



OPINION

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Q&A: Harold McGee, the curious cook

Harold McGee

Abstract

Harold McGee, author of best-selling book, *On Food And Cooking*, talks to *Flavour* about minerality, academia and molecular gastronomy.

Opinion

Harold McGee's book, *On Food And Cooking*, published in 1984, revolutionised the role of science in the kitchen. He is a prolific food writer with three books, five years of columns for the New York Times and a *Nature* paper to his name. He is an advisor to many of the world's best restaurants and talks to *Flavour* about the science of cooking.

What first interested you in the science of cooking?

Well it started out as a subject to pursue because I was out of work. It's kind of a long and indirect story; I started out studying astronomy and did that for several years, before I decided that what I was really interested in were the ideas that science elicits when one thinks about what we know about the universe. I wasn't so much interested in calculating gravitational forces as I was in the thoughts and feelings that I had about it. So I switched to philosophy and literature, did a graduate degree and taught for several years, but I couldn't get a regular long-term teaching job and got tired of applying for a new job every year. I'd been teaching writing, I'd studied science, so I decided to try writing about science and make a living that way. Not that many people were writing about the science of everyday life, and so I thought that would be a good place to start. I hit upon the idea of writing about food and cooking and was immediately convinced that it was the right thing to do, simply because if I wrote about the weather, for example, you'd know more about the weather but there would be nothing you could do about it. You'd still have to get your umbrella on a rainy day. With cooking, if you learn something about how the process works, it can actually make a difference to the way you do things in your own

life - you can change the way you cook, or use your understanding to cook the same dishes better. There were just many more possibilities for active engagement of readers in the subject, and the more I looked into it, the more I learned and the more fascinated I became. I very quickly became hooked, and never got around to the weather after all.

You're frequently mentioned as an advisor to chefs and those in the food industry, including cocktail maker Tony Conigliaro and his development of flint vodka

I think that what Tony's doing with the idea of *terroir* [1], the expression of geographical place in product, is actually much more literal than the very loose way in which the term *terroir* is often used. When people talk about the flavours of a place in wine, it's generally a marketing strategy rather than a term for understanding and appreciating something. For example, a sommelier in a restaurant might try to convince you that you'd really like a certain wine by saying 'you can taste the granite that the vines grow in' and that sort of thing, which is just not biologically possible. But what Tony is doing is actually taking an extract from a place, a rock, and putting the characteristic aroma of that place into a drink. I think that's brilliant, it shows that the worlds of nature and flavour are complicated; usually we taste and categorize things without taking into account that complexity. The great thing about what Tony does is that he takes what he's interested in from a complex situation and works with it, and that's the essence of distillation, so I think that it's a fantastic project.

When you try to pin people down about what it is that they're tasting, they'll often talk about minerality. That's another way of saying earthiness, *terroir*, that sort of thing. The interesting thing about the tasting term minerality is that it's a very recent addition to

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the wine lexicon. Even if you read about the pioneers of scientific wine analysis, such as Émile Peynaud from Bordeaux, who wrote a whole book about the taste of wine, nowhere in that book will you find that term. So you have to ask the question, couldn't he taste? Are we today, in the 21st Century, tasting more, or tasting something that previous generations were unable to? I don't think so. I think that in fact people are latching onto an aspect of wine that they want to associate with this idea of place. And because it is so difficult to connect particular flavours with their sources, it's hard to really define what minerality is, or what the expression of a place in a product could actually be. And you have to ask yourself, how many times have people actually tasted minerals, like the flint from which Loire white wines are said to get their flavor? How often do you put a rock in your mouth and suck on it?

What is responsible for the flinty or minerally flavour?

The French discovered a molecule in *sauvignon blanc* wines that is responsible for the sensory quality, and it turns out that it has nothing to do with flint; it's a sulphur compound generated by the action of yeasts on precursor sulphur compounds in the grape. So it's actually a collaboration between two biological agents that produces an aroma, which reminds us of a struck flint, but in fact has nothing to do with it, which I think is actually more interesting.

That's the way flavour works; flavours are generated by chemical compounds impinging on our receptors, and the way we know how to describe them to one another, the way we know how to recognize them, is by having encountered them before. Usually, the context in which we first encounter these sensations gives us the vocabulary to describe them to other people and to register them for ourselves, so we may call some wines 'grassy' because the first time we smelled that particular aroma was in the meadow and not in a wine. For me that's a big part of the excitement of the subject of flavour; the book I'm writing at the moment is about tracking down what the original sources of those sensations are. It's fine for us to have our vocabularies and our ways of keeping track of them, but what I want to know is where did they really come from? What do particular smells tell us about our specific surroundings?

The basic premise of it is to help people understand, and be more aware of, how our senses of taste and smell work, so that we distinguish marketing from solid information. But it's also about how to enjoy things, how to pay attention to what's there and maybe even get more pleasure from food. What is it that is giving rise to these molecules and what are their

functions in the world? So it's not just about food and drink, it's about life.

You were instrumental in the Erice meetings on physical and chemical gastronomy. Can you talk us through the background to those and the role you think that those had?

Nicholas Kurti, a Hungarian professor of physics at Oxford who had been in the UK for decades, was a very avid amateur cook, and back in the late sixties he did a British Broadcasting Corporation (BBC) programme about the science of cooking. We'd started sending probes into space, and Nicholas said at that time that he thought it was a shame that we knew more about what was going on in the atmosphere of Venus than we knew about what was happening in a soufflé in our own kitchen. He proceeded to show us what was happening in a soufflé by putting a thermocouple probe in it and following the temperature changes. Nicholas was good friends with a cooking teacher named Elizabeth Thomas in Berkeley, California, whose husband was a physicist. Elizabeth and her husband were attending a physics meeting in Erice, Sicily when they had the idea that a scientific meeting about cooking would be a really good idea, so Elizabeth spoke with the director of the centre there and he thought it was a great idea too, but it was a science centre and he needed a scientist to lead the program. So Elizabeth contacted Nicholas, who contacted me and also Hervé This in Paris, and the three of us put together the first programme, with Nicholas in charge. That was 1992, I think.

The idea was to invite scientists and chefs to the same meeting to talk to each other - it was that simple. Back then this wasn't happening at all, which was why it was such a great idea. So there were about forty of us altogether, from Europe and the United States, and we would just sit in a room together and take turns speaking about what we thought was interesting about the subject of food preparation in the home and in restaurant kitchens. We didn't want to talk about typical sorts of food science that have to do with manufacturing; this was about fine cooking - what was known, what wasn't known, what did chefs want to find out, what did scientists think they could provide, and it just started a dialogue. We had a handful of meetings every two or three years until the early 2000s, and although they were wonderful meetings for the people who attended, there were no proceedings or reports about what went on, so it was really kept to the people in the room. And so my feeling is that given the way things have changed, with the tremendous interest in the science of food and drink nowadays, the Erice meetings actually had very little to do with that; they were kind of an initial sign that times were changing, but they themselves didn't change anything.

What has changed in the relationship between science and cooking in the last thirty years?

Basically, two things have happened: first, the world in general has become much more interested in food, and in good food; chefs have become celebrities, and I think that's helped raise the visibility of everything to do with the subject. Second, cooks have come to realise that science is a tremendously valuable ally in creating good food, because cooking is essentially chemistry; the more you know about the elements, your ingredients, and what happens when you transform them into compounds, your complex dishes, the better job you can do and the more creative you can be.

Are there myths which are perpetuated by cooks today, but do not have a basis in science?

Yes, you might think of them as old cooks' tales, but my experience is that cooks, by and large, know what's going on. They have thousands of years of experience to bank on, so although they'll sometimes get the explanation for something wrong or they'll rationalise things in a way that may not be correct, they know how to cook, and they know what works and what doesn't. So I think at this point it's really more a matter of helping cooks start out their careers with a good grasp of the basics, rather than coming to see the value of science mid-career and getting to it a little bit late, which has often been the case in the last thirty years or so. I think that the earlier people start with an understanding of the basic science, the better they can do, the further they can take it and the fewer of these myths will persist.

There is interesting stuff going on in kitchens that's not being done anywhere else. Of course, academic science has been the gold standard in science for quite a while, and will probably continue to be. But because funding is becoming more and more difficult for academic science, and because people in trades are realising how important science is to what they do, I think there's going to be a kind of leakage from academic science into the rest of the world. I have a couple of children, still in school, who are leaning towards science, but what I hear from my friends in academia is how difficult it is, how stressful it is to get funding and so on. I'm thinking, what do I want for my children? I want them to keep that passion for knowledge, but find a reasonable life at the same time. I have a feeling that because things are becoming more difficult in academic science, there will be some scientists looking around and saying 'alright, forget about a university position, I am going to work as a consultant for the drinks industry, or the dairy industry, or the cheese industry'. There are restaurants like Noma and the Fat Duck that have development kitchens, with people on the staff who are essentially doing research every day, and I think that's maybe a sign that things are moving in that direction.

And about that word *science*. For most people it's intimidating because it connotes a specialised body of knowledge that you're not privy to, and people who do science know more than you do. One of the great things about the movement of science into kitchens and bars nowadays is that there are people doing real science who are not professional scientists, they're working with everyday materials and everyday products, and they're engaging with them, not because they've been assigned a project to complete, but because they really want to know how something works and to make something out of that. And that's really what animated the first scientists; before there was a profession, there was a fascination with the world and a desire to understand it better. They had the time and opportunity to play around with matter, to better understand how it behaved. So it's a wonderful return to the origins of the scientific instinct.

Finally, what's your view of the term molecular gastronomy?

The term was coined in order to accommodate the scientific conference centre in Erice where we wanted to hold this first meeting. The director apparently felt that 'the science of cooking' just wasn't impressive-sounding enough. It really is true that until very recently, food was not a respectable subject for serious people - in science, in philosophy, you name it. It was a very different time; Nicholas had to invent something that sounded more serious than 'the science of food' or 'the science of cooking', so he and Herve This came up with two multi-syllabic words: 'gastronomy', which is a couple of centuries old and means a general interest in things to with food and drink, and 'molecular'. Molecular was chosen, not because we were talking about things at the molecular level - food chemistry is so complex that you almost can't do it molecule by molecule - but because it was a very fashionable term at the time. Molecular biology, the study of individual molecules, particularly DNA, was making tremendous strides and had great public visibility, so 'molecular gastronomy' would echo that. I don't think any of us thought that that was going to be the name that would stick for a scientific approach to food. But it's appealing in a kind of perverse way, right? It's like no other term in cooking, it sounds complicated and impressive, and so it got latched onto by the first magazines and newspapers that covered it. I don't think it's a very attractive phrase, and I think as Heston Blumenthal and other leading modernist chefs have said, cooking is cooking. People are still taking ingredients and putting them together; they aren't measuring out six molecules here and putting them together with four molecules there, they use tinctures and alcohols and spices. So it's all to do with cooking.

Competing interest

Harold McGee is a consultant and advisor to several food and ingredient companies.

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