NEED TO KNOW: MOLECULAR GASTRONOMY

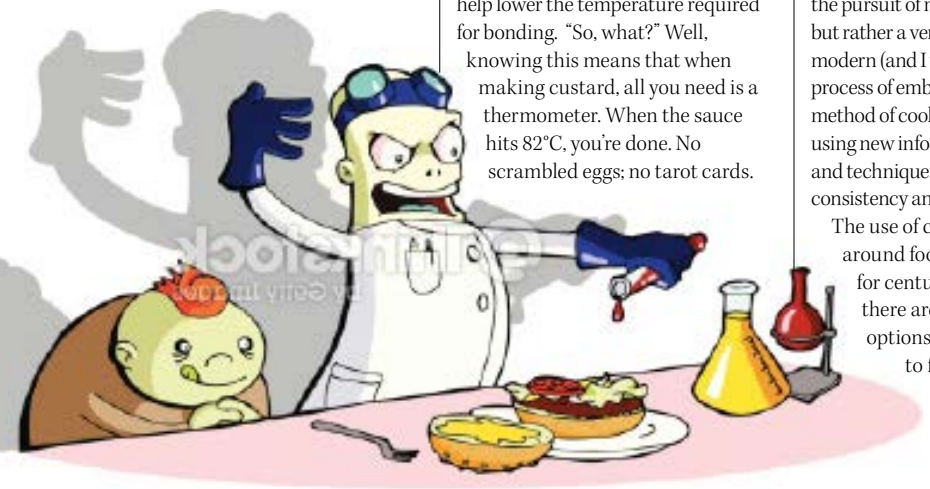
UNDERSTAND THE TRUE DEFINITION OF THE MISALIGNED AND OVERUSED CULINARY TERM, COURTESY OF BRIAN STEEL AND HISTORY.

YOU want to make custard. You take egg yolks, cream and sugar, mix and heat in a pan until it starts to thicken. Once it coats the back of a spoon, you're done. But be careful; if you go too far, you end up with sweet scrambled eggs.

We've been using eggs to thicken sauces for thousands of years, but it wasn't until around 1988 that Hungarian-born physicist Nicholas Kurti eventually asked why. (This is the same man who gave a talk to the Royal Society in 1969 entitled *The Physicist in the Kitchen* when he used the newfangled 'microwave oven' to make a reverse-baked Alaska.)

Egg yolks thicken a sauce over a narrow temperature range due to the properties of protein coagulation. Proteins exist as long chains of amino acids that clump together into mounds. When heated, these mounds unfurl and are able to bind with other proteins, trapping bits of water in the mesh.

Egg yolks do this at 70°C but, when you add a liquid (cream or milk), the proteins become diluted and need more heat to mesh. Both acid and salt help lower the temperature required for bonding. "So, what?" Well, knowing this means that when making custard, all you need is a thermometer. When the sauce hits 82°C, you're done. No scrambled eggs; no tarot cards.



What I just did was apply contemporary technical and scientific rigour to food: in this case, by understanding what's inside an egg yolk. And what I have just described is more aligned with what 'molecular gastronomy' actually is than the common, over-generous application of the term.

What it is not is neither a style of cooking nor a type of cuisine. It is not the pursuit of novelty for its own sake, but rather a very small part of the modern (and I would argue, natural) process of embracing a scientific method of cooking. It's about a chef using new information, ingredients and techniques to improve quality, consistency and flavour.

The use of chemistry and science around food has been going on for centuries, it's just that today there are fewer limits, more options, and more equipment to facilitate the cooking process, be it through the use of sous vide, liquid nitrogen, dehydration, or a wood-fired oven.

Evolution is a natural component of all cuisines, and building on collective culinary traditions through the application of knowledge and understanding is simply mirroring what has happened consistently over centuries. The apparent accelerated rate is no different to that associated with cars, computers, or phones. And in terms of food, it's long overdue.

A disproportionate number of recipes and techniques in current use are still based on those codified by Escoffier in the early 1900s. Using new ideas, new ingredients and modern technology is no more revolutionary than the birth of the restaurant itself.

Molecular gastronomy, originally 'Molecular and Physical Gastronomy', is a term coined to describe food-focused workshops by scientists. The modern face of this is Hervé This, whose current focus is 'Note by Note' cuisine, with the goal of feeding the world.

With his Note by Note approach, he aims to extract the pure essential compounds, flavours, and elements of all foods (which are all mostly water) and reconstruct them as required from what could be a small bag of powders. This is fascinating stuff, and could have tremendous application in a global sense.

Much like molecular gastronomy, this approach is a fair distance from the workings of a restaurant kitchen, and while it may help or inform the process, it certainly doesn't define it.

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