient but also as an infringement on individual choice owing to the confiscation of taxpayer property.

One interpretation of this story is that agricultural biotechnology developed initially in the United States without very much public discussion. Rather than attributing US acceptance of GMOs to early, inclusive, and high quality dialogue, widespread introduction of GMOs happened without many people realising it. Survey data show, for instance, that many people do not realise how much GMO food they eat.

At the same time, among some segments of the population, there are high levels of distrust of biotechnology companies, with accusations of Monsanto conspiracies and so forth. All of this has been happening in a context where institutions that were important in the 1970s and 1980s in fostering analysis and dialogue around science and society have been weakened. One important institution, the US Office of Technology Assessment (OTA), was eliminated entirely in 1995. More broadly, the United States is experiencing increasing political polarisation of the major parties and ideological blocks. This polarization, which carries over into science and society issues, shows little prospect of diminishing. If this analysis is correct, then the US experience with GMOs looks less like an exemplar of how high-quality dialogue about science and society can produce harmonious outcomes and more like a model that one might want to avoid. ♦

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TIRÉS À PART

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