RUNNING HEAD: MEXICO: THE MULTISENSORY DINING EXPERIENCE

Introducing diners to the range of experiences in creative Mexican cuisine, including the consumption of insects

ABSTRACT

It would seem fair to say that most people in the West remain more than a little apprehensive about eating insects (entomophagy), and the idea of incorporating insect matter into their diet. Rather that telling people that they should eat insects and/or that it is good for the planet, the approach trialled as part of the México dining concept delivered in London in 2015 by *Kitchen Theory* was to incorporate insect matter (primarily powdered, but also, on occasion, whole) into a number of the courses served as part of the seven-course meal. Importantly, various psychological techniques were built into the design of the multisensory experience in order to help familiarize those diners who were anxious about the prospect of eating bugs and critters. The consumption of insects has long been a (small) part of Mexican cuisine, and thus developing a creative Mexican dining concept seemed to be an appropriate gastronomic vehicle to introduce people to the pleasures and cultural history of entomophagy.

KEYWORDS: GASTROPHYSICS; MEXICAN CUISINE; ENTOMOPHAGY; MODERNIST CUISINE.

Introduction: México: The multisensory dining concept

The México dining concept (see **Menu 1**) ran for four months at Kitchen Theory (https://kitchen-theory.com/) from September to December 2015 at Maida Hill Place, London. Chef Jozef Youssef (JY) spent five weeks in Mexico City and Oaxaca, Mexico, courtesy of the Mexican Government Scholarship for Artist Residencies in 2015 (http://www.mexicanchamberofcommerce.co.uk/mexico-by-kitchen-theory.html) in preparation for the event. Together with his sous chef, they explored the culture, regional flavours, and techniques. They worked with local chefs in the *Zefiro* Restaurant (http://elclaustro.edu.mx/zefiro/) – a training restaurant located at The University of the Cloister of Sor Juana, Mexico City. They also travelled south to Oaxaca for a week to explore regional specialities including mezcal, Oaxaca cheese, and chapulines (grasshoppers) as well as Oaxaca's notable varieties of mole sauce.

Menu 1.

Amuse – The Holy Trinity

Starter I – Nopal

Starter II – Memories of Oaxaca

Main I - El Chapulín Colorado

Main II – An Offering for the Gods

Pre-dessert – Mezcal

Dessert I – Vanilla and the Bee

Four of the seven dishes on this menu are vegetarian.

All of the others have vegetarian options (available on pre-order).

An important part of the approach was around ensuring the authenticity of the experience. In part, this involved importing uniquely Mexican ingredients including guajillo and ancho chillies (see Miller & Harrison, 1991), dried epazote (a herb also known as known as Jesuit's

tea; see Logan, Gwinn, Richey, Maney, & Faulkner, 2004), huitlacoche (corn fungus, AKA Mexican truffle; Valverde, Paredes-López, Pataky, & Guevara-Lara, 1995), and chapulines (grasshoppers; Cohen & Schuster, 2019; Wade, 2015). Even basic elements such as the flour used to prepare the handmade tortillas and tacos was made of nixtamalized corn, a process for the preparation of maize/grains in which the corn is soaked and cooked in an alkaline solution, usually limewater (Jiménez, Toledo, Mier, Bravo, Gutiérrez, Ayala, & Rodriguez-Garcia, 2020). While store-bought tacos exist (and are easy enough to come by), it was felt important to be as true/authentic as possible. The effort in preparation and research for the event was all made worth the while when one visiting Mexican dignitary said something of the sort: *"It doesn't look like Mexican food, but there were flavours that reminded me of my grandmother's cooking."*

Chef JY gave a lot of thought as to how the guests would interact with the dishes that were to be served as part of this particular dining concept. For four of the seven courses, the diners were encouraged to eat with their hands. Note that a seemingly-similar inspiration motivated Mugaritz's decision to forego cutlery for one season (Mugaritz ak, 2016; see also Gill, n.d.). This approach was taken for the following reasons: 1) People often eat with their hands in Mexico (Chandra, 2018); 2) Many people believe that eating with the hands it can actually make the food taste better (see Spence & Piqueras-Fiszman, 2014), or at least means that the foods we eat are not 'contaminated' by the metallic taste of most common forms of cutlery (e.g., see Piqueras-Fiszman, Laughlin, Miodownik, & Spence, 2012); 3) Asking British diners to eat with their hands in some ways takes people slightly out of their comfort zone. As such, the idea was that this should then make them a little more aware and mindful of the dishes that they were tasting, as they could no longer rely on the mindless way in which they normally interact with the food (cf. Gander, 2016; Hong, Lishner, & Han, 2014); 4) Eating with the hands also takes diners back to a more natural, and one might even say sensual, and ancient method of interacting with the food they eat.

Given our ongoing research agenda on the importance of eye appeal to the enjoyment of a meal (e.g., Michel, Velasco, Gatti, & Spence, 2014; Velasco, Michel, Woods, & Spence, 2016; Youssef, Juravle, Youssef, Woods, & Spence, 2015), the various dishes were very much designed with this in mind. In particular, various stencils were ordered, thus allowing for Aztec-themed patterns to be dusted onto the diners' plates. At the same time as the development of the México dining concept, chef JY had become particularly interested in the notion of

storytelling at the dining table (e.g., Huen, 2018; Shaw, 2015; see also https://www.trendhunter.com/protrends/narrative-dining). The México menu thus provided one of the first occasions when the chef JY would deliberately come out from the kitchen to regale the diners with stories and myths relevant to / underpinning the food that they were about to eat. In designing the multisensory dining experience, much thought was given over to a consideration of how to gradually introduce the guests to the idea of entomophagy. Although this was the secondary theme after Mexico, there were a number of reasons to believe that this was an important part of the experience.

The theme colour for this dining concept was black (see **Figure 1**). In total, around 630 diners had the experience. When booking, diners were given the option of going insect-free. Here, of course, it is important to note that beyond any visceral aversion to entomophagy that some diners may have (Spence, 2015), there is a risk of an allergic reaction to the chitin is the allergen in shellfish, crustaceans and insects (e.g., see Brinchmann, Bayat, Brøgger, Muttuvelu, Tjønneland, & Sigsgaard, 2011; Lee, 2009), and so any relevant allergies were also checked for (see also Bee, 2019). The experience was designed to showcase both creative contemporary Mexican cuisine, while as a secondary theme, use the Mexico concept to help introduce diners to entomophagy.

INSERT FIGURE 1 ABOUT HERE

The atmosphere has a significant impact on the perceived authenticity/ethnicity of the food we eat (e.g., Bell, Meiselman, Pierson, & Reeve, 1994; Two Pesos v. Taco Cabana, 505 U.S. 763, 1992, cited in Greene & Kesselheim, 2011; Spence, 2017). As such, the Kitchen Theory venue at Maida Hill place was decked out with Hollow Day of the dead skulls with candles inside and canvases displaying images of vibrant Mexican street art. Music by Mexican ambient electronic musician Jorge Reyes (who fuses elements of native Aztec/Mexican culture into his instrumental work) was also presented in the background (cf. Yeoh & North, 2010; though see also Zellner, Geller, Lyons, Pyper, & Riaz, 2017). Together, it was hoped that these audiovisual contextual cues would help to transport the diners to a very different place. Prior to the dining experience, the guests were offered a Mexican-themed cocktail (or mocktail), thus providing time for all the guests to arrive, and for the diners to soak up the atmosphere of Mexico, where the chef hoped to transport his diners. Mexican Copal incense was burnt in the dining room as part of the opening ceremony, thus providing a relevant olfactory contextual cue.

Chile: A central ingredient in Mexican cuisine

The chile is often considered to be a distinctive feature of Mexican cuisine (see Rozin, 1982, 1983). Indeed, it has been used in the cuisines of Mexico, Colombia, and the Panamanian northern coastal regions of South America for millennia (Paran & van der Knapp, 2007; Perry Dickau, Zarrillo, Hoist, Pearsall, Piperno, et al., 2007; see Spence, 2018b, for a review). This ingredient is often, but not always, added for the spicy heat that it adds to the flavour of a dish (Rozin, 1990; see also Gonzalez-Crussi, 1989; and Calvino, 2009). This a taste experience that many people, especially outside Mexico acquire a liking for (Rozin, Guillot, Fincher, Rozin, & Tsukayama, 2013). As many anthropologists, chefs, and commentators have noted, a very wide range of formulations of chile differing in flavour profile are used (see Adapon, 2008; Miller & Harrison, 1991; see also Spence, 2018a, b). In fact, the use of, and appreciation for, chilies in Mexican cuisine goes far beyond the heat they may add to a dish. They are most prized for the wide array of aromas and flavours they contribute to sauces, stews, pastes and beyond, and are responsible for much of the uniquely signature flavours at the heart of many Mexican dishes (cf. Adapon, 2008; Lomelí, 1991; Miller & Harrisson, 1991; Muñoz Zurita, 1996; Van Rhijn, 1993). According to the latest research, chiles are also a functional food inasmuch as those who include them in their diet show a reduced risk of mortality (see American Heart Association, 2020).

Entomophagy

Entomophagy, eating insects, is increasingly being mentioned as a possible alternative source of at least some part of our protein (see Deroy, Reade, & Spence, 2015; Spence, 2015). This idea was popularised in the mainstream media in 2013 when the United Nations Food & Agriculture Organisation published a report entitled “Edible insects; Future prospects for food and feed security” (see van Huis, Van Itterbeeck, Klunder, Mertens, Halloran, Muir, & Vantomme, 2013). The report outlined the potential benefits of eating insects with regards to sustainability, food security, and nutrition. Entomophagy can, then, be seen as offering a potential route to helping address the looming challenge of feeding nine billion people (Godfray, Beddington, Crute, Haddad, Lawrence, Muir, et al., 2010; see also Vandenberg, 2019).

Most people in the West, however, remain apprehensive about eating insects (entomophagy). Here, though, it is important to note that people already eat a number of bee-related products, such as honey, propolin, and Royal Jelly. People's disgust tends to be focused on the idea of eating dirty insects such as cockroaches (see Deroy, Reade, & Spence, 2015). Interestingly, the research shows that the nutritional composition of insects is highly diverse (i.e., depending on the species). On average, insects tend to be roughly as 'healthy' as meat products (Payne, Scarborough, Rayner, & Nonaka, 2016). At the same time, however, farming insects uses up to 50-90% less land per kilogram of protein produced, 40-80% less feed per kg of edible weight, and produces 1,000-2,700g less GHGEs (Greenhouse Gas Emissions) per kilogram of mass gain than conventional livestock (see Ceurstemont, 2013).

It has been estimated that many consumers already unknowingly eat around 1/2 kg of insects on an annual basis. A look at the FDA (https://www.fda.gov/food/ingredients-additives-gras-packaging-guidance-documents-regulatory-information/food-defect-levels-handbook) website offers insight to the 'default action level' for insects in processed food. There is, for example, an estimated average of 60 or more insect fragments per 100 grams in chocolate. Popular foods such as peanut butter have an action level of 30 or more insect fragments per 100 grams. Meanwhile, in the case of canned citrus juice, the action level is five or more Drosophila and other fly eggs, or one or more maggots, per 250 ml.

Entomophagy is an accepted practice within many cultures around the world and constitutes a major source of nutritious food for many people. Over 3000 ethnic groups in mainly African, Asian, and Latin American countries already eat insects as part of their normal diet (Shockley & Dossey, 2014; van Huis et al., 2013). It has been estimated that Mexico has 300 to 550 species of edible insects, more, in fact, than any other country, according to the U.N. Food and Agriculture Organization (FAO; Van Huis et al., 2013). What is more, edible insects have been an integral part of Mexican cuisine as far back as the Aztecs, Mixtecs, and other civilizations, that flourished for millennia on diets that were rich in grubs, grasshoppers, and other invertebrates. While many chefs have chosen to introduce new recipes that incorporate insects, or insect matter, it seemed perhaps more appropriate to consider their use within a pre-existing ancient cuisine. The key themes of this multisensory dining experience were authenticity and storytelling.

There has long been interest in insects a food and feed (Van Huis, 2013; van Huis, Van Itterbeeck, Klunder, Mertens, Halloran, Muir, & Vantomme, 2013; Van Itterbeeck & van Huis,

2012). What has changed in recent years is the growing interest amongst chefs in serving insects (e.g., Ceurstemont, 2013; Dicker, 2015; Evans, Flore, Bom Frøst, & Nordic Food Lab, 2017). For instance, Rene Redzepi (*Noma*) has reported how he was inspired to use ants by Brazilian chef, Alex Atala (*Dom restaurant*, Brazil). Redzepi said the taste was explosive, describing it as tasting like lemongrass and kaffir lime. *"I could not believe there was so much flavor in such a little creature,"* he recalled. *"I was thinking, why aren't we exploring this? We have bugs here -- maybe some are actually delicious."* (quoted in Serafin, 2013). As another example, consider only how the Nordic Food Lab's research and book popularised insects among chefs (Evans, Flore, Bom Frost, & Nordic Food Lab, 2017).

In 2013, the Nordic Food Lab, Pestival, and the Wellcome Collection in London organized a two-night culinary event "Who's the Pest?" (http://www.pestival.org/news/09052013195103-a-guardian-film-about-nordic-food-lab-and-pestival-collaboration-/). The audience was presented with a range of tasting elements including a French-style mousseline containing wax moth larvae with morel mushrooms, butter-roasted crickets, and a tangy ant-gin cocktail (see http://nordicfoodlab.org/blog/2013/5/pestival).

The México menu

The Opening Ritual

The hostess welcomed the guests and introduced the dining concept, the lights were dimmed (though see van der Heijden, Festjens, & Goukens, 2021), and Jorge Reyes's *Donde Nadie* was played over the loudspeakers. A partition was pulled back allowing the guests to both see and smell the corn on the cob being grilled. One person walked around the dining room lighting the candles on the various tables, while another followed with a resin burner containing copal (see Gigliarelli, Becerra, Curini, & Marcotullio, 2015, on the health and well-being benefits of this tree resin that is frequently used in Mexico). The guests were then handed rose-scented hot towels – this obviously an important element if the diners were to eat with their hands. At this point, the first dish was served.

The Holy Trinity

According to Joy Adapon (2008, p. 8), corn, beans, and chile represent the holy trinity of Mexican cuisine. She quotes Zarela Martinez as saying that: *"Without each other, none of the three would be what it is. Corn is an incomplete protein, while beans can be difficult to digest. Together they would be good basic sustenance, but hopelessly monotonous. As such, chile makes the gastric juices run for a dinner of beans and tortillas. It also provides the vitamins that would otherwise be lacking, including vitamins A and C. The combination of the three makes a nutritionally based meal. Its magic."* (see also Spence, 2018b).

Elements of the dish: Refried bean puree, grilled corn in husks, soaked guajillo chilli chiffonade, huitlacoche (otherwise known as corn fungus or Mexican truffle; Valverde et al., 1995), sweet & hominy corn cake, chile oil, corn husk ash for the stencil (see **Figure 2**). This was one of the vegetarian dishes. See Appendix for the recipe.

INSERT FIGURE 2 ABOUT HERE

When designing this culinary concept, it was deemed important not to face diners with the threat of edible insects from the very start of the meal, but rather to introduce them slowly, once they had settled themselves into the multisensory experience (cf. Veeck, 2010). Corn husks were charred until they had become ash. The ash was then used to create a traditional black stencilled Aztec pattern on the white plate. Notice how this plays both on the importance of eye appeal on the plate (see Spence, Okajima, Cheok, Petit, & Michel, 2016), but also to the use of parts of the produce (the corn husk) that would normally be discarded. Hence, in some small way, the use of the corn husk can be seen as attempting to highlight the problem of food waste; e.g., Leverenz, Hafner, Moussawel, Kranert, Goossens, & Schmidt, 2020; Schanes, Dobernig, & Gözet, 2018).

Nopal

Nopal (from the Nahuatl word nohpalli for the pads of the plant) is a common name in Mexican Spanish for the plant, of the Opuntia cacti. Nopal can be eaten raw or cooked, and is typically used in marmalades, soups, stews, and salads, as well as having various medicinal uses (see El-Mostafa, El Kharrassi, Badreddine, Andreoletti, Vamecq, El Kebbaj, et al., 2014). For the Mexico menu, nopal leaves were grilled and served with Oaxacan cheese on a fresh tortilla with avocado crème, spherified tomato caviar (see Youssef, 2013, on the technique required to

make this), white onion, coriander cress, coriander salt, and salsa were served from a molcajete. A molcajete is a stone tool, the traditional Mexican version of the mortar and pestle (see Laudan, 2013) (see **Figure 3**). It is worth pointing out how in this and several of the subsequent dishes on the Mexico menu, the stencilling was deliberately oriented to ensure a dominant line ascending to the right from the diner's perspective (see Youssef et al., 2015; though see also Spence, Michel, Youssef, & Woods, 2019). This dish was to be eaten with the hands.

INSERT FIGURE 3 ABOUT HERE

Memories of Oaxaca

Oaxaca, in Southwestern Mexico, is best known for its indigenous peoples and cultures with the most numerous and best-known being the Zapotecs and the Mixtecs. Oaxaca is considered a Mexican gastronomic Mecca by Mexicans (Herrera, 2015). Oaxacan gastronomy is known for its "seven moles" (traditional sauces), chapulines, a unique style of regional tamales in banana leaves, tasajo, and, of course, mescal (Ramírez-Guzmán, Torres-León, Martinez-Medina, de la Rosa, Hernández-Almanza, Alvarez-Perez, et al., 2019).

This dish was inspired by two elements of chef JY's trip to Mexico: 1) Chef Juan Pablo Flores, executive chef at *Zefiro* restaurant in Mexico DF. He is the chef JY worked with to develop *Synaesthesia* Mexico (cf. Spence & Youssef, 2020). Juan Pablo is originally from Oaxaca and is of Zapotec origin. One day as they tasted dishes on the *Zefiro* menu, Juan Pablo took a spoon of a corn and shellfish soup which he had mixed with an epazote and lime dressing and immediately said: *"That reminds me of Oaxaca, it tastes like home"*. The second inspiration came as JY was on the bus going to Oaxaca. As they approached, JY could see that the clouds appeared to be getting closer, due to the high altitude in Oaxaca, it almost felt like you could reach up and touch the clouds. This inspired the epazote 'cloud' that is poured into the soup.

Elements of the dish: Hominy corn and shellfish soup, aguachile sphere, grilled shrimp and octopus, epazote and chive dust for the stencilling, and coriander cress (see **Figure 4**). This dish was also partly eaten using the hands.

INSERT FIGURE 4 ABOUT HERE

Here, one might also consider how shrimps, and other shellfish were once considered as little more than insects of the deep, at least in Western Europe (Luzer, 2017). Hence, this dish can, in some sense, be seen as setting the scene for the whole insect that appeared in the next dish.

El Chapulín Colorado

Within the varied and complex cuisine of Mexico, the use of edible insects dates back to Mexico's indigenous origins. In many parts of Mexico (especially Hidalgo, Chiapas, Oaxaca, Guerrero, Puebla, and Yucatan), insects are still consumed in much the same way as they were before the European invasion (Ramos-Elorduy, 2009). After preparing the insects for consumption by cleaning and cooking them, the critters are usually either toasted and eaten as a snack, or else incorporated as ingredients in a taco. The most popular edible Mexican insects are Chapulines (grasshoppers), the plural for chapulín (Cohen & Schuster, 2019; Gardner, n.d.; Wade, 2015). The term itself is specific to Mexico and derives from the Nahuatl word chapolin.

While, for the most part, insects (such as chapulines) are considered as little more than a 'street food', or bar snack, these bugs have, in recent years, started to find their way on to the menus of some of the country's top restaurants (Tiu, 2016). Indeed, a number of progressive Mexican chefs have increasingly sought to incorporate esoteric regional ingredients, which is all part of a broader trend of bringing traditional Mexican elements back to the table and elevating them in the context of fine dining. The title of this dish was inspired by one of the most famous Mexican TV comedy characters, known as El Chapulín Colorado (Mexican Spanish for "The red grasshopper").

Elements of the dish: Hearts of palm and octopus ceviche, onion and cucumber brunoise, jalapeno, aguachile (marinade), avocado cream, coriander cress, all served on three tostadas. For those diners who opted-in for insects, the dish was seasoned with chapuline, and worm salt was also used for the stencilling (see **Figure 5**). At the request of those diners who enjoyed the insect-based element of the menu, a whole (and thus recognizable) chapuline was placed on each diner's plate, aligned with the side of their dominant hand thus increasing the affordance to grasp (see Gmuer, Nuessli Guth, Hartmann, & Siegrist, 2016; Spence, 2017).

INSERT FIGURE 5 ABOUT HERE

For service, the hostess first introduced the dish, then played a video (https://www.youtube.com/watch?v=eKRUuGeTOg0). The dish was served as the video was ending. Once again, the guests were encouraged to eat these tostadas with their hands.

An Offering to the Gods

In the Yucatan region of Mexico, venison has ritualistic as well as culinary significance. Once upon a time, it would have been prepared as an offering to the gods, usually in the form of a venison stew in an achiote, chile, and tomato sauce. It is also said that Mayan hunters ate the deer's organ meats cooked in corn gruel. In the modern era, deer recipes are served on special feast days (in particular regions), and a dish called Salpicon de Venado, a cold venison salad, is eaten on the feast day of the Virgin of Guadalupe (December 12th), especially in the region of Acanceh, whose name means the "cry of the deer" (though see Yucatan Times, 2019). While in Mexico, the chef JY went to the Ballet Folklorico de Mexico to see the 'Danza Venado' – Venison dance, which also helped to inspire the dish.

Elements of the dish: Grilled Venison, pumpkin puree, mole negro, burnt tortilla powder, buffalo worm powder, tortilla and grilled spring onion, smoked Maldon salt, and worm powder (see **Figure 6**). Note that the ingredients in each dish were explained to the guests by the host as they were being served the course.

INSERT FIGURE 6 ABOUT HERE

The hostess first introduced a dish, before showing the video of the venison dance (https://www.youtube.com/watch?v=jTCmhhJk3mI). The dish was served as the video came to an end. This dish was served with knife and fork to cut the meat. Note here also how the main meat dish on the Mugaritz menu in the season without cutlery was also served with a stone shard to eat the meat (Mugaritz ak, 2016). The atmospheric instrumental Mexico-inspired track that played as the dish was served is *La Casa Obscura* by Jorge Reyes (listen at https://www.youtube.com/watch?v=ZR0LsZZgnco).

Mezcal

The word mezcal comes from Nahuatl mexcalli which means ‘oven-cooked agave’. The maguey grows in many parts of Mexico, though most mezcal is made in Oaxaca. There is a saying attributed to Oaxaca regarding the drink: "para todo mal, mezcal, y para todo bien también" ("for every ill, mezcal, and for everything good, too"). Today, mezcal is still made from the heart of the maguey plant, called the "piña", in most places, in much the same way as it was some 200 years ago. Mezcal is currently not as popular as tequila (a mezcal made specifically from the blue agave in select regions of the country; though see Archibold, 2011). In Mexico, mezcal is generally drunk straight, not mixed in a cocktail. Mezcal is often accompanied with orange slices sprinkled with a mixture of ground fried larvae, ground chili peppers, and a salt by the name of "sal de gusano", which literally translates as "worm salt".

Elements of the dish: Orange supreme served in a half orange glazed, tajin powder, black ants, micro coriander, orange essence diffused using dry ice inside the half orange, a measure of mezcal (see **Figure 7**). Once the dish was served on the table and introduced, a video of a Mezcaleria played. Once again, parts of this dish were to be eaten using the hands.

INSERT FIGURE 7 ABOUT HERE

Vanilla and the Bee

Mexican vanilla is the "original vanilla". The only place in the world where it grows naturally is in the Veracruz region of Papantla, where the Melipona Bee is the exclusive pollinator of its flower. Back in 1836, Charles Francois Antoine Morren travelled to Mexico in the hope of discovering the secret of how to produce vanilla beans (see Rain, 2004; Sethi, 2017). One day, while he was studying a vanilla orchid, he observed a tiny little bee known as the Mexican Melipona Bee, land on a vanilla orchid. He was amazed as he watched the bee lift a protective hood-like membrane covering the throat of the orchid before disappearing inside. The bee collected its pollen and left the orchid before flying on to the next flower and repeating the process. Unlike European orchids, the flower didn’t wither away, but in this case produced a pod. The bee, in other words, provided México with a 300-year-long monopoly on vanilla production until the advent of artificial pollination (not to mention synthetic vanilla essence). Today, even in México, pollination by hand is still the norm (see Anuradha, Shyamala, & Naidu, 2013).

Elements of the dish: Tres leches vanilla cake, cinnamon, and honey pearls, Mexican honey, bee pollen, smoked Maldon sea salt, chia and vanilla crisp, smoked honey cream (see **Figure 8**). For this course, the scent of camomile was also dispersed in atomisers over the diners/table (Spence & Youssef, 2015). Note that the bee in the title of this dish refers to the storytelling element rather than directly to the culinary ingredients in the dish itself. At the same time, however, it is perhaps worth mentioning that there has been some discussion in recent years of the question of whether insects such as bumble bees have feelings or emotion (e.g., see Baracchi, Lihoreau, & Giurfa, 2017; Goldman, 2016). This latter point is likely to feed into the question of whether entomophagy will represent a plausible alternative protein source.

INSERT FIGURE 8 ABOUT HERE

Nudging diners away from animal protein

Consistent with chef JY's ethos toward nudging diners away from consuming animal protein (while at the same time also recognizing the importance of offering a meat course as part of the typical western meal format; e.g., Douglas, 1972; Douglas & Nicod, 1974), the one and only meat dish on the Mexico menu was preceded by an artistic rendition of the hunting and death of the deer. The five minute clip showed the dancers mimicking the hunters chasing and killing a wild deer. The idea was to use this approach to artfully draw the diner's attention to the question of where their meat has come from. Note that this approach to making diners consider the source (and suffering) of their animal protein is one that has been followed up in several of the subsequent dining concepts offered by Kitchen Theory. Take, for example, the Picasso dish served as part of a series of London dinners held in 2016. In this case, diners were reminded, by means of an audio recording of the sound of a duck noisily being chased and then the sound of a meat cleaver thudding into a chopping board, followed by an ominous silence before the duck dish (again the only meat dish on the menu) was served (see Spence & Youssef, 2016). Again, the idea was to make the guests feel a little uncomfortable about the source of their meat.

Conclusions

In conclusion, the México dining concept revealed a number of intriguing, albeit largely anecdotal, findings that we feel are nevertheless worth sharing here. There was a sense in which haute Mexican cuisine and/or entomophagy may have proved to be an undesirable/challenging concept for some of the primarily British diners. That being said, the public and critical response to this multisensory dining experience was very positive (though interestingly, none of the quotes really foreground the entomophagy angle):

> *"A fascinating gastronomic trawl through the myths and marvels of Mexico and its food. This much-misunderstood cuisine's vibrant flavours are brilliantly distilled onto the plate (and into the glass) by Kitchen Theory's talented chef/patron Jozef Youssef: an unforgettable experience."* (Bill Knott, food writer, FT, How to Spend It, 2015; see http://www.mexicanchamberofcommerce.co.uk/mexico-by-kitchen-theory.html).
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> *"There is no silver bullet in solving our current food crisis but entomophagy certainly has a role to play. This is why projects such as 'México by Kitchen Theory' are so important. Raising awareness, enabling the conversation while offering to people an unforgettable dining experience. It's the must-try pop-up kitchen of the autumn."* (Theflexitarian, 2015).
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> *"Mexico by Kitchen Theory was a truly complete dining experience. The cooking was elegant and refined, with each dish being highly complex and well thought out. During the meal we were also offered the use of spray scents to supplement the sensations of the food and shown videos to enhance the story of our menu. With all these additional elements and the excellent cooking, Mexico by Kitchen Theory offered a truly exciting insight into a refined, modern and multisensory Mexican dining experience."* (A girl has to eat, 2015).

In truth, booking numbers for Mexico, while good, were noticeably down relative to the dining concept *Synaesthesia* that followed it (see Spence & Youssef, 2020), as well as the Nordic concepts *Nattura* that had preceded it. Given that the price, venue, and chef were essentially the same in all cases, and given that these dining events ran concurrently, the figures would appear to suggest that the Mexico concept was simply not quite as popular with the punters (or that synaesthesia is simply a more intriguing dining concept for people). In hindsight, though, it is hard to know whether it is simply that the concept of Mexican haute cuisine doesn't necessarily resonate with UK diners (after decades of Tex-Mex and, more recently, the phenomenal rise of the *Wahaca* chain of casual Mexican dining restaurants; see https://www.wahaca.co.uk/). Alternatively, however, it may equally well have been the threat of entomophagy (that is, insects on the menu) that may have put off some diners.

As mentioned earlier, the diners were given the option of going down the insect-free route, though, in practice, the majority (approximately 70%) opted-in in advance for the insect-based menu), with that number going up to about 90% once the diners had consumed a few courses and could see that the inclusion of insects was not simply a gimmick. At first, there were no whole insects on the menu. However, after a number of diners inquired the chef ended-up putting a whole grasshopper on people's plate during the fourth course (El Chapulin Colorado). Ultimately, it was gratifying to see just how many of the diners came away from the México dining concept saying that their minds had been changed about eating insects. The approach certainly fits very well within the suggestion that in order to change people's food behaviour, one should lead through the sensory appeal of what insects can bring to a dish, rather than simply telling people that they should eat insects because they are either healthy (providing an excellent source of protein) or because they would be good for the planet (see Deroy et al., 2015, on this point).

The Mexico concept built on the idea that there are certain types of insect that provide a more acceptable ideal bridge into the world of entomophagy than others. After all, few consumers have any qualms about eating honey, and other bee-related products, for example (see Deroy et al., 2015). Introducing diners to the eating of insects by means of a cuisine in where they have traditionally been incorporated also seems like a sensible strategy. Having often used nature sounds previously, it would perhaps have been interesting to incorporate the sound of the beehive, as included recently in a sonic-tasting experience curated by culinary artist Caroline Hobkinson (Brennan, 2020; Unusual Ingredient, Oxford, https://unusualingredients.co/).

At the same time, however, it is important to note that insect matter was only ever a small part of any of the dishes that were served as part of the Mexico concept. That is, it was not a major source of protein for any of the dishes. Hence, the idea was more to build-up the diners' familiarity with the notion of entomophagy than to replace other sources of protein. However, as Ceurstemont (2013) notes, insects mostly appear as a snack or topping in those regions where they form part of the cuisine.

Other recent culinary attempts to incorporate insects into haute cuisine offerings

In 2020, chef James Ramsden of *Pidgin* (https://www.pidginlondon.com) in London teamed up with Wychwood Brewery to offer a bug and beer tasting menu. A range of insects were paired up with a number of Hobgoblin's prize-winning beers (as part of a Halloween-themed marketing event http://www.mybeernotes.com/hobgoblin-halloween-special/). This can be seen as another way in to increasing the public's exposure to, and acceptance of insects. It is certainly intriguing to see the increasingly popular pairing concept being extended into the domain of entomophagy (see Spence, 2020a, b, for reviews). Note here also how the latest research has identified that the social occasion at the pub with friends fits perfectly in terms of the type of context in which people say that they are most likely to try insects (Motoki, Ishikawa, Spence, & Velasco, 2020). Social occasions with friends (e.g., at the pub turns out to be one of the occasions where people say that they would be more willing to try insects). [At least pre-Covid lockdown; see Spence, 2020c.]

Coda

Many of the elements from the México dining concept have since been incorporated, either directly (as dishes), or as a source of inspiration, in the subsequent dining concepts offered by Kitchen Theory. Indeed, addressing the themes of tackling food waste, foregrounding issues of sustainability, encouraging alternate sustainable food sources, story-telling, and art on the plate etc. have all continued to be dominant themes for chef/patron JY.

REFERENCES

Adapon, J. (2008). *Culinary art and anthropology*. Oxford, UK: Berg.

A girl has to eat (2015). Mexico, by Kitchen Theory. *A Girl has to Eat*, **November 18th**. http://agirlhastoeat.com/mexico-by-kitchen-theory/.

American Heart Association (2020). People who eat chili pepper may live longer? *ScienceDaily*. **November 9th**. www.sciencedaily.com/releases/2020/11/201109074114.htm.

Anuradha, K., Shyamala, B. N., & Naidu, M. M. (2013). Vanilla- Its science of cultivation, curing, chemistry, and nutraceutical properties. *Critical Reviews in Food Science and Nutrition*, **53(12)**, 1250-1276, DOI: 10.1080/10408398.2011.563879.

Archibold, R. C. (2011). Move over, tequila, it's mescal's turn to shine. *The New York Times*, **July 21st**. https://www.nytimes.com/2011/07/22/world/americas/22mescal.html.

Baracchi, D., Lihoreau, M., & Giurfa, M. (2017). Do insects have emotions? Some insights from bumble bees. *Frontiers in Behavioral Neuroscience*, **11**:157. DOI=10.3389/fnbeh.2017.00157.

Bee, P. (2019). Adult food allergy? Join the club. *The Times*, **February 12th**, 4-5.

Bell, R., Meiselman, H. L., Pierson, B. J., & Reeve, W. G. (1994). Effects of adding an Italian theme to a restaurant on the perceived ethnicity, acceptability, and selection of foods. *Appetite*, **22**, 11-24.

Brennan, A. (2020). Unusual Ingredients: New immersive dining night to explore how music affects flavour. *The Evening Standard*, **February 19th**. https://www.standard.co.uk/go/london/restaurants/unusual-ingredients-tour-london-food-music-a4365801.html.

Brinchmann, B. C., Bayat, M., Brøgger, T., Muttuvelu, D. V., Tjønneland, A., & Sigsgaard, T. (2011). A possible role of chitin in the pathogenesis of asthma and allergy. *Annals of Agricultural and Environmental Medicine*, **18(1)**, 7-12.

Calvino, I. (2009). *Under the jaguar sun*. (Translated by W. Weaver). London, UK: Penguin.

Ceurstemont, S. (2013). Grub's up. *New Scientist*, **July 6th**, 35-37.

Chandra, G. (2018). A guide to eating with your hands around the world. Let's dig in. *Condé Naste Traveller*, **March 5th**. https://www.cntraveler.com/story/a-guide-to-eating-with-your-hands-around-the-world.

Cohen, J. H., & Schuster, P. K. (2019). To eat chapulines in Oaxaca, Mexico: One food, many flavors. In S. I. Ayora-Diaz (Ed.), *Taste, politics, and identities in Mexican food* (pp. 131-144). London, UK: Bloomsbury Books.

Deroy, O., Reade, B., & Spence, C. (2015). The insectivore's dilemma. *Food Quality & Preference*, **44**, 44-55.

Dicker, L. (2015). Are ants the new caviar? *Suitcase*, **February 3rd**. https://suitcasemag.com/articles/ants-new-caviar.

Douglas, M. (1972). Deciphering a meal. *Daedalus*, **101 (1, Myth, Symbol, and Culture; Winter)**, 61-81.

Douglas, M., & Nicod, M. (1974). Taking the biscuit: The structure of British meals. *New Society*, **30**, 744-747.

El-Mostafa, K., El Kharrassi, Y., Badreddine, A., Andreoletti, P., Vamecq, J., El Kebbaj, M. S., et al. (2014). Nopal cactus (Opuntia ficus-indica) as a source of bioactive compounds for nutrition, health and disease. *Molecules*, **19(9)**, 14879-14901. doi: 10.3390/molecules190914879.

Evans, J., Flore, R., Bom Frøst, M., & Nordic Food Lab (2017). *On eating insects: Essays, stories and recipes*. London, UK: Phaidon.

Gander, K. (2016). The supper club where diners are given spoons filled with nails to promote slow, mindful eating. *The Independent*, **August 22nd**. http://www.independent.co.uk/life-

style/supper-club-mindful-eating-steinbeisser-slow-food-movement-amsterdam-california-a7196901.html.

Gardner, A. (n.d.). The ultimate edible insect travel guide – Mexico. *Crickster*, https://www.eatcrickster.com/blog/insect-travel-guide-mexico.

Gigliarelli, G., Becerra, J. X., Curini, M., & Marcotullio, M. C. (2015). Chemical composition and biological activities of fragrant Mexican copal (Bursera spp.). *Molecules*, **20(12)**, 22383-22394. https://doi.org/10.3390/molecules201219849.

Gill, N. (n.d.). Mugaritz questions the tasting menu. *New Worlder*, https://www.newworlder.com/article/13843/mugaritz-questions-the-tasting-menu.

Gmuer, A., Nuessli Guth, J., Hartmann, C., & Siegrist, M. (2016). Effects of the degree of processing of insect ingredients in snacks on expected emotional experiences and willingness to eat. *Food Quality & Preference*, **54**, 117-127.

Godfray, H. C. J., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., et al. (2010). Food security: The challenge of feeding 9 billion people. *Science*, **327**, 812-818.

Goldman, J. G. (2016). I'll bee there for you: Do insects feel emotions? *Scientific American*, **September 30th**. https://www.scientificamerican.com/article/i-ll-bee-there-for-you-do-insects-feel-emotions/.

Gonzalez-Crussi, F. (1989). *The five senses*. New York, NY: Harcourt, Brace, Jovanovich.

Greene, J. A., & Kesselheim. A. S. (2011). Why do the same drugs look different? Pills, trade dress, and public health. *New England Journal of Medicine*, **365(1)**, 83-89.

Herrera, B. (2015). Eating Oaxaca: A visit to Mexico's culinary mecca. *Culinary Back Streets*, **January 14th**. https://culinarybackstreets.com/cities-category/oaxaca/2015/eating-oaxaca/.

Hong, P. Y., Lishner, D. A., & Han, K. H. (2014). Mindfulness and eating: An experiment examining the effect of mindful raisin eating on the enjoyment of sampled food. *Mindfulness*, **5**, 80-87.

Huen, E. (2018). How stories can impact your taste in food. *Forbes*, **September 29th**. https://www.forbes.com/sites/eustaciahuen/2018/09/29/story-food/?sh=d74abc335973.

Jiménez, B. C., Toledo, M. E. O., Mier, L. G., Bravo, R. M., Gutiérrez, C. A. G., Ayala, F. C. & Rodriguez-Garcia, M. E. (2020). Physicochemical study of nixtamalized corn masa and tortillas fortified with "chapulin" (grasshopper, Sphenarium purpurascens) flour. *CyTA - Journal of Food*, **18(1)**, 527-534, DOI: 10.1080/19476337.2020.1794980.

Laudan, R. (2013). Using and choosing a Mexican mortar and pestle. *Blogpost*, **July 10th**. https://www.rachellaudan.com/2013/07/using-and-choosing-a-mexican-mortar-and-pestle.html.

Lee, C. G. (2009). Chitin, chitinases and chitinase-like proteins in allergic inflammation and tissue remodeling. *Yonsei Medical Journal*, **50(1)**, 22-30. https://doi.org/10.3349/ymj.2009.50.1.22.

Leverenz, D., Hafner, G., Moussawel, S., Kranert, M., Goossens, Y., & Schmidt, T. (2020). Reducing food waste in hotel kitchens based on self-reported data. *Industrial Marketing Management*. https://doi.org/10.1016/j.indmarman.2020.08.008.

Logan, M. H., Gwinn, K. D., Richey, T., Maney, B., & Faulkner, C. T. (2004). An empirical assessment of epazote (Chenopodium ambrosioides L.) as a flavouring agent in cooked beans. *Journal of Ethnobiology*, **24(1)**, 1-12

Lomelí, A. (1991). *El arte de cocinar con chile* [The art of cooking with chile] (Rev. Ed., originally *El chile y otras picantes*). Mexico City: Libros de Contenido.

Luzer, D. (2017). How lobster got fancy. *Pacific Standard*, **June 14th**. https://psmag.com/economics/how-lobster-got-fancy-59440

Michel, C., Velasco, C., Gatti, E., & Spence, C. (2014). A taste of Kandinsky: Assessing the influence of the artistic visual presentation of food on the dining experience. *Flavour*, **3**:7.

Miller, M., & Harrisson, J. (1991). *The great chile book*. Berkeley, CA: Ten Speed Press.

Motoki, K., Ishikawa, S., Spence, C., & Velasco, C. (2020). Contextual influences on the acceptance of insect-based foods. *Food Quality and Preference*, **85**:103982.

Mugaritz ak (2016). Eating with your hands: The custom is a cultural issue. **September 22nd**. http://www.mugaritzak.com/eating-with-your-hands/.

Muñoz Zurita, R. (1996). *Los chiles rellenos en México: Antología de recetas* [Stuffed chiles in Mexico: An anthology of recipes]. Mexico City: UNAM.

Paran, I., & van der Knapp, E. (2007). Genetic and molecular regulation of fruit and plant domestication traits in tomato and pepper. *Journal of Experimental Biology*, **58**, 3841-3852.

Payne, C. L., Scarborough, P., Rayner, M., & Nonaka, K. (2016). Are edible insects more or less 'healthy' than commonly consumed meats? A comparison using two nutrient profiling models developed to combat over- and undernutrition. *European Journal of Clinical Nutrition*, **70(3)**, 285-291. https://doi.org/10.1038/ejcn.2015.149.

Perry, L., Dickau, R., Zarrillo, S., Hoist, I., Pearsall, D. M., Piperno, D. R., et al. (2007). Starch fossils and the domestication and dispersal of chili peppers (*Capsicum* spp. L.) in the Americas. *Science*, **315**, 986-988.

Piqueras-Fiszman, B., Laughlin, Z., Miodownik, M., & Spence, C. (2012). Tasting spoons: Assessing how the material of a spoon affects the taste of the food. *Food Quality and Preference*, **24**, 24-29. DOI:10.1016/j.foodqual.2011.08.005.

Rain, P. (2004). *Vanilla: The cultural history of the world's favorite flavor and fragrance*. USA: Jeremy P. Tarcher

Ramírez-Guzmán, K. N., Torres-León, C., Martinez-Medina, G. A., de la Rosa, O., Hernández-Almanza, A., Alvarez-Perez, O. B., et al. (2019). Traditional fermented beverages in Mexico, In A. M. Grumezescu & A. M. Holban (Eds.), *Fermented beverages* (pp. 605-635). Woodhead Publishing.

Ramos-Elorduy, J. (2009). Anthropo-entomophagy: Cultures, evolution and sustainability. *Entomological Research*, **39(5)**, 271-288. https://doi.org/10.1111/j.1748-5967.2009.00238.x.

Rozin, E. (1982). The structure of cuisine. In L. M. Barker (Ed.), *The psychobiology of human food selection*. Bridgeport, Connecticut: AVI.

Rozin, E. (1983). *Ethnic cuisine: The flavor-principle cookbook*. Brattleboro, VT: The Stephen Greene Press.

Rozin, P. (1990). Getting to like the burn of chili pepper: Biological, psychological and cultural perspectives. In B. G. Green, J. R. Mason, & M. R. Kare (Eds.), *Chemical senses, Volume 2: Irritation* (pp. 231-269). New York: Marcel Dekker.

Rozin, P., Guillot, L., Fincher, K., Rozin, A., & Tsukayama, E. (2013). Glad to be sad and other examples of benign masochism. *Judgment and Decision Making*, **8**, 439-447.

Schanes, K., Dobernig, K., & Gözet, B. (2018). Food waste matters - A systematic review of household food waste practices and their policy implications. *Journal of Cleaner Production*, **182**, 978-991. https://doi.org/10.1016/j.jclepro.2018.02.030.

Serafin, A. (2013). In Copenhagen, daring to innovate on the plate. *ZDNet*, **February 12th**. https://www.zdnet.com/article/in-copenhagen-daring-to-innovate-on-the-plate/.

Sethi, S. (2017). The bittersweet story of vanilla. *Smithsonian Magazine*, **April 3rd**. https://www.smithsonianmag.com/science-nature/bittersweet-story-vanilla-180962757/**.**

Shaw, L. (2015). Restaurants embracing story telling trend. *The Drinks Business*, **December 17th**. https://www.thedrinksbusiness.com/2015/12/restaurants-embracing-story-telling-trend/.

Shockley, M., & Dossey, A. T. (2014). Insects for human consumption. In J. A. Morales-Ramos, M. Guadalupe Rojas, & D. I. Shapiro-Ilan (Eds.), *Mass production of beneficial organisms. Invertebrates and entomopathogens* (pp. 617-652). Academic Press.

Spence, C. (2015). *Entomophagy*. TedX City University, London, **March 14th**. https://www.youtube.com/watch?v=iQEX-kMpz-4.

Spence, C. (2017). *Gastrophysics: The new science of eating*. London, UK: Viking Penguin.

Spence, C. (2018a). Crossmodal contributions to the perception of piquancy/spiciness. *Journal of Sensory Studies*, **34**:e12476. doi: 10.1111/joss.12476.

Spence, C. (2018b). Why is piquant/spicy food so popular? *International Journal of Gastronomy & Food Science*, **12**, 16-21.

Spence, C. (2020a). Flavour pairing: A critical review of the literature on food and beverage pairing. *Food Research International*, **133**:109124. https://doi.org/10.1016/j.foodres.2020.109124.

Spence, C. (2020b). Multisensory flavour perception: Blending, mixing, fusion, and pairing within and between the senses. *Foods*, **9(4)**:407. http://dx.doi.org/10.3390/foods9040407.

Spence, C. (2020c). Sensehacking: Maintaining a balanced diet of multisensory stimulation during COVID-19 lockdown, and why it matters. *Tangible Territory Journal*, **1 (Autumn)**. https://tangibleterritory.art/journal/issue1/.

Spence, C., Michel, C., Youssef, J., & Woods, A. (2019). Assessing the aesthetic oblique effect in painting and plating. *International Journal of Gastronomy & Food Science*, **17**, 100168.

Spence, C., Okajima, K., Cheok, A. D., Petit, O., & Michel, C. (2016). Eating with our eyes: From visual hunger to digital satiation. *Brain & Cognition*, **110**, 53-63.

Spence, C., & Piqueras-Fiszman, B. (2014). *The perfect meal: The multisensory science of food and dining*. Oxford, UK: Wiley-Blackwell.

Spence, C., & Youssef, J. (2015). Olfactory dining: Designing for the dominant sense. *Flavour*, **4**:32.

Spence, C., & Youssef, J. (2016). Constructing flavour perception: From destruction to creation and back again. *Flavour*, **5**:3. http://rdcu.be/wOLI.

Spence, C., & Youssef, J. (2020). Synaesthesia: The multisensory dining experience. *International Journal of Gastronomy & Food Science*, **18**:100179. https://doi.org/10.1016/j.ijgfs.2019.100179.

Theflexitarian (2015). México by Kitchen Theory: "Where modernist cuisine meets science meets sustainability". *Theflexitarian*, **October 22nd**. https://theflexitarian.co.uk/2015/10/mexico-by-kitchen-theory-where-modernist-cuisine-meets-science-meets-sustainability/.

Tiu, C. (2016). Ants, grasshoppers and worms: Where to eat insects in Mexico City's fine-dining restaurants. *Forbes*, **October 11th**. https://www.forbes.com/sites/cheryltiu/2016/10/11/ants-grasshoppers-and-worms-where-to-eat-insects-in-mexico-citys-fine-dining-restaurants/.

Valverde, M. E., Paredes-López, O., Pataky, J. K., & Guevara-Lara, F. (1995). Huitlacoche (Ustilago maydis) as a food source -- biology, composition, and production. *Critical Reviews in Food Science and Nutrition*, **35(3)**, 191-229. DOI: 10.1080/10408399509527699.

Vandenberg, G. (2019). Eating insects is good for you — and the planet! *The Conversation*, **June 27th**. https://theconversation.com/eating-insects-is-good-for-you-and-the-planet-118675.

van der Heijden, K., Festjens, A., & Goukens, C. (2021). On the bright side: The influence of brightness on overall taste intensity perception. *Food Quality and Preference*, **88**:104099. https://doi.org/10.1016/j.foodqual.2020.104099.

van Huis, A. (2013). Potential of insects as food and feed in assuring food security. *Annual Review of Entomology*, **58**, 563-583.

van Huis, A., Van Itterbeeck, J., Klunder, H., Mertens, E., Halloran, A., Muir, G., & Vantomme, P. (2013). *Edible insects: Future prospects for food and feed security*. FAO Forestry Paper 171. Food and Agriculture Organization of the United Nations. http://www.fao.org/3/i3253e/i3253e.pdf.

Van Itterbeeck, J., & van Huis, A. (2012). Environmental manipulation for edible insect procurement: A historical perspective. *Journal of Ethnobiology and Ethnomedicine*, **8**, 1-7.

van Rhijn, P. (1993). *La cocina del chile* [The chile kitchen]. Mexico City: Suari.

Veeck, A. (2010). Encounters with extreme foods: Neophilic/neophobic tendencies and novel foods. *Journal of Food Products Marketing*, **16**, 246-260.

Velasco, C., Michel, C., Woods, A., & Spence, C. (2016). On the importance of balance to aesthetic plating. *International Journal of Gastronomy and Food Science*, **5-6**, 10-16.

Wade, L. (2015). We'll all eat grasshoppers—Once we know how to raise them. *Wired*, **March 19th**. https://www.wired.com/2015/03/well-eat-grasshoppersonce-know-raise/.

Yeoh, J. P. S., & North, A. C. (2010). The effects of musical fit on choice between two competing foods. *Musicae Scientiae*, **14**, 165-180.

Youssef, J. (2013). *Molecular cooking at home: Taking culinary physics out of the lab and into your kitchen*. London, UK: Quintet Publishing.

Youssef, J., Juravle, G., Youssef, L., Woods, A., & Spence, C. (2015). Aesthetic plating: A preference for oblique lines ascending to the right. *Flavour*, **4**:27.

Youssef, J., Keller, S., & Spence, C. (2019). Making sustainable foods (such as jellyfish) delicious. *International Journal of Gastronomy & Food Science*, **16**:100141. https://doi.org/10.1016/j.ijgfs.2019.100141.

Youssef, J., Sanchez, C. C., Woods, A., & Spence, C. (2018). "Jastrow's Bistable Bite": What happens when visual bistable illusion meets the culinary arts? *International Journal of Gastronomy & Food Science*, **13**, 16-24.

Yucatan Times (2019). Poaching kills more than 20000 deer a year in Yucatan. *Yucatan Times*, **April 11th**. https://www.theyucatantimes.com/2019/04/poaching-kills-more-than-20000-deer-a-year-in-yucatan/.

Zellner, D., Geller, T., Lyons, S., Pyper, A., & Riaz, K. (2017). Ethnic congruence of music and food affects food selection but not liking. *Food Quality & Preference*, **56, Part A**, 126-129.

Figure 1. México, by Kitchen Theory.

Figure 2. The Holy Trinity.

Figure 3. Nopal.

Figure 4. Memories of Oaxaca.

Figure 5. El Chapulín Colorado.

Figure 6. Offering to the Gods.

Figure 7. Mezcal.

Figure 8. Vanilla & the Bee.

APPENDIX.

The Holy Trinity dish recipe

Tamales			
Quantity	Unit	Ingredient	Cost (£)
180	g	Butter	1.35
250	g	Sweet Corn	0.43
80	g	Hominy Corn	0.58
30	g	Semolina	0.18
90	g	Maseca	0.52
100	g	Butter	100.00
1.8	g	Baking Powder	0.01
1	g	Bay Leaf	0.08
5	g	Salt	0.01
45	ml	Milk	0.03
20	g	Sugar	0.03
2	pcs	Eggs	0.32

1. Drain the water from the hominy corn and sweet corn.

2. Chop the butter into small pieces then soften it in the microwave.

3. Mix the corn, eggs, milk and sugar and blend with Bamix. (If you're making a double recipe you can use the Thermomix.)

4. Add salt, baking powder, Maseca and Semolina and mix well.

5. Grease the hexagonal moulds. Fill them up with tamale mix, making sure that there's no air bubbles inside. (Tap the moulds on the counter ;lightly to help remove any bubbles.)

6. Place the moulds in a perforated steamer tray or rack but it needs to be wrapped with cling-film. This is to make sure no liquid gets into the moulds whilst they're cook.

7. Bake the tamales in the steam oven at 90ºC for 1 hour

8. Once cooked allow the wrapped tray or rack to cool down outside for 30 mins before removing the tamales from the moulds.

9. After 30 mins, remove the tamales from the moulds and place them on lightly greased baking parchment in a perforated tray. Drizzle a little bit of olive oil over each tamale and cover the tray with cling and refrigerate until need.

10. To reheat the tamales place the wrapped tray in the steamer at 90ºC for 5 mins. Remove the tamales and sprinkle some Maldon salt and another light drizzle of olive oil then serve.

Refried Beans			
Quantity	Unit	Ingredient	Cost (£)
500	g	Pinto Beans	3.25
40	g	Garlic	0.19
175	g	Red Onion	0.20
5	g	Thyme	0.08
0.75	g	Scotch Bonnet	0.01
220	ml	Stout	1.22
2000	ml	Water	0.00
5	g	Coriander Powder	0.05
15	g	Salt (to taste)	0.01
20	ml	Vegetable Oil	0.04

1. Soak your pinto beans in water overnight for a minimum of 8 hrs.

2. Dice the onions and place them in a large pot with the vegetable oil, cook on medium heat until they soften and start to change colour.

3. Finely chop your garlic and add it to the onions, cook further until you have a nice dark golden colour.

4. Add the coriander powder, Scotch bonnet, thyme and bay leaf.

5. Add the pinto beans to the pot and cook them for a couple of minutes in the spiced onion mix.

6. Add the water and cook on a rolling boil for 1 hr until the beans are cooked.

7. Once the water in the pot has reduced by half add the stout and cook for 15 mins longer to remove the alcohol taste.

8. Strain the beans and keep the stock in a bowl on the side.

9. Blitz the beans in the Thermomix, using the stock to let down the puree when needed. If you have too much stock left reduce it to a glaze then add it to the last batch of beans that you blitz.

10. Season the puree with salt to taste and vacuum pack in 200g bags and place in the freezer.

Smoked Corn Cream			
Quantity	Unit	Ingredient	Cost (£)
500	g	Sweetcorn	0.87
50	g	Burnt Butter	0.47
200	ml	Whipped Cream	1.06
2.6	g	Liquid Smoke	0.04
2.5	g	Salt	0.01
150	ml	Milk	0.11

1. In a medium pot, weigh out all the above ingredients, except for the liquid smoke.

2. Bring mixture to the boil then leave to simmer for 30 mins on a medium heat.

3. Pour the corn mixture into the thermomixer and blend at high speed for 5 minutes.

4. Once turned into a light smooth cream, remove it from the thermomixer, adjust the taste adding salt and liquid smoke.

5. Store in vacuum bags of 180 g each (enough for 1 dinner).

6. Thirty minutes before the event starts, warm up 175g of corn cream with 60 g milk. Adjust seasoning and pour the cream into 2 jugs ready to serve.

Corn Meringue			
Quantity	Unit	Ingredient	Cost (£)
500		Water	0.00
5		Methyl Cellulose	0.00
11		Xanthan	0.08
50		Castor Sugar	0.00
2		Tajin Powder	0.01

1. In a medium tall container combine water and methylcellulose with a whisk till it is fully hydrated.

2. Pre-mix xanthan gum and sugar in a small container.

3. Add the powders above into the methyl cellulose solution and start blending trying to incorporate as much air as possible.

4. The end result of this mixture must appear as a thick meringue.

5. Brush spray butter onto the leaf mould ensuring a proper coating.

6. Spread the merengue mixture evenly onto the rubber leaf.

7. Dehydrate at 50˚C overnight.

Store in an airtight container with silica gel.

Before the service sprinkle the dry leaves with tajin powder.

Burnt Ash			
Quantity	Unit	Ingredient	Cost (£)
100	g	Corn husk	0.00

1. Place the husks on a tray with foil.

2. Preheat the oven at 230˚C.

3. Bake till it burns and drys out completely.

4. Blitz it into a fine powder in the spice grinder and store it in an airtight container.

Guajillo Chiffonade			
Quantity	Unit	Ingredient	Cost (£)
50	g	Guajillo	1.00
100	ml	Boiling Water	0.00
100	ml	E.V.O.O.	0.56

1. In a kettle quickly bring some water to a boil.

2. Place the Guajillo Chilli's in a plastic container and pour over the boiling water.

3. Leave it to hydrate until the chillies soften up.

4. Once ready remove the seeds and the stems and slice the chillies in chiffonade.

5. Store it in a vacuum bags with the extra virgin olive oil (E.V.O.O.) in the fridge.

6. Use it when needed to season the Quetzelcotal salad.

Corn Salad			
Quantity	Unit	Ingredient	Cost (£)
15	g	Red Amaranth Cress	1.01
15	g	Coriander Cress	1.01
4	g	Guajillo Chiffonade	0.08
15	g	Huitlacoche	0.61
1	g	Smoked Maldon	0.01
10	ml	E.V.O.O.	0.06

1. Before serving this dish mix coriander cress and red amaranth cress in a medium bowl.

2. Add the huitlacoche and guajillo chiffonade, and season with smoked Maldon salt and E.V.O.O.

3. Split the seasoned salad into two small bowls and serve.