

The Politics of Food Science

Martin Cohen

Editor's Note

A few years ago (2018), our new regular columnist **Martin Cohen** was invited by Palgrave Communications, publishers of influential journals like *Nature*, to write a piece about issues in food and public policy which would have appeared on the nature.com website. However, despite agreeing a 1,000 word outline, the journal's editorial board declined to publish the article he submitted. Martin's feeling about it was that the real problem was that his guest editorial's core argument – i.e. that experts were fallible and debate should be encouraged – tended to undermine the hierarchy of expert knowledge that *Nature* and Palgrave Communications had built up over the years. *Self & Society* is honoured to have the opportunity here to share Martin's original submitted article and, hopefully, to continue a debate about 'science' and expertise in late-modern culture that we started in the previous issue of the online magazine (ahpb.org), and which Martin also continues in his other article in this issue. With the issue of food and their supply lines likely to be a very prominent issue in the coming months, this is a particularly apposite moment to be publishing this challenging article. Note, finally, that the article below has been only very lightly copy-edited, so as to retain as far as possible the integrity of Martin's original submission.

Abstract

Food has rarely been under so much scientific scrutiny. Yet why do expert opinions on it change so much? My argument in this paper is that apparently scientific claims about food and health can easily be co-opted as part of a political or mercenary programme, and that there needs to be a much more sceptical approach to scientific claims made both for food policy and for food safety. Consumers and public health bodies alike need to resolutely guard against treating science as a final arbiter, but instead recognise it more as an entity easily co-opted by the interests of both industry and politicians. To illustrate this, I consider several historical examples, including the involvement of doctors in the efforts by Italian Fascists to promote a high-carbs diet; the constructed post-war consensus in the United States that 'dietary fat' was causing heart disease; and the ongoing promotion of rapeseed oil as a healthy alternative to more expensive traditional food oils. These case studies are then re-evaluated from the perspective of social scientific paradigm theory.

Introduction

Food debates, like philosophy more generally, aren't really about answers – they're about questions. They're about who frames debates, who excludes issues, and why we need to be protected from a certain kind of limited technocratic rationality.

My argument in this paper is essentially that there needs to be a much more sceptical approach to scientific claims made about both food dangers and food benefits. Consumers and public health bodies alike need to adopt an approach that treats science less as a final arbiter, and much more as an entity easily co-opted by the interests of both industry and

politicians. There needs to be recognition that the horizons of both these groups are functional and necessarily limited, while the relationship of the human species to food is ancient, subtle and complex.

The mismatch is shown by a news story I came across about a year ago (Hunt, 2007). It concerned a Press Release from MacDonaldis UK, boasting about how the firm was using its cooking oil, a mix of rapeseed and sunflower oil, twice: once to make its French Fries, and a second time as fuel for its fleet of vans. That's quite a feat for a cooking oil – but would you really want to eat food fried in a kind of petrol? Indeed, not so long ago, expert opinion was pretty much unanimous that the rapeseed oil

made from crushing up any of several cultivars of the plant family *Brassicaceae* was pretty toxic stuff, in particular on account of its high levels of erucic acid (Sahasrabudhe, 1977). Yes, the plant had been cultivated for thousands of years (Bonjean et al., 2016) – Chinese archaeological evidence for *Brassica juncea* goes back to 5000 BCE!¹

For much of the twentieth century, health concerns meant that rapeseed oil was restricted in cooking uses and, in particular, considered unsuitable for frying. The American FDA (Food and Drug Administration) even banned it for human consumption in 1956. Today's ubiquitous, yellow-flowering crop was associated with heart lesions, vitamin deficiencies and retarded growth. The erucic acid it contained was accused of causing heart and kidney damage. And so on account of this, its role in human consumption was drastically limited. Yet today, ingeniously modified and, in the USA, under its new, friendly name of 'Canola', for 'CANadian Oil, Low Acid', rapeseed oil is a standard ingredient in everyone's meals. Yes, even yours. Oil that is descended from pretty much the same variety of turnip that lit ancient lamps is now one of the most widely consumed food oils, second only to soybean.² These days, according to food campaigner John Moody, the cooking oil in many professional kitchens is a mix of 25 per cent olive oil to 75 per cent canola oil (Moody, 2018), while the issue of its safety has been largely removed from mainstream public debate – even if it hangs on in corners of the internet.

Canola, or Colza or other rapeseed-derived oils, are all a far cry from the kind of vegetable oils that we used to consume. In the USA, the crop is genetically modified; everywhere it is industrially extracted using hexane. The plants represent the appliance of sophisticated chemistry to food matters.³ It is only in this climate of science-led progress that the technical achievement of recovering cooking oil in a fast-food restaurant for re-use to run a van could seem like an achievement worth sharing with customers!

Similarly, it is in this kind of climate that earnest articles like 'From paradox to principles: where next for scientific advice to governments?' (Gluckman & Wilsdon, 2016), for Palgrave Communications, would appear. The authors reflect a very common assumption when they seem to assume that scientific advice is an unalloyed good, a kind of philosopher's stone that turns leaden policy to gold. Their main worry is that 'New developments in science or novel applications of technology may provoke scepticism or resistance from a public that perceives them as allied to elite interests'. There is little sense of the partisan nature of scientific advice, the internal disputes over the 'facts', or of the very real problem of governments buying the science that they want to fit ideologically framed policies. Peter Gluckman and James Wilsdon surely know that there are debates, but consign them to the philosophical margins.

But a different view is possible: that the certainty of science is an illusion that must constantly be challenged. That, in the words of Karl Popper:

Science does not rest upon solid bedrock. The bold structure of its theories rises, as it were, above a swamp. It is like a building erected on piles... if we stop driving the piles deeper, it is not because we have reached firm ground. We simply stop when we are satisfied that the piles are firm enough to carry the structure, at least for the time being.

(Popper, 1959, p. 114)

And food debates constitute a particularly good starting point for exploring the issue of the deceptive certainty of scientific pronouncements. Food is something both so close to all of us and yet something so remote as well. And it has rarely been under so much scientific scrutiny. Yet the perplexing thing about food science, the elephant in the room, is that it's not just the opinions that keep changing – but the 'facts' themselves shift, too – just as Popper warns.

So here, I want to present the case for a very practical procedural shift, by which policy

makers should automatically seek an expert but contrary view which is summarised alongside the main view. This would provide a reminder that most scientific debates are multi-sided. Unfortunately, it is usually useless to ask the partisans of one side to accurately present the issue as seen from the other. Scientists, to borrow Thomas Kuhn's phrase, inhabit tribes.

The Political Co-option of Health Advice

To illustrate this scientific tribalism, as well as more generally the political nature of science policy, let us briefly recall some revealing food-related stories from the last century.

One shamelessly overt example of the political co-option of science relates to the 1930s, a time when the Italian Fascists wished to shift the public away from pasta (due to a shortage of wheat) and towards foods like rice. A key element of their strategy was 'health advice' that included (bogus) warnings about the deleterious health effects of eating pasta. A watershed moment came in 1932 when Mussolini delivered a speech to medical doctors at the inauguration of the National Congress of the trade unions of Fascist physicians, a speech that provides a sharp example of how not only the Italian dictatorship then, but governments of all stripes now, see science and the role of experts. Mussolini explicitly appealed to the doctors for their support in what he presented as a public health issue, as being people that the public trusted, that the public believed. He recalled their role in an earlier public health initiative after which grape production quintupled, saying they had the power to decide what was right or wrong for Italian bodies and minds – and that they were duty bound to put this power at the service of the State.⁴

In an article titled 'Food and the futurist "revolution"' for the *Journal of Interdisciplinary History of Ideas*, Roberto Ibba and Domenico Sanna note another political dimension to the Italian Fascist government's choice of a 'high carbs' diet that left out animal protein, vegetables, olive oil and citrus fruits

(Ibba & Sanna, 2015). This is that the diet was symbolically linked to nationalism and the Italian 'Risorgimento' – the Italian movement towards creating a single state out of the patchwork of regional states. Such cultural links matter: in a similar way, I would argue, American Fast Food is also linked to cultural notions of political individualism.

As the Second World War bit harder, the food situation in Italy (as in most of Europe) became dire. The Fascist food priorities became quite literally a matter of life and death in the closing phase of the war, with people actually starving to death due to food shortages (Helstosky, 2004).

A decade later, and scarcely less disastrous, came the intervention of the US government in the 1950s into the question of 'healthy' and 'unhealthy' foods staples. 'Dietary fat' became a great public health issue, accused of causing an 'epidemic' of heart disease. Out went butter and real cheese, and in came modern, manufactured margarine and substitute foods such as soya. Only many years later would large-scale surveys finally deal body blows to such dietary orthodoxies of the twentieth century, with research published in 2005 and 2006, for example, convincingly demonstrating that 'low fat' diets – if anything – *increased* the individual's risks of heart disease (Ludwig, 2016; Malhotra et al., 2017).

However, the 'fat is bad' theory suited some people very well. 'Sugar Information' was set up in 1943 by the sugar industry to be its public relations arm. And, in the years following the end of the Second World War, it proved very good at getting its 'research findings' not only into the public eye but also into the official views of government agencies – like the reports of the all-powerful Food and Drug Administration.

Back then, as they still do today, a handful of influential academics decided public policy – like Frederick Stare, founder and chairman of the Department of Nutrition at the Harvard School of Public Health. Frederick Stare was an

expert – in the new science of nutrition. For more than two decades, right up to the early 1970s, he was one of the food industry’s star advocates, regularly testifying in Congress from that all-important objective observer position about the wholesomeness of sugar – even as his department gobbled up funding from sugar producers and food and beverage giants, such as Carnation, Coca-Cola and Kellogg’s (Hess, 1978).

Indeed, since these days the talk is all about reducing sugar intake, it is revealing to recall that as recently as 1995, the American Heart Association was recommending ‘healthy’ snacks of ‘low-fat cookies, low-fat crackers... hard candy, gum drops, sugar, syrup, honey’ and other carbohydrate-laden foods. The ‘sugar is good’ era, like the ‘Fat is bad’ scare, illustrates both how knowledge is created and defined, and how it is disseminated.

Now you may think that public health messages should not be funded by food businesses, but, well, they always have been; and today, they still are. In 2015, for example, the White House-backed ‘Partnership for a Healthier America’ was unashamedly mixing academic research with data provided by the big food corporations. Because, as its website explained:

if we wanted to make good on our promise to give all of America’s children the chance to grow up at a healthy weight, we’d need to harness the resources, expertise and free-market creativity that drives consumer choices in the American marketplace.

No suggestion there that an unmanaged free market might actually be part of the problem.

Nor that, as the investigative journalist and food writer Michael Moss has explained in an aptly entitled book *Salt Sugar Fat: How the Food Giants Hooked Us*, the reliable strategy of the food industry – in trying to keep up with new discoveries about potential hazards from their core products, discoveries and controversies that have variously seen all its ‘core pillars’ of salt, sugar or fat fall out of societal favour – has been

to simply swap from pillar to pillar, depending on which one is currently the focus of public attention (Moss, 2013, p. 70). After all, it is elementary human psychology that people tend to only be able to worry about one thing at a time!

But of all the food messages, the perception that fat is Public Enemy No. 1 seems to be particularly resilient. Remarkably, it seems that in the USA, the notion can be traced back to a single researcher, Ancel Keys, who published a series of papers in the years following the Second World War saying that Americans were suffering from ‘an epidemic’ of heart disease because their diet was more fatty than their bodies were used to, after thousands of years of evolution.

A vital part of the evidence offered by Keys to firm up his ‘fat causes heart disease’ hypothesis came from a comparative study of the US, Japan and four other countries. Country by country, his research seemed to impressively demonstrate that a high-fat diet coincided with high rates of heart disease. Only later did it turn out that Keys’ comparison had been skewed, as he’d discarded countries that did not fit his theory, such as France and Italy with their oily, fatty cuisines (Andrade, 2009): he had cherry-picked his data

Nor, on closer investigation, were ‘traditional diets’ especially low-fat, either. If the hunter-gatherers of yore relied on eating their prey, they would have had a lot more fat in their diet than most people do today. And even taking the better-known circumstances of the century preceding the supposed ‘epidemic’ (Tierney, 2007), Americans were consuming large amounts of fatty meat, so it followed a *reduction* in dietary fat consumed – not an increase.

Yet despite such protesting voices, it was too late: the cascade of misinformation had already begun. Following the shift in policy of the US Department of Agriculture, soon, scarcely a doctor could be found who was prepared to speak out against the expert consensus, leaving

only a few contrarians protesting on the margins. It all culminated with the highest medical officer in the USA, the Surgeon General, issuing a doom-laden warning about fat in foods, insinuating that ice cream was a health menace on a par with smoking tobacco. The theory made the cover of *Time* magazine, and was picked up by the US Department of Agriculture, who invited supporters to draw up revised ‘health guidelines’ (Tiernay, 2007).

What the story really shows, though, is not that sometimes over-zealous researchers get things wrong – surely a platitude of a finding – but how consensus stifles debate, and allows errors to propagate. Years later, after large-scale studies were conducted in which comparable groups were put on controlled diets (low-fat and high-fat), a correlation was found. However, it was not what was expected. It turned out that the low-fat diet seemed to be unhealthy.

After all, if the pursuit of low-fat foods sounds like a really good idea, in reality it can lead people away from healthy foods towards over-processed and fattening junk ones. Simple notions are misleading, as the famously unbalanced diet of the Inuit reminds us. Harold Draper, a biochemist and expert in Eskimo nutrition, says that what the ‘fatty’ Inuit diet illustrates is that there are no essential foods – only essential nutrients; and these nutrients are obtainable in more ways than we imagine (Gadsby & Steele, 2004, citing Draper, 1977). Similarly, the fats found in things like olive oil, nuts and seeds protect from many chronic diseases.

The story of Keys’ one-man crusade to change the official view of dietary fat underlines the point that all policy advice should come with an independent, contrary view. Instead, Keys’ success stands as an example of what happens when one view drives out all the alternative perspectives – as an example of what social scientists call ‘cascade theory’. This is the idea that information cascades down the side of an informational pyramid like a waterfall, because most of us, most of the time, cannot find things out directly for ourselves, and so we find that

adopting the views of others is easier. It is without doubt a useful, indeed essential, social instinct. Unfortunately, following wrong information is less rational, and that’s what often happens. A lot of economic activity and business behaviour, including management fads, the adoption of new technologies and innovations, reflect exactly this tendency of the herd to follow poor information.

What are possible strategies in response? One would be to control the information allowed to circulate so that ‘duff’ ideas, misleading or erroneous information, are prevented from taking hold. This approach is always popular – but as the Ancient philosophers understood, who is going to be the judge of which ideas are ‘good’ and which are ‘bad’?

A second and alternative approach is to actually encourage a range of views to be heard, even when they’re annoying to the ‘majority’. In societal terms, this means ensuring diversity in the ownership of newspapers and other media; allowing teachers freedom to choose their own curricula; allowing genuine participation in decision making by minorities. In terms of food advice, it requires public money supporting ‘pure’ research, and it certainly means seeking views from both sides of the fence.

‘But, but, but... facts are facts!’, scientists will insist. Yet quantitative data is particularly misleading. Statistics can be précised to great accuracy, but the criteria that decided the measure are much woollier, and are often ignored.

Methodological studies of ‘how scientists work’ have found that unconscious bias can be far worse than when researchers set out deliberately to falsify their reports, as Danielle Faneli (2009) has summarised. Research is riddled by simple errors, by bias, by reliance on other erroneous studies. Derek Koehler warns specifically that in attempting to explain, researchers temporarily make assumptions about the truth of what they are describing, assumptions which then become fixed in their minds as truths (Koehler 1991). As for ‘peer review’, supposed to hold the whole

research edifice together, it has been accused of *amplifying* errors rather than eliminating them. When researchers sent papers deliberately spiked with simple errors, the great majority of referees failed to spot most of them.

Nor do large-scale randomised trials definitively settle issues. As Bruce Charlton has put it (Charlton, 2001), the widely held notion that large-scale randomised trials are definitive is nonsense. ‘This aggrandisement of mega-trials to a position of superiority is an error’, he warns, and wonders how such a ‘transparently ludicrous idea’ gained such wide currency when its inbuilt deficiencies inevitably mean its conclusions are often going to be misleading.

Post-rational Food Policy?

The continual rotation of favoured theories in food science illustrates all too well the claim that science proceeds less by rational argument, let alone by experimentation, than it does by manipulating data into preconceived patterns, aided by scurrilous personal attacks and media tricks. Philosopher of science Thomas Kuhn compared the progress of scientific theory modification to political revolutions. Opinion must be won over by any means.

And to make matters worse, as the American social psychologist Solomon Asch found in the 1950s, people are quite prepared to change their minds on even quite straightforward factual matters in order to ‘go along with the crowd’; or in many cases, the experts.⁵ Science is not immune from this effect.

‘Paradigm shift’ is one of the most used and least understood terms in social science. Indeed, it seems that when Kuhn introduced the term in his book *The Structure of Scientific Revolutions*, way back in 1962, he himself had only a very hazy idea of what it might mean. Later, too, Kuhn seems to have retreated from the more radical implications of his theory, which are that scientific facts are never really more than opinions, whose popularity is transitory and far from conclusive. If, in the following half century, the notion has become firmly rooted in

the social sciences and humanities – it has scarcely made any impact on the actual conduct of mainstream science. Here, instead, experts live, as the philosopher Søren Kierkegaard said mockingly of philosophers, in a perpetual state of being just about ready to announce a new theory to explain everything. This misleading sense of science proceeding steadily towards ultimate truth conceals the alternative reality, that new ‘discoveries’ are often created to fit commercial, political and social agendas.

The World in a Drop of Cooking Oil

Which brings me back to cooking oil, at once so ordinary and yet so highly political. The rehabilitation of rapeseed oil didn’t come about by chance. Millions of dollars were spent on artificially modifying the plant’s characteristics in the 1970s, and similarly huge sums on ‘proving’ that the new product was safe before, in 1985, the oil obtained GRAS, or ‘Generally Recognised As Safe’ status in the United States. The new oil – originally called LEAR, for ‘Low Erucic Acid Rapeseed oil’ – contained hardly any erucic acid, and instead was high in omega-3s and heart-healthy mono-unsaturated fats. But just step back a moment: what is all this chemistry talk doing in a food debate, anyway? From the standpoint of chemistry, saturated fats are simply fat molecules that have no double bonds between carbon molecules because they are saturated with hydrogen molecules. The three main omega-3 fatty acids are alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). And ‘Mono-unsaturated’ fats are fatty acids that have one double bond in the fatty acid chain with all of the remainder carbon atoms being single-bonded. Clear? Not at all. Does it matter?

A literature study by *Nutrition Reviews* (Lin et al., 2013) entitled ‘Evidence of health benefits of canola oil’ found that most of the health claims advanced for the oil were at best unproven, and many were downright contrived.

And so today, this anonymous cooking oil perfectly illustrates the power of scientific claims to influence what we eat. Not merely

billions of dollars, but millions of lives hang on this product being safe. But is it? We have outsourced the issue to scientists speaking an impenetrable and quite possibly irrelevant language. However, my interest here is not actually in answering such questions – but rather in defending the right to ask them. Because my focus, and my concern, is the increasing tendency of modern, technocratic states to encroach on individual autonomy – often with the aid of modern science.

Today, the world has two great food crises. In the developing world, there is chronic poverty and malnutrition, along with multiple environmental threats from deforestation in the Amazon to desertification in Africa and Asia – driven by our taste for meat and the anonymous multinational food giants’ thirst for cheap crops like corn oil and soy. But the other crisis affects the rich world every bit as much as it does the developing countries. This is the so-called obesity epidemic, estimated to cost the global economy around \$2 trillion a year.

Both crises are intimately related to expert food advice, and the decisions taken by governments about what we should and should not eat. And yet, so much of it turns out not only to be wrong, but dangerously wrong! Public and governments in equal part are in thrall to a view of science as impartial and monolithic, when the reality is that the knowledge base reflects both the individual prejudices and preferences of researchers and their funders, and the economic prerogatives of governments and the food industry.

I don’t think that anyone can claim to have the answers. But I do think we won’t have any chance of finding them unless we start to ask more questions.

Notes

- 1 The Chinese language equivalent of rapeseed was first recorded c. 2,500 years ago, and the oldest archaeological finds may date back as far as c. 5000 BCE.
- 2 Sharon Therien, a ‘Certified Yoga Teacher and a Reiki Master with a Certificate in Fitness and

Nutrition’ who ‘specializes in health writing and copywriting for websites, blogs and businesses’, states firmly on the influential website Livestrong.com that ‘Canola oil is slightly healthier than olive oil, although olive oil is also a healthy oil’.

- 3 The official definition for canola stipulates the use of seeds from either *Brassica napus* or *Brassica rapa* that produces ‘an oil that must contain less than 2 percent erucic acid and solid component of the seed must contain less than 30 micromoles of any one or any mixture of 3-butenyl glucosinolate, 4-pentenyl glucosinolate, 2-hydroxy-3-butenyl glucosinolate, and 2-hydroxy-4-pentenyl glucosinolate per gram of air-dry, oil-free solid’.
- 4 A wider pool of experts, christened the Italian National Research Council (CNR), also endorsed the ‘battle for wheat’, producing papers extolling the positive benefits of whole-wheat bread and rice.
- 5 In Asch’s classic social scientific experiment, a group of volunteers were shown cards with various lines drawn on them, asking them to determine which of the lines were the longest. Unbeknownst to one of the group, all the others were not, in fact, volunteers but stooges, previously instructed to assert things that were obviously not the case, such as that a line that was obviously shorter than another was actually a bit longer.... It turned out that when enough of their companions told them to do so, around one third of people were all prepared to ‘change their minds’, and (disregarding all the evidence) bend pliantly to peer pressure.

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About the contributor



Dr Martin Cohen is an author specialising in popular books in philosophy and social science. His writing ranges widely, as he likes to make connections between different areas and ideas. As well as *Paradigm Shift*, featured in the previous issue (AHPb online magazine no. 7), his books include *101 Philosophy Problems*, *Critical Thinking Skills for Dummies*, *I Think Therefore I Eat* and even a book on nuclear economics called *The Doomsday Machine*. *I Think Therefore I Eat*, in particular, combines philosophy and food, offering surprising insights into why everything we eat makes us fat, and seems to have more to do with laboratories than farms!

SOME HUMANISTIC WISDOM

“Philosophy ought to challenge the basic assumptions of the age.”

Peter Singer (1946–)