Keeping Pace with the Vegan Race: A Challenge for Culinary Arts Education

Orla Mc Connell

Abstract: Culinary arts practice is under continuous pressure to innovate for dietary trends and to offer consumers options which fulfil their personal food choices. With culinary arts education entrenched in classical French cuisine, a potential disparity exists between education provision and consumer requirements. Veganism has risen significantly in Ireland, providing a contemporary lens through which culinary arts education can be examined. This paper evaluates if the innovative skillset to produce plant-based cuisine is being cultivated and to bridge the gap between culinary arts education and consumer needs by discussing the importance of adaptable curriculum design to better address future dietary trends.

I am not vegan, but as an educator my motivation is to use veganism as a lens to examine culinary arts education in the recently formed Technological University Dublin (TU Dublin). Whilst change in higher education can be gradual, this transition offers an opportunity to reflect on how to best shape the future curricula. This paper intends to be a timely catalyst to ask the question 'how disruptive is culinary arts education?'; to reflect on what we are learning, teaching and cooking, and, more importantly, how to ensure relevance of curriculum content. First, the significance of plant-based cuisine in the contemporary culinary field is explored. Then the evolution of culinary arts education is outlined. Finally, *Practical Cookery*, the prescribed textbook on the *Higher Certificate in Culinary Arts* programme at TU Dublin (Technological University Dublin, 2019a), is examined. A comparative analysis of content related to veganism is used to investigate if culinary arts education is responding to the plant-based trend. The findings are discussed, and recommendations made as to how culinary arts education can be more disruptive in a positive way.

Veganism on the Rise

In the preface of his book, Pollan (2013) proffers uncomplicated dietary advice: 'Eat food… Not too much… Mostly plants' (p.ix). Evidence suggests that this nutritive mantra has become increasingly part of consumers' food choice. Journalist Marie Claire Digby (2018) reported on the rise of veganism in Ireland, with numerous established hotels and restaurants offering vegan workshops, masterclasses and tastings. In 2019, three new vegan eateries were due to open in Dublin (Cope, 2019). Although the number is on the increase, the opening of one vegan restaurant failed to impress food critic Katie McGuinness. A self-confessed meat lover she stated, 'I don't have any strong feelings about fake meat, but vegans deserve better' (McGuinness, 2019). It is worth noting that only a small number of vegan restaurants have been awarded one-star by the Michelin Guide such as Kaijitsu and Nix, both located in New York (Michelin Guide, 2019). Even fast food operators are jumping on the meat-free bandwagon; McDonald's launched their first vegetarian meal for children last year (Gittens, 2019) and Leon opened its first outlet in Ireland in 2019, providing a vegan sweet potato falafel hot box (Taylor, 2019).

Lundahl (2018) argues that veganism has moved from stigmatised to mainstream, assisted by the profiles of celebrities adopting this eating regime. Packaged in ethical food consumption, it is seen as a lifestyle grounded in concern for the environment, animals and people (Doyle, 2016) and is inherently linked to an individual's identity (Greenebaum, 2012). Documented health benefits include reduced body mass index, glucose levels, total and low-density lipoprotein cholesterol, incidence of cancer, and ischemic heart disease (Dinu, Abbate, Gensini, Casini and Sofi, 2017). Culinary arts educators must examine why veganism is flourishing, consider the implications for culinary practice and facilitate change through innovative curriculum design.

Dietary Guidance: A Shift to a Plant-based Diet

Consumers continue to be bombarded with dietary guidance. In 2011, The Harvard School of Public Health published the *Healthy Eating Plate* with an emphasis on increased vegetable and fruit consumption, limited amounts of red meat and dairy products, avoidance of processed meat, and the recommendation to stay active (Harvard School of Public Health, 2011). The World Health Organisation (2015) highlighted the cancer risks associated with eating red meat and processed meat products, stating consumers who are concerned 'could consider reducing their consumption of red meat or processed meat until updated guidelines related specifically to cancer have been developed'.

Sustainable Food Systems: A Global Concern

Media attention on veganism is not only driven by dietary health concerns and new restaurant openings. From an environmental perspective, the importance of a sustainable global food system continues to gain traction (Food and Agricultural Organisation of the United Nations, 2019). There has been recent recognition of how culinary arts practitioners can help achieve this (Borden, 2019). The EAT-Lancet Commission (2019) recommends transforming to a healthier diet for the planet and its inhabitants which should include more 'consumption of plant-based foods – including fruits, vegetables, nuts, seeds

and whole grains – while in many settings substantially limiting animal source foods' (p.21).

Several studies have shown that plant-based diets are better than animal protein-based diets for the environment (Baroni, Cenci, Tettamanti and Berati, 2007; Leitzmann, 2003; Pimentel and Pimentel, 2003; Reijnders and Soret, 2003). In Ireland, the reduction of greenhouse gases produced by the dairy and cattle agricultural sector needs to be addressed. Due to expansion in the diary sector, emissions have increased by 8 percent from 2012 to 2016. Part of the solution to this problem, offered by the 2019 Report of the All-party Joint Oireachtas Committee on Climate Action (JOCCA), is to diversify land use by increasing horticultural production (O'Sullivan, 2019).

Culinary arts practitioners have an important role to play in this as their purchasing power can bring about change in the food system, either by creating a demand for certain products or by reducing the consumption of others. Culinary arts educators should provide their students with opportunities to explore the impact of food choice on both human health and the environment.

Culinary Arts Practice and Education

Western and Eastern Culinary Practice

Before examining culinary arts education, it is worthwhile considering culinary arts practice. In the Western and Eastern world, the respective status of plant-based and animal-based cuisines differs. Abstinence from eating animal flesh was advocated by the Greek philosopher Pythagoras (Davidson, 1999) and in 7th and 8th century Japan, refrainment from meat prevailed, seen in the strict vegetarian diet, *shōjin ryōri*, of nuns and monks (Booth, 2002). This plant-based cuisine was regionally adapted and is still evidenced in Japanese meals today, as tofu, pickles and vegetables are all prominent components, with meat and seafood playing a secondary role. Vegetarianism continues to be linked to many religions in the form of avoidance such as in Hinduism and Jainism (Davidson, 1999).

Beardsworth and Keil describe vegetarianism as an ethical approach to food consumption and 'an exercise in the management of anxiety' (1992, p.290). As a break away from the Vegetarian Society, veganism dates back to 1944, and is seen as a restricted version of vegetarianism prohibiting the consumption and use of animal products, not only as a food, but also by-products such as honey, ivory, pearl and wool (Suddath, 2008). The food writer Jaffrey (1990) has documented numerous plant-based dishes demonstrating the established roots of vegan cuisine in Japan, China and India. Ashkenazi and Jacob (2000, p.42) state: 'Buddhism's preference for vegetarian products has meant that Japan has evolved one of the most complex and elaborate vegetarian cuisines in the world'. In Western societies, veganism is less significant in everyday food preparation and consumption. It is seen more as a cultural movement (Cherry, 2006) and has been associated not only with counterculture as it 'served as an incessant critique of the mainstream, a marker of Otherness and an enactment of punk' (Clark, 2008, p.416), but also with animal welfare, ethics and activism (Francione, 2012).

In Ireland, veganism has neither this historical culinary anchor, nor is it a prominent feature in culinary arts education. In direct contrast, dairy produce has been deeply embedded in Irish culinary culture since the 12th century (Albala, 2011, p.200). At times such as Martinmas, the feast of St. Martin, it was even compulsory to eat meat (Mahon, 1998, p.142). Although the indigenous Irish diet is a far cry from veganism, this recent dietary trend continues to grow. A shift in culinary arts education is required to address the current and future demand for vegan and plant-based food offerings.

Evolving Culinary Arts Education

To envisage how culinary arts education can move forward, it is important to consider how it has evolved thus far. Since the Middle Ages, the study and practice of culinary arts has been guided by the master-apprentice modus. At this time, guilds were formed to provide structure, promote learning and ensure workers' rights. The apprentice, or novice, acquired knowledge though observation of their master, or expert. Successful replication of the skill ensured their path to excelling in this vocational craft (Emms, 2005). By the beginning of the 20th century, the French chef Auguste Escoffier simplified the way food was cooked and served, with an emphasis on seasonality (Myhrvoid, 2019). He set about improving the profession through organisation and training, with his work influencing the development of pedagogical approaches in culinary arts education (James, 2002).

An underlying inertia to change exists within the discipline of culinary arts. Western culinary arts education is traditionally grounded in the classical French kitchen (Woodhouse, 2015, p.58) with an emphasis on animal-based products. For example, crustacean shells are used to extract flavour, butter to enrich sauces and animal fat to maintain moisture. While veganism poses a restricted ingredient list to work with, creating vegan dishes can promote creativity and help push the boundaries in culinary arts practice. This is not without challenges though: extracting and promoting flavour in the absence of a protein-rich larder, and the need to utilise new techniques and technology to create a satisfying and balanced dish.

Vocational to Academic Metamorphosis

In 1999, Dublin Institute of Technology (now part of TU Dublin) launched the first culinary arts degree programme, providing culinary arts graduates with an academic roadmap for progression in their profession (Hegarty, 2004). The drilling of apprentices, not unlike soldiers, had been the modus operandum, but in an increasingly complex world this approach failed to appropriately equip culinary arts practitioners to lead in their discipline. Many culinary arts educators have questioned this master-

apprentice teaching strategy and favour pedagogies which foster creative thinking, innovative culinary competency, reflective practice and culinary imagination (Deutsch, 2014; Hu, Horng and Teng, 2016; Hegarty, 2011; Mills, 2007 and O'Mahony, 2007). There is further evidence of a vocational to academic transition: new culinary programmes have been developed such as a part-time Bachelor of Arts in Botanical Cuisine (Technological University Dublin, 2019b), and a Master of Arts in Gastronomy and Food Studies (Technological University Dublin, 2019c). An ongoing dialogue around evolving culinary arts education is essential to explore this question of identity.

Required Textbooks and Teaching Strategies in Culinary Arts

Over the last 20 years, culinary arts education in Ireland has shifted from a vocational to an academic trajectory, yet it could be argued that neither the content of the required textbooks nor the teaching strategies employed have significantly changed at foundation level. The seminal textbook *Practical Cookery* – first published in 1962 – still endures. Currently in its 13th edition, animal protein-based dishes appear to dominate the text. Even though this formative text has been revised by reputable culinary arts practitioners, the content seems to have largely remained unchanged. Rooted in classical French cuisine first year students are evermore drilled in classical stocks and sauces, with a weighty leaning towards meat, poultry and fish recipes.

Evolving Cuisine and Modern Culinary Techniques

The evolution of cuisine is well documented from the development of ancient cuisine to modern molecular cuisine (Gillespe, 2011), and culinary arts has seen many chefs contribute to its development. Considering the global food challenges currently faced – dietary, environmental and ethical – it seems essential to evolve our cuisine beyond the lightening of a sauce or the aesthetic of a plate. Much more is at stake and culinary arts education should be more disruptive.

Culinary arts practitioners around the world are critically re-evaluating what and how they cook. In 2018, René Redzepi, chef proprietor of Noma in Copenhagen, reopened his restaurant with a new approach. The revised menu reflects the seasons; customers can explore exclusively plants in summer, game and the forest in autumn, and seafood in winter (Price, 2018). His desire is to harvest what is best in season, respect the land and sea, and apply techniques which minimise waste.

Evolving techniques add to the complex culinary repertoire. This is particularly important when considering vegan cuisine where protein-rich, flavour driven foods are no longer on the menu. Methods of preparation and cooking techniques which harness flavour are even more essential. Many traditional processes such as smoking, drying and pickling have seen a revival. Demystifying techniques such as fermentation (Katz, 2012), employing industrial sous-vide technology in the kitchen (Keller, 2008), and deciphering innovative methods such as spherification (Adrià, Soler and Adrià, 2008) have expanded the catalogue of culinary processes. These techniques, both traditional and novel, are essential to produce an appealing repertoire of vegan and plant-based dishes. Processes which enhance flavour, add visual appeal and develop distinct textures can address some of the problematic aspects of vegan cuisine. These processes require specialised equipment, so the implication for culinary arts education is to fund the purchase of and provide access to such equipment.

Exploration of the Textbook Practical Cookery

Practical Cookery aims to provide students with the essential knowledge, skills and competence through practice-based opportunities in a professional kitchen. This paper seeks to analyse the textbook content and discuss evidence of the evolving constructs which assist in developing vegan and plant-based dishes. Several noteworthy areas of exploration related to the rise in veganism were identified in the literature: recent dietary advice, sustainable food systems, evolving cuisine (recipes) and culinary techniques (see Figure 1). Using these headings, the content of the 7th, 11th and 13th editions (Ceserani and Kinton, 1990; Campbell, Foskett, and Ceserani, 2008; Foskett, Ceserani and Kinton, 2015) was analysed.

The recipes were categorised as animal protein-based, plant-based vegetarian and plant-based vegan. Animal protein-based recipes contain ingredients such as beef or pork, with or without dairy products. Plant-based vegetarian recipes contain dairy products. Plant-based vegan recipes contain no animal or dairy products. The research concentrated on chapters related to *Soups*,

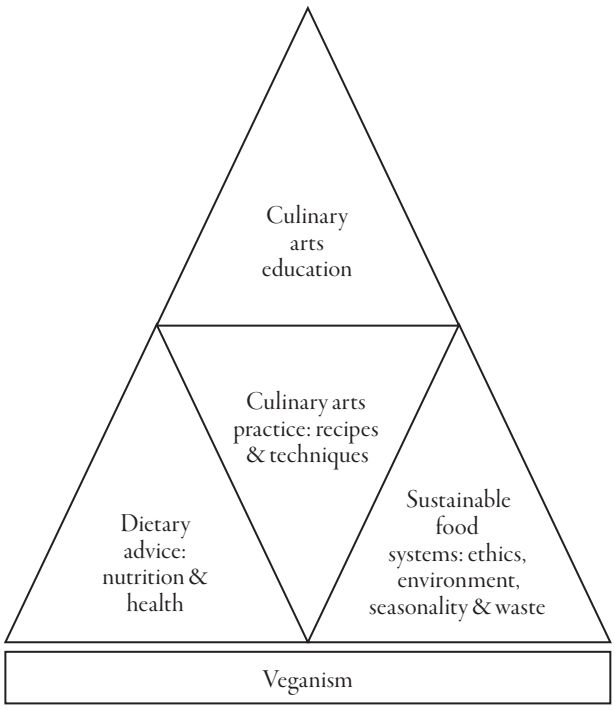

Figure 1: Veganism used as a lens to critique culinary arts education.

Vegetables, *Potatoes, Vegetarian Dishes, Rice,* and *Pulses and Grains*. The animal protein-based recipes in the meat and fish chapters were also analysed. Recipes which did not specify the use of meat or fish stock were classified as vegan because a plant-based alternative could be used.

Limitations

This paper only examines the content of the required textbook on one specific culinary arts programme. Concentrating on the core practical cookery module it seeks evidence of the knowledge, skills and competency to create vegan or plant-based dishes, but it does not consider the other modules delivered within the programme. Some chapters within the three editions were not analysed – *Salads and Sandwiches*, *Eggs, Farinaceous Dishes,* and *Hors-d'oeuvre* (7th edition); *Pasta and Rice* , *Cold Preparations, and Egg Dishes* (11th edition); *Eggs, Pasta and Noodles*, and *Cold Presentation* (13th edition) – as many of these recipes include eggs making them vegetarian, but not vegan.

Results

The review of the 7th, 11th, and 13th editions of *Practical Cookery* focused on key areas relevant to veganism. It sought evidence of the scaffolding required to impart knowledge, skills and competence in the development of vegan and plant-based dishes. A summary of the data is available from the author upon request.

Discussion of Findings and Recommendations

The findings offer an insight into how *Practical Cookery* has evolved over a 25-year period. This paper set out to assess if the textbook was keeping pace with current dietary trends, such as veganism and plant-based cuisine. While there is some evidence of changing content, evaluating the nature of these amendments is more important. Certain areas appear to be more evolved than others, but are these changes suitably developing the knowledge, skills and competence to produce vegan dishes and plant-based cuisine?

Dietary Advice: Nutrition and Health

In line with the mantra of the day, dietary advice has changed over the three editions: low-fat emphasis in 1990, nutritional information in 2008, and food intolerances and allergens in 2015. The nutrition report summaries in the 7th edition do not include recommendations for fruit and vegetable consumption. Instead the focus is on energy, calories and fat. New nutritional information is provided for one-third of the recipes and advice given on how this information can benefit customers, allowing them to make more informed food choices. It is worthwhile noting that legislation relating to calories on menus is currently under review in Ireland (Department of Health, 2020). If passed, food operators will need to provide consumers with nutritional information, so this section continues to be relevant.

In the 11th edition healthy eating moves to a more prominent location in chapter 1, but the content is reduced from twelve pages to just six. Emphasis is on balanced eating, recommending a diet high in starchy and bulking foods. *The Eatwell Plate* is introduced for the first time, providing guidance on fruit and vegetable consumption. All protein sources are in the same category – moderate consumption – with no differentiation between dairy, meat and fish. No advice is given to limit red meat or processed meat.

In the most recent edition, dietary advice is moved to chapter 17. There are few updates except for the addition of dietary intolerances. Considering the increased demand for healthy food options, the decision to move this important information to a less prominent position is questionable. Although the descriptions of vegetarian and vegan diets are more detailed, the most recent edition does not highlight this as a growing area of significance. The link between obesity and disease is discussed, but the health benefits of a plant-based diet are not. The 13th edition is clearly out-of-step with contemporary dietary advice such as reducing red meat and dairy consumption, avoiding processed red meat, and increasing vegetables. With rising rates of obesity and related non-communicable diseases, culinary arts students require an acute awareness of up-to-date dietary advice, so this should feature prominently in the text.

Sustainable Food Systems

Regarding sustainable food systems there is evidence of some progression. There is no seasonality chart for vegetables in the 7th and 11th edition, only appearing for the first time in the 13th edition. The importance of sustainable food systems is not featured in the earliest edition. In the 11th edition globalization is seen as positive, providing an increased larder for chefs to draw from. There is no mention of the negative impact this may have on the planet: diminishing nutritional quality of produce, increasing the carbon footprint, or additional packaging requirements. Important points are touched on in the most recent textbook, but they are neither prominent nor explored in any great depth. Considering the impending need for sustainable food systems, this should be in a more prominent position. It is essential for students to explore the connections between our food systems, the health of the population and the environment. The most recent edition insufficiently links food production, health and the environment which are all important elements to consider in the development of plant-based cuisine.

Culinary Arts Practice: Recipes and Techniques

A considerable reduction in the total number of recipes is noted from the 7th to the 13th edition. For example, in the 7th edition there are 203 plant-based vegan and vegetarian recipes, but only 101 in the 13th edition. Exposure to a repertoire of recipes is important as it helps students to develop their knowledge, skill and competency by exploring a range of ingredients and techniques.

Despite the current plant-based trend, the number of vegetarian and vegan recipes in the *Vegetarian* chapter declined, from 22 to 5, and 12 to 8 respectively. When including the other chapters, plant-based recipes increased from 52.1% to 68.2% when expressed as a percentage of animal protein-based recipes. This is mirrored with an overall decrease in animal-based protein recipes of 6.3%. Current dietary advice regarding reduced red meat consumption is evidenced. Over the three editions, red meat recipes decreased (beef by 3.2%, veal by 6.9% and pork by 1.6%), whereas fish and poultry recipes increased (5.1% and 2.2%). Tofu and other vegetable-based protein sources are introduced in the 11th and 13th editions. From the 7th to the 13th edition the overall percentage of vegan recipes increased by 6.3%, but vegetarian recipes remained the same at 18.9%.

It must be noted that many of the plant-based recipes are simple side dishes rather than complex main courses. At this formative stage in culinary arts programmes, composite recipes are extremely important; they demonstrate how to bring individual components together creating a complete harmonious dish. As veganism and plant-based cuisine become more popular, and no longer sit on the side-lines as side dishes or accompaniments, it is essential that students are provided with a repertoire of recipes which reflect the modern culinary landscape.

There is scant explanation of modern cooking methods and techniques in all three textbooks. Sous-vide briefly appears in the 11th and 13th edition, but other modern processes associated with the production of vegan and plant-based cuisine, such as spherification, sprouting, smoking, dehydrating and fermentation, are not included. Exploration of these techniques is critical in the development of culinary arts students' competency. Many of these processes were well-established prior to the most recent publication, so it is surprising that they are not featured in the text. With these techniques not featured in the textbook, students must then rely of the availability of equipment, experience of their educators and an adaptable curriculum to experience these processes.

Conclusion

Although this paper is only a snapshot of one textbook within one programme, it offers an insight into the challenge culinary education is facing to keep pace with the dietary trend of veganism. By examining content related to dietary advice, environmental issues, recipe relevance and modern techniques, this paper has shown that while the required textbook has changed, it has not sufficiently evolved. Culinary arts education appears to be stuck in a rut and the question now is how can it be more disruptive?

As seen in this research, textbooks do not always capture the most recent technology used in the applied discipline. Textbooks are simply not supple enough to adapt in a timely manner, so it is essential that students are supported by innovative teaching strategies, and a curriculum that is flexible to adapt to emerging trends. Culinary education should not just take place within the confines of the textbook or class-kitchen; industry links must be prioritised and fostered. Practitioners are an invaluable resource, helping to bridge the gap between learning environments and real-world experiences. Students should be provided with opportunities to share recipes, insights and techniques acquired on their work placement with their fellow students and educators.

It is crucial that educators examine the relevance of all resources. In a dynamic culinary landscape, a shift away from the traditional approach of perfecting tasks through repetition is required. This can be supported not only by suitable textbooks, but through creative learning environments and flexible delivery. It is incumbent on educators and academic management to carefully review the relevance of required textbooks. To research, assess and reflect on a textbook takes time, as this paper can testify to; educators need to be afforded time to complete such tasks. Identifying and funding additional teaching and learning provisions, such as equipment and technology, must be prioritised.

By using veganism as a lens, and examining the required textbook, this paper has identified some of the challenges faced by culinary arts education to innovate for current and future dietary trends. The necessary skillset to develop plant-based food offerings is only partially fostered within the textbook. Although plant-based recipes have increased, there is a considerable lack of information on the relevant technology and modern processes to innovate in this area. None of the composite vegan recipes in the most recent edition employed contemporary techniques. The supporting topics of dietary advice and sustainable food systems are also insufficiently explored. If textbooks are to be prescribed, their content should be critically evaluated to ensure they provide students with up-to-date and appropriate content. Alongside this, the culinary curriculum must be flexible to address any gaps as trends evolve and emerge.

The newly formed TU Dublin distinguishes itself by its commitment to the application of knowledge. But what if the knowledge contained within prescribed textbook fails to reflect present-day expertise? To achieve this remit, we need to be more disruptive. Textbooks must be relevant, specialised equipment invested in and educators supported to maintain professional currency. It appears that veganism is here to stay and grow. To be at the forefront of the culinary race higher education must continuously evaluate itself, otherwise it will be straggling behind, just keeping pace.

Reference list

Adrià, F., Soler, J. and Adrià, A. (2008). *A Day at elBulli*. London: Phaidon.

Albala, K. (2011). *Food Culture of the World Encyclopedia*. California: Greenwood.

Ashkenazi, M. and Jacob, J. (2000). *The Essence of Japanese Cuisine*. Surrey: Curzon Press.

Baroni, L., Cenci, L., Tettamanti, M. and Berati, M. (2007). 'Evaluating the environmental impact of various dietary patterns combined with different food production systems'. *European Journal of Clinical Nutrition*, 61(2), pp.279–286. Doi: https://doi.org/10.1038/sj.ejcn.1602522.

Beardsworth, A. and Keil, T. (1992). 'The vegetarian option: varieties, conversions, motives and careers'. *The Sociological Review*, 40(2), pp.253–293. Doi: https://doi.org/10.1111/j.1467–954X.1992.tb00889.x.

Booth, S. (2002). *Food of Japan*. London: Grub Street.

Borden, M. (2019). 'These 16 Chefs are Working for a Better Future: Our Latest Group of Boot Camp Chefs is Fighting for Food System Change'. *Stories/ Impact*. [blog] 25 February. Available at: https://www.jamesbeard.org/blog/these-16-chefs-are-working-for-a-better-future [Accessed 10 January 2020].

Campbell, J., Foskett, D. and Ceserani, V. (2008). *Practical Cookery*. 11th ed. London: Hodder Education.

Ceserani, V. and Kinton, R. (1990). *Practical Cookery*. 7th ed. London: Hodder & Stoughton.

Cherry, E. (2006). 'Veganism as a cultural movement: A relational approach'. *Social Movement Studies*, 5(2), pp.155–170. Doi: https://doi.org/10.1080/14742830600807543.

Clark, D. (2008). 'The Raw and the Rotten: Punk cuisine'. In: Counihan, C and Van Esterik, P., eds. *Food and Culture: A Reader*. New York: Routledge, pp.411–422.

Cope, L. (2019). 'Go vegan in Stoneybatter with three new eateries'. *The Irish Times* [online] 23 February. Available at: https://www.irishtimes.com/life-and-style/food-and-drink/go-vegan-in-stoneybatter-with-three-new-eateries-1.3799318 [Accessed 10 January 2020].

Davidson, A. (1999). *The Oxford Companion of Food*, Oxford: Oxford University Press.

Department of Health (2020) *Consultation with food businesses on the introduction of mandatory calorie posting on menus*. [online] Gov.ie. Available at: https://www.gov.ie/en/consultation/d9bfcc-consultation-with-food-businesses-on-the-introduction-of-mandatory-c/?referrer=/blog/press-release/government-approves-heads-of-bill-for-calorie-posting-on-menus/ [Accessed 8 January 2020].

Deutsch, J. (2014). *Suppressing Desire as Culinary Discipline: Can Culinary Education be Hedonistic? Should it Be?* [online] Available at: https://arrow.dit.ie/cgi/viewcontent.cgi?article=1055&context=dgs [Accessed 10 January 2020].

Digby, M.C. (2018). 'The vegans have landed: the rise and rise of veganism in Ireland'. *The Irish Times* [online] 08 August. Available at: https://www.irishtimes.com/life-and-style/food-and-drink/the-vegans-have-landed-the-rise-and-rise-of-veganism-in-ireland-1.3588945 [Accessed 10 January 2020].

Dinu, M., Abbate, R., Gensini, G.F., Casini, A. and Sofi, F. (2017). 'Vegetarian, vegan diets and multiple health outcomes: a systematic review with meta-analysis of observational studies'. *Critical Reviews in Food Science and Nutrition*, 57(17), pp.3640–3649. Doi: https://doi.org/10.1080/10408398.2016.1138447.

Doyle, J. (2016). 'Celebrity vegans and the lifestyling of ethical consumption'. *Environmental Communication,* 10(6), pp.777–790. Doi: https://doi.org/10.1080/17524032.2016.1205643.

EAT- Lancet Commission (2019). *Healthy diets from sustainable food systems.* [online] Available at: https://eatforum.org/content/uploads/2019/07/EAT-Lancet_Commission_Summary_Report.pdf [Accessed 7 January 2020].

Emms, S. M. (2005). *The Modern Journeyman: Influences and Controls of Apprentice Style Learning in Culinary Education*. Doctoral dissertation. Auckland University of Technology. [online] Available at: https://openrepository.aut.ac.nz/bitstream/handle/10292/85/EmmsS.pdf [Accessed 7 January 2020].

Food and Agricultural Organisation of the United Nations (2019). *Chefs are Key Ingredient in Promoting Sustainable Food Systems for Healthy and Culturally Diversified Diets*. [online] 22 March. Available at: http://www.fao.org/news/story/en/item/1186442/icode [Accessed 7 January 2020].

Foskett, D., Ceserani, V. and Kinton, R. (2015). *Practical Cookery*. 13th ed. London: Hodder Education.

Francione, G. L. (2012). 'Animal Welfare, Happy Meat, and Veganism as the Moral Baseline'. In: Kaplan, D. M., ed. *The Philosophy of Food*. Berkley and Los Angeles: University of California Press, pp.169–189.

Gillespie, C. (2011). *European Gastronomy into the 21st Century*. Oxon: Routledge.

Gittens, G. (2019). 'McDonald's launches a vegetarian and dairy-free Happy Meal in Ireland'. *The Independent* [online] 03 January. Available at: https://www.independent.ie/life/food-drink/mcdonalds-launches-a-vegetarian-and-dairyfree-happy-meal-in-ireland-37675653.html [Accessed 10 January 2020].

Greenebaum, J. (2012). 'Veganism, identity and the quest for authenticity'. *Food, Culture & Society,* 15(1), pp.129–144. Doi: https://doi.org/10.2752/175174412X13190510222101.

Harvard School of Public Health (2011). *The Nutrition Source: Healthy Eating Plate*. [online] Available at: https://www.hsph.harvard.edu/nutritionsource/healthy-eating-plate/ [Accessed 2 January 2020].

Hegarty, J. (2004). *Standing the Heat: Assuring Curriculum Quality in Culinary Arts and Gastronomy.* New York: The Haworth Hospitality Press.

Hegarty, J. (2011). 'Achieving excellence by means of critical reflection and cultural imagination in culinary arts and gastronomy education'. *Journal of Culinary Science & Technology*, 9(2), pp.55–65. Doi: https://doi.org/10.1080/15428052.2011.580705.

Hu, M. L. I. C. M., Horng, J. S. and Teng, C. C. (2016).

'Developing a model for an innovative culinary competency curriculum and examining its effects on students' performance'. *The Journal of Creative Behavior*, 50(3), pp.193–202. Doi: https://doi.org/10.1002/jocb.139.

Jaffrey, M. (1990). *Eastern Vegetarian Cooking*. London: Arrow.

James, K. (2002). *Escoffier: The King of Chefs*. New York: Hambaldon and London.

Katz, S. E. (2012). *The Art of Fermentation: An In-depth Exploration of Essential Concepts and Processes from Around the World*. White River Junction, VT: Chelsea Green Publishing.

Keller, T. (2008). *Under Pressure: Cooking Sous Vide*. New York: Artisan Books.

Leitzmann, C. (2003). 'Nutrition ecology: the contribution of vegetarian diets'. *The American Journal of Clinical Nutrition*, 78(3), pp.657S-659S. Doi: https://doi.org/10.1093/ajcn/78.3.657S.

Lundahl, O. (2018). 'Dynamics of positive deviance in destigmatisation: Celebrities and the media in the rise of veganism'. *Consumption Markets & Culture*, pp.1–31. Doi: https://doi.org/10.1080/10253866.2018.1512492.

Mahon, B. (1998). *Land of Milk and Honey*, Cork: Mercier Press.

McGuinness, K. (2019). 'Beast review: 'Vegans deserve better than the meat substitute at this plant-based restaurant''. *The Independent* [online] 11 April. Available at: https://www.independent.ie/life/beast-review-vegans-deserve-better-than-the-meat-substitute-at-this-plantbased-restaurant-37955913.html [Accessed 10 January 2020].

Michelin Guide (2019) *The Michelin Guide New York City*. 15th ed. New York: Michelin.

Mills, R. (2007). 'Culinary education: Past, present practice and future direction'. In: Christou, E. and Sigala, M, *2007 Annual International CHRIE Conference & Exposition*. Dallas, United States of America 25–29 July 2007.

Myhrvoid, N. (2019). *Auguste Escoffier French Chef*. [online] Available at: https://www.britannica.com/biography/Auguste-Escoffier [Accessed 2 January 2020].

O'Mahony, B. (2007). 'Culinary imagination: the essential ingredient in food and beverage management'. *Journal of Hospitality and Tourism Management*, 14(1), pp.1–5. Doi: https://doi.org/10.1375/jhtm.14.1.1.

O'Sullivan, K. (2019). 'Climate action committee urges redirection of Irish agriculture'. *The Irish Times* [online] 27 March. Available at: https://www.irishtimes.com/news/environment/climate-action-committee-urges-redirection-of-irish-agriculture-1.3839508?mode=amp [Accessed 10 January 2020].

Pimentel, D. and Pimentel, M. (2003). 'Sustainability of meat-based and plant-based diets and the environment'. *The American Journal of Clinical Nutrition*, 78(3), pp.660S-63S. Doi: https://doi.org/10.1093/ajcn/78.3.660S.

Pollan, M. (2013). *Food Rules: An Eater's Manual*. New York: Penguin Group.

Price, L. (2018). 'Noma 2.0 opens in Copenhagen today'. [blog] 15 February. Available at: https://www.theworlds50best.com/blog/News/noma-2-opens-copenhagen.html [Accessed 2 January 2020].

Reijnders, L. and Soret, S. (2003). 'Quantification of the environmental impact of different dietary protein choices'. *The American Journal of Clinical Nutrition,* 78(3), pp.664S-668S. Doi: https://doi.org/10.1093/ajcn/78.3.664S.

Suddath, C. (2008). 'A brief history of veganism'. *Time* [online] 30 October. Available at: http://time.com/3958070/history-of-veganism/ [Accessed 10 January 2020].

Taylor, C. (2018). 'Leon to open first Irish restaurant in Dundrum Town Centre'. *The Irish Times* [online] 22 November. Available at: https://www.irishtimes.com/business/agribusiness-and-food/leon-to-open-first-irish-restaurant-in-dundrum-town-centre-1.3705834 [Accessed 8 January 2020].

Technological University Dublin (2019a). *Higher Certificate in Arts in Culinary Arts*. [online] Available at: https://www.it-tallaght.ie/index.cfm/page/course?code=TA_HCART_C [Accessed 2 January 2020].

Technological University Dublin (2019b). *BA (Hons)in Botanical Cuisine*. [online] Available at: https://www.it-tallaght.ie/contentfiles//Documents//life_long_learning/2019/management/Botanical_Cuisine_2019.pdf [Accessed 2 January 2020].

Technological University Dublin (2019c). *Gastronomy and Food Studies*. [online] Available at: http://www.dit.ie/studyatdit/postgraduate/taughtprogrammes/allcourses/dt9400ptgastronomyfoodstudiesma.html [Accessed 2 January 2020].

Woodhouse, A. (2015). *Culinary Arts Pedagogy: A Critical Enquiry into its Knowledge, Power and Identity Formation*. Master's thesis. Otago Polytechnic, Dunedin.

World Health Organisation (2015). *Q&A on the Carcinogenicity of the Consumption of Red Meat and Processed Meat*. [online] Available at: https://www.who.int/features/qa/cancer-red-meat/en/ [Accessed 7 January 2020].