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## Kitchen Competent 廚房獻「技」

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As technology increasingly pervades all aspects of our lives, acclaimed chefs reveal how important it is to their art, but also what it will never be able to replace. 科技已經滲透生活每個層面，知名大廚將與我們分享科技的好處，以及科技無法取代的事物。By Rachel Duffell

# Kitchen 廚房獻「技」 competent

Exploring the offerings at medical-equipment trade shows was once the source of many of the tools used in molecular gastronomy and modernist cuisine. Centrifuges designed to separate serum from plasma were adopted to clarify fruit juice or make butter, and water baths originally used to store samples at a uniform temperature form the heart of the near-ubiquitous sous vide machine, which is ideal for cooking items evenly all the way through.

Many of these tools associated with modernist cuisine pervade professional kitchens today. Yet implementing such technology into a chef's gastronomic journey generally happens on the job, rather than at cooking school.

When Grant Achatz, chef and owner of the three-Michelin-star restaurant Alinea in Chicago – which opened in 2005 and originally focused on molecular gastronomy – graduated from the Culinary Institute of America in 1994, the most cutting-edge technology he'd been exposed to was the immersion blender, a recent upgrade from the standing blender. It wasn't until he staged at elBulli in 2000, a restaurant credited with bringing the modernist approach – and molecular gastronomy – to the mainstream, that his eyes were opened to the technology available to chefs.

"I watched them transform textures and manipulate ingredients, most famously with the siphon. But there were many other things going on that were technologically advanced, or at least the approach of it was," says Achatz. "And it spread like wildfire, and while it was spreading, the awareness was raised and demand increased and then there was a rapid increase in technology."

醫療設備展銷會曾經是搜購分子料理和現代主義烹調工具的地方：把血清跟血漿分開的離心機被拿來弄走果汁裡的雜質和製造牛油；原本用以存放樣本的恆溫水槽，變成無所不在的真空慢煮機的主體，成為將食物均勻煮透的理想工具。

今天，許多與現代主義烹調相關的廚具已佔據大小餐廳的廚房。不過，它們在廚藝學校裡依舊罕見，廚師一般要到投身工作才有機會使用這些工具。

Grant Achatz是2005年開業的芝加哥米芝蓮三星餐廳Alinea的主廚兼老闆，該餐廳主打分子料理，但這位出身於美國廚藝學院的名廚，於1994年畢業時接觸到的最頂尖烹調工具，只是改良自直立式攪拌機的手提攪拌器。2000年，Achatz加入將分子料理帶進主流市場的elBulli餐廳。他在這家帶領現代主義烹調潮流的餐廳，首次見識到科技在烹飪上的應用，眼界大開。

Achatz表示：「我看著他們改變食物的質感，隨意操控各種食材。當中，蘇打槍（又名泡沫槍）的使用最出名，但除此之外，其他先進烹調技術以至方法亦如雨後春筍。科技應用如野火燎原，一發不可收拾，並開始引起大家注意，以致需求日增，高科技廚房用具火速地應運而生。」

雖然現時每個廚房基本上都具備一些先進廚具，但它們並非不可或缺。羅馬米芝蓮二星餐廳Il Pagliaccio主廚Anthony Genovese以烹調正宗意大利菜聞名，他表示：「在我的廚房裡，科技的角色非常次要。科技是好幫手，但不會影響我的烹調方法，因為我的料理無需大肆改變食材的形態和質感，而是講求天然食材與各種有趣的味道配搭。雖然乾冰和3D食品打印機是餐飲界的新寵，但沒有它們問題也不大，況且這些東西對食物的味道沒有多大的貢獻。」

FOODINI IMAGES BY NATURAL MACHINES, ALINEA IMAGES BY ALLEN HEMBERGER

A variation of Polish-style cucumber salad with cucumber chutney, encapsulated dill-flavoured buttermilk and Siberian sturgeon caviar at Senses

Senses餐廳以青瓜酸辣醬、蒔蘿味白脫牛奶球和西伯利亞鱈魚子醬炮製的新版波蘭青瓜沙律





This page, clockwise from top: Natural Machines' Foodini 3D printer at work; The Deepness at Il Pagliaccio; 3D printing and a chef join forces

Opposite page: chef Anthony Genovese of Il Pagliaccio

本頁上圖起順時針：  
Natural Machines的  
3D食物打印機Foodini；  
Il Pagliaccio菜式The  
Deepness；3D打印與廚  
師的聯手創作  
對頁：Il Pagliaccio主廚  
Anthony Genovese

To an extent, technology is something present in every kitchen, but it's not essential. Anthony Genovese, chef at two-Michelin-star restaurant Il Pagliaccio in Rome, who is known for his unambiguous Italian cuisine, says, "In my kitchen, technology has a marginal role; it has certainly helped but did not upset my way of cooking. My style of cooking doesn't require the food being modified and tampered with too much, because it's about celebrating pure ingredients through interesting flavour combinations. While dry ice and 3D printers are a novelty, we've survived perfectly well without them and they don't really bring anything to the table in terms of excellent flavour."

Lynette Kucsma, co-founder of Natural Machines, cites two reasons why professional chefs – and even home cooks – might adopt her company's 3D food printer, Foodini, in their kitchens: first, to allow for food presentations that simply aren't possible by hand; and second, to help chefs through automation. The appliance is designed as a complementary kitchen tool. But you can only automate so far, she says. "A chef is definitely going to come up with the creative ideas of what to print, what it looks like, food presentation, the ingredients that go behind it. It's a tool that helps them express their creativity." Chefs Paco Pérez of Miramar and Joel Castanyé of La Boscana, as well as a number of culinary schools, are among those who have embraced the Foodini.

Andrea Camastra of Senses restaurant in Warsaw, Poland agrees that the incorporation of cutting-edge equipment is by no means essential and that every restaurant has its place in the world with or without technology, yet, for him, when combined with food science, the addition of technology to the culinary equation can produce optimum results.

"Technology together with chemistry allows us to bring out the best of the product we're analysing," says Camastra. "Once we know everything about a product we can proceed better. It's like anything else in life – the more information we have about things the more we can react."

Genovese is keen to add one important point. "If you use top-quality ingredients and fresh products, then technology can only enhance it. If the product is not of excellent quality and people try to make this behind fancy technology, then it becomes a problem."

At Senses it's quality produce that's being enhanced by Camastra's scientific knowledge and use of technology – as the restaurant's acclaim, which includes one Michelin star, attests. Senses' kitchen is complemented by a chemistry laboratory and Camastra's sous chef, or "right hand", as he calls Wiktor Faliszewski, is a microbiological technology scientist. Camastra believes that together the pair is writing the next chapter in gastronomic history. "I've got the latest technology in my hand which will change the gastronomy world for the second time after molecular gastronomy," he says.

Natural Machines公司的創辦人之一Lynette Kucsma則指出，專業廚師甚至一般家庭會選用其公司的3D食品打印機Foodini，主要有兩個原因：一是可以做出人手無法做到的食物賣相，二是工序自動化可減輕廚師的工作。Foodini只是廚房的輔助工具，有其局限。她解釋：「要印什麼、食物的樣子和賣相，以至該採用哪些食材等，都必須由廚師自己發揮創意，這工具只能幫助他們實踐創意。」Foodini深受Miramar餐廳主廚Paco Pérez、La Boscana餐廳的Joel Castanyé及多間廚藝學校歡迎。

Andrea Camastra是波蘭華沙餐廳Senses的主廚，他也同意，尖端設備並非不可或缺，用不用這些先進工具不會影響一間餐廳的生存，但對他來說，食物科學與科技結合，可以獲得相得益彰的效果。

Camastra解釋：「在分析產品時，科技結合化學可以讓我們找出產品最好的一面，對產品瞭如指掌才能精益求精。正如人生的其他事情，了解越多，就越能夠作出正確的反應。」

大廚Genovese特別補充一點：「當你使用的是優質食材和新鮮產品，科技無疑可以提升其味道；但要是產品本身品質不夠好，卻想借助花巧的科技來扭轉乾坤，問題便來了。」

Camastra的科學知識和科技運用，讓Senses採用的優質農產更出色，餐廳獲得米芝蓮一星的榮譽證明此言非虛。Senses的廚房裡不僅設有化學實驗室，Camastra的得力助手、副主廚Wiktor Faliszewski更是一名微生物科技學家。Camastra相信兩人聯手可以譜寫飲食史的新一頁，他說：「我所掌握的最新科技，將會繼分子料理之後，再次改變飲食世界。」

該餐廳供應的「合成料理」菜式，概念源自法國物理化學家Hervé This，他正是1988年提出分子料理的人。合成料理的概念在於利用科技提取食材的味道和香氣，將每種食材的基本合成物分解出來，藉此了解食物的構成，並以這些分解出來的合成物而非它們所合成的食材進行烹調，從而創造食物的全新口味和質感。Pierre Gagnaire於2009年推出第一道以合成料理方法炮製的菜式，而供應波蘭與地中海融合菜式的Senses，則是第一家主打合成料理的餐廳。

科技肯定不是炮製得獎佳餚的必要條件。著重烹飪技巧和高質素食材的Genovese表示：「烹調意大利菜用不著太多科技，這正合我意。我們的菜式賣相複雜，有些更是在羅馬從沒見過的，因此有人以為我們一定是大量使用科技才能做到如此精準，但事實是，我們的烹飪技巧已達到這種高度。」



The restaurant serves up “note by note” cuisine, a gastronomic concept founded by Hervé This, the same French physical chemist who invented molecular gastronomy in 1988. It focuses on using science and technology to extract intense flavours and aromas from ingredients, breaking each ingredient down to its base compounds to understand how food really works and then cooking with these compounds as opposed to their sum to create brand-new flavours and textures. The first “note by note” dish was created in 2009 by Pierre Gagnaire, while Senses is the first restaurant devoted solely to the cuisine applied to a fusion of Polish and Mediterranean culinary traditions.

Technology is certainly not required to produce high-level award-winning food. “Italian cuisine doesn’t require so much technology, which suits me very well,” says Genovese, whose cooking relies on technique as well as the highest-quality ingredients. “I think because my food appears to be quite complex, in terms of presentation and dishes that haven’t really been done before in Rome, people think we must use a lot of technology to get this level of precision. But actually we develop this level of skill ourselves.”

Technology can allow for distinctive dining experiences and in some cases this is happening as much outside the kitchen as it is within. Alinea 2.0, which was launched in 2016 after the restaurant closed for renovation, saw technology enter the dining room.

“It’s interesting to see how people still associate Alinea with molecular gastronomy, which disappoints me, quite honestly, because in the lifespan of this restaurant the cuisine has evolved. Today we’re not abandoning things like rotary evaporators and helium and the classic soda siphons or centrifuges, but they’re utilised to different effect and for different purposes, as it should be for a restaurant whose name literally means ‘the beginning of a new train of thought’.

“We’re always trying to reinvent,” says Achatz. “The restaurant has evolved and it’s not manipulating what’s on the plate for Alinea any more – it’s about manipulating the experience and the environment, so now we play with theatre lighting and directional speakers and crazy things like fog machines that we use to spray out different aromas into the dining room. I guess you could say this is new technology but it’s a totally different purpose.”

Wherever and whatever the technology, one thing chefs agree on is how essential a strong classic cooking background is.

“It’s absolutely fundamental and absolutely necessary and it’s not possible to do without for several reasons. First of all, we have to remember always that a restaurant is an eating place. People are coming to eat food. Second, there’s no way that you can express yourself fully, even in a very modern



**This page, from top:** Gazpacho comprised of local tomato, peach, and citrus aroma, with a sidecar of ibérico-manchego bread at Alinea; chef Grant Achatz of Alinea

**Opposite page:** Iberico, green pea, mortadella and truffle at Senses

**本頁上至下:** Alinea的本地番茄、桃和柑橘香味伴ibérico-manchego麵包; 餐廳主廚Grant Achatz

**對頁:** Senses的伊比利亞火腿、綠豌豆、mortadella意式肉腸和松露

Duffe... competent ??????

“If you use top-quality ingredients and fresh products, then technology can only enhance it  
當你使用的是優質食材，科技無疑可以提升其味道”  
– Anthony Genovese

科技有助營造別出心裁的用餐體驗，而有時候，科技在廚房以外的地方受到的重視不亞於廚房裡面。2016年完成裝修後重開的第二代Alinea餐廳，便於用餐區引進不少科技設備。

東主Achatz說：「有趣的是，大家仍然把Alinea跟分子料理連在一起。老實說，我有點失望，因為餐廳其實一直在變。今天，我們不是要摒棄旋轉減壓濃縮機、氮氣、傳統蘇打槍或離心機這些東西，只是為了達到不同的效果和目的而改變它們的用途。餐廳的名字Alinea意思是『新思潮的開始』，求新求變才不會辜負這名字。」

他續說：「我們一直追求革新，餐廳已再次蛻變，現在我們的焦點不只是操控盤裡的食物，而是更進一步操控用餐體驗和環境。因此，我們餐廳加設舞台燈光、定向喇叭，以及可以噴出不同香氣的煙霧製造機。你或許會說這也是新科技的運用，但用途卻完全不同。」

雖然在哪裡和怎樣使用科技沒有定論，但大家有一個共識，就是必須要有紮實的傳統烹飪訓練。



There's no future without the past, so it's incredibly important that the classic methods and skills are mastered

沒有過去·何談將來·最重要的還是掌握傳統的烹調技巧

– Andrea Camastra



Opposite page: Quality ingredients shine with simple preparation in Il Pagliaccio's Lamb, Dates and Mont Blanc

對頁: Il Pagliaccio的羊肉、棗子和Mont Blanc, 只要簡簡單單的搭配, 優質食材自會發光

This page, from left: chef Mike Bagale, executive chef at Alinea, plates "s'mores" comprised of liquid ganache, birch syrup and marshmallow; chef Andrea Camastra of Senses

本頁左起: Alinea行政總廚Mike Bagale以朱古力醬、白樺糖漿和棉花糖炮製的's'mores; Senses大廚Andrea Camastra

way, if you did not master classic cooking," says Camastra, who goes on to give an example. If you want to make something with leaves, he says, you start by making a broth – a consommé – in the traditional way. This consommé ends up in the laboratory, where it might be used as a soup, as a liquid to make a piece of bread, dehydrated to make a powder, or siphoned to make a foam. "Regardless, it's important to know how to make it from scratch through classic cooking. There's no future without the past, so it's incredibly important that the classic methods and skills are mastered."

Yet an understanding of technology and its application in the kitchen may also be useful. The International Culinary Institute hopes to address this with its new training offerings and facilities. As well as a sensory laboratory, students will be exposed to equipment such as rotary evaporators and tools used for freeze drying and other modernist and progressive techniques.

"One of the things that feels so antiquated with culinary school is that there's very little progressive cooking in the curriculum," says Achatz. "In most culinary schools it's important for students to get a background mostly in Western or European technique before they're expected – or even allowed – to use more modernist approaches to cooking. It would be pretty cool to have some form of modern gastronomy education and maybe that's something that will happen in the near future."

Camastra解釋:「這是最根本的, 不可或缺的原因有二: 首先, 必須時刻謹記, 餐廳是用膳的地方, 客人是來吃東西的; 其次, 沒有掌握好基本的廚藝, 即使借助現代科技, 也無法完全做出自己想要的東西。」他接著舉例說明。

假如你要用菓子做些什麼, 首先你要用傳統方法將它煮成高湯, 然後將高湯拿去食物實驗室, 之後要當餐湯, 還是作為製作麵包所需的液體, 或脫水後做成湯粉, 或用蘇打槍變成泡沫狀, 悉隨尊便。「無論如何, 你首先必須懂得用傳統烹調手法走出第一步。沒有過去, 何談將來。因此, 最重要的還是掌握傳統的烹調方法和技巧。」

然而, 認識科技及廚房裡的科技應用對烹調也大有幫助。有見及此, 國際廚藝學院的課程將涵蓋有關內容, 並增設新的訓練設備如感官科學實驗室等作配合, 學員將有機會接觸旋轉濃縮機、冷凍乾燥機等現代主義烹調所需的先進技術。

Achatz認為:「廚藝學校的課程甚少納入前衛的烹飪知識, 我覺得這個做法已經過時了。大部分廚藝學校非常重視學生的西方或歐洲菜餚的烹飪技巧訓練, 必須先打好這方面的基礎才有機會或才會獲准使用較現代的烹調手法。如果能夠在課程中加入現代飲食教育的內容其實也不錯, 也許在不久的將來可以看到這樣的發展。」