



Food that Acts Like Other Food: A History

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Abstract

What is the history of animal product substitutes, and why have humans created and consumed them? How long has this practice existed and in which cultures? This history of these novel foods, plant-based protein alternatives, notes a shift over time from predominantly religious to largely secular motives for avoiding meat and dairy. In recent decades plant-based meat and dairy substitutes have grown in number and use, even as Western countries have experienced a decline in organized religion. The impetus behind their production and consumption today is now predominantly secular, rather than religious, specifically environmental and animal welfare issues. This paper charts the transformation of motives and purposes behind the uses of these foods. This historical survey, while not geographically or chronologically exhaustive, is told mainly from a UK/US point of view, two societies with entrenched animal meat and dairy consumption habits. Providing examples from different cultures and periods, it divides the use of plant-based product substitutes into several periods: early to medieval civilizations; nineteenth century Western industrialization; the early twentieth century; late twentieth-century United States; and to conclude, the present day. The historical and cultural contexts provide important perspective on the current proliferation of novel plant-based meat and dairy substitutes.

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Introduction

Mock duck made of wheat gluten; nut milk coagulated to form mock eggs; butter substitutes made from vegetable oils; and soy-based meat substitutes of both the early (tofu) and modern eras (Protese, Garden Burgers, textured vegetable protein). What are the histories of these plant-based meat and dairy substitutes? Why have humans created and consumed them, given that animal-derived meat and dairy have been readily available, desired, and consumed by the majority of humans over time and across cultures?

The history and practice of food substitutes—food acting like other food—is wide-ranging and pervasive. While plant products have been substituted for other plants (using crackers for apples in mock apple pie), and animals for other animals (ex: surimi, a fish paste imitation crab), most such novel food creations have been plant-for-animal product substitutions. This article focuses on the motives behind plant-based animal product substitutes, specifically for meat and dairy.

These novel plant-based alternatives have diverse origins but commonalities as well, including the motivations behind their development, and their meanings over time, from predominantly religious to largely secular motives for avoiding meat and dairy. In recent decades plant-based meat and dairy substitutes have grown in number and use, even as countries have experienced a relative decline in organized religion (Pew Research Center, 2022). While religious reasons for avoiding meat still exist, today the impetus behind the production and consumption of meat and dairy alternatives is predominantly secular rather than religious, specifically environmental and animal welfare issues. This paper charts the transformation of the motives and purposes behind the production of these foods.

This brief historical survey highlights examples from different cultures and periods, though mainly tells the story from a United Kingdom/United States orientation. Furthermore, it focuses mostly on societies where animal-derived meat and dairy are prominent features in their cuisines (though perhaps not readily available to all people because of cost or accessibility). Cuisines relying primarily on plant-based sources of protein would have a different relationship with novel plant-based meat and dairy substitutes, and there may perhaps be less of a need to develop them. While the early Asia example discussed below is perhaps one such society (at least with regard to animal-derived dairy), it would be interesting to explore in more depth the question of whether cuisines less reliant on animal products are compelled to create plant-derived meat and dairy substitutes.

The discussion divides the use of plant-based product substitutes into several periods: early to medieval civilizations (Asia and Europe); nineteenth-century western industrialization (UK and US); the early twentieth century; late twentieth-century United States; and briefly concludes with the present day. While such a short paper cannot provide geographically or chronologically exhaustive examples, these historical and cultural contexts still provide important perspective on the current proliferation of novel plant-based meat and dairy substitutes.

Meanings and Motives of Food Taboos

As omnivores, the human digestive system can accommodate both plants and animals as food. Yet individuals and groups have avoided eating meat and other animal products, usually as a response to religious or cultural prohibitions. These rules, often codified as taboos, become deeply embedded in cultures (Fiddes 1992).

Nearly all religious traditions use food consumption or its absence in rituals, as symbols that impart meaning, and to drive group identity and cohesion. Many of these food practices involve eschewing animal products, specifically meat. Some avoid all animal flesh (Seventh Day Adventists, Buddhists) and others focus on a



particular kind (Judaism, Islam, Hinduism). Others have provided restrictive rules regarding the consumption of these products (Catholicism). While these proscriptions and practices have changed over time, for many orthodox practitioners, these food rules are deeply embedded within their identity and religious practice, to the point that the thought of consuming the forbidden animal flesh creates deep feelings of disgust. This discomfort can remain even if a person no longer practices their childhood faith (Rozin and Nemeroff 2002). In response, cultures have developed plant-based meat and dairy substitutes, which take on their own meanings and uses as they become embedded in culinary foodways.

There are numerous reasons groups avoid eating animals and their byproducts, and individuals often have mixed motives for doing so. When examining historical food habits, it is impossible to know exactly what people's motives were, although archaeologists and historians are able to draw conclusions about historical food habits' function and meaning. Moreover, religious and secular ethical reasoning are themselves interwoven. While religion and secular ethics are main drivers, a number of other factors can come into play, including demonstration of power and hierarchy, technological innovation, economic hardship, taste preferences, group dynamics and involuntary feelings of disgust. For example, some avoid eating animals for religious reasons that are intertwined with national allegiances (India), political/historical context (Germany), or even national security (Israel, Singapore) (Jain 2019; Torella 2022; Spence 2021; Rozin 1982; Stevens and Ruperti 2023). Someone may eat tofu instead of meat for multiple reasons: animal welfare ethics, for example, but also attempts at weight loss, or to conform to group norms. Meanings and uses can moreover change over time; that is, people start out avoiding meat for one reason (religious taboo) and it later turns into another or is expanded to include other motives (environmental awareness, health concerns). While this research examines the historical past for clues regarding the development of and humans' response to proscribing animal consumption, it focuses on the product substitutes that arise as a result.

Mock Duck and Almond Milk: Early Religious-Based Substitutes in Buddhism and Medieval Christianity

Buddhism, with its proscriptions against eating animals, has had a significant effect on the food cultures of Asian countries. China's early adoption of plant-based meat products is closely linked to its long history of Buddhism. Buddhism began in India and migrated to east Asia, reaching significant influence between the fifth and eighth centuries CE (Lauden 2015). Original Buddhist teaching did not entirely prohibit the eating of animals, and Buddhist sects have varied on their practice with regard to meat eating (Daly and Thakchoe 2023). It has, though, encouraged abstaining from meat through *ahimsa*, the virtue of non-violence. *Ahimsa*, also a key tenant in Hindu, Jain, and Sikh thought, advocates doing the least harm to others possible, which includes all living beings (Chapple 1993).

The religious proscription gave rise to meat product substitutes serving a variety of constituents and needs. Monasteries in Asia became prominent centres of not only religious thought and practice but also commerce, agricultural, and technological innovation. Traveling merchants, explorers, wealthy patrons, and religious pilgrims sought lodging and hospitality, and monastery kitchens providing food for all became centres of cuisine and product innovation. While Buddhists monks were for the most part non-meat eaters, travellers—many of whom were wealthy patrons—consumed and expected meat. As a result, Buddhist temple food traditions produced meat analogues, including tofu and wheat gluten, also called seitan (Lauden 2015; Erway 2018; Wei 2021). Wheat gluten, the protein-rich substance remaining after rinsing wheat, was especially developed as a mock meat, as they were called, formed into shapes and cooked deliberately to resemble meat. Its texture being somewhat similar to cooked poultry, mock duck was an early popular product made from wheat gluten. The gluten, formed and dimpled to resemble a plucked bird's skin, was cooked and served to enhance its appearance compared to actual duck. Mock duck became a mainstream product in China and elsewhere in Asia, and continues to be a popular dish today (Erway 2018; Lott-Lavingna 2019; Dunlop 2023).

Similar to Buddhist influences in Asia, in Medieval Europe Catholic religious dietary restrictions led to plant-based substitutes, in particular for dairy. Monasteries similarly were centres of wealth, agricultural and culinary ingenuity, as well as religious thought. Most followed the Rule of Saint Benedict. Benedict's writing, codified in the sixth century CE, preached simplicity as a reflection of divinity, and advocated prayer, work, and *lectio divina* (scripture study and pondering). The Benedictine Rule advocated simple living, including avoiding extravagant eating, and at the same time extending hospitality to strangers. Some Catholic monastic orders abstained from eating meat entirely, limiting their meals to one or two a day (even while some monasteries became famous for their rich food and drink traditions) (Lauden 2015; Albala 2011a; Albala 2011b). Ordinary people were not beholden to such a strict regimen, but did have rules to follow regarding meat and dairy consumption during fast days.

Fast days, comprising at least half of the calendar year, were decreed by the church and enforced to a certain extent by the state as well as by social norms during the Middle Ages, when Christians had to observe them. On these days, no animal products, including eggs, dairy and meat, could be eaten, though anything from water was permissible. The reasoning was that land beasts had had to shelter from the Flood on Noah's ark, but fish were exempt, and therefore permitted (Henisch 1976; Frost 2017). Much debate went into what defined which animals were exempted from the fasting rules; beaver and the Barnacle goose, for example, were categorized as waterfowl and thus allowable. While people near water had greater access to seafood as meat substitutes, most did not. Salt cod, which stored well and could be kept over long periods of time, was a popular fasting alternative to pork and beef.

Nuts served important purposes as fasting food alternatives. Rich, filling and meaty in texture, nuts could in some measure satisfy meat cravings. Nut milks and cheeses became important stand-ins for dairy milk and cheese (Spencer 1993). Cooks poured water through crushed almonds to develop a milk product useful in cooking as well as for drinking, and thickened it to form a cheese-like product (Henisch 1976; Lauden 2015; Frost 2017). Medieval cookbooks even contained a recipe for a mock egg made with almond milk-based jelly with an almond centre dyed yellow with saffron (Napier 1888). A popular recipe of the time, blanched ground almonds were simmered in boiling water and the liquid drained away. The remaining soft puree was sweetened with sugar and divided. One part was left white and the other coloured yellow with saffron, ginger and cinnamon. Carefully stuffed in an empty eggshell and gently roasted, it was served up as a hardboiled egg (Henish 45). Such an item made with expensive ingredients and requiring laborious processing was however available only to the elite.

Most medieval Christians endured with monotonous diets of bread, salted fish, and root vegetables as fasting foods for extended periods of time until the rules became more relaxed in the early modern period. Albala notes that the scholars adhering to Galenic humoral theories of the body took issue with the Church's fasting rules but rarely openly challenged them. They argued that consuming mostly fish and vegetables—fasting foods categorized as cold and moist—in the winter/early spring Lenten season, for example, was exactly the opposite of what the body needed. Humoral theory dictated that warm and dry meats and cheeses were much more suitable to the human body's needs (Albala 2002).

Protose and Granola: A Religious Basis for the Emerging Ethics of Animal Welfare in Nineteenth-Century Britain and United States

While some religious fast days were still observed among Christians in nineteenth-century industrializing Europe and United States, the Catholic church's power and influence over food habits, especially in Protestant countries, diminished. Emerging, however, were secular organizations that employed more ethical considerations of animal treatment, as well as small groups of Protestants whose theology included meat abstinence. As the industrialization of the food supply commenced in the late nineteenth century, commercial products such as Protose and granola became mainstream alternatives to meat and affected mealtime food habits.



Philosophers have long examined the ethics of eating animals, but in Victorian-era Britain and the United States increased attention focused on the topic. English vegetarianism, the word first formally used in the 1840s, began to coalesce around a number of ideas and was spurred by various factors. Ideas about meat-eating were contested in Christian theology. Traditionalists pointed out that God had assigned humans dominion over animals, when Adam and Eve were commanded to ‘be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth’ (Genesis 1:28). A small group of theologians, however, argued that meat-eating was the result of Adam and Eve’s original sin, and that the true Christian’s avocation was to return to the pre-downfall state of perfection and harmonious relationship with all creatures. This ‘prelapsarian’ theology provided a philosophical base for vegetarianism that made sense to a growing number of British citizens. Adherents established Vegetarian Societies in London, Manchester and elsewhere (Stuart 2006).

Meat abstinence in the nineteenth century was furthermore directly influenced by Eastern religions. Travelers to India and elsewhere in the East were exposed to millions of non-meat eaters, and viscerally understood that people could be healthy without consuming meat (Stuart 2006; Hauser 2020). Moreover, that so many existed without meat shook the European travellers’ belief in sanctioned human dominion over animals. As Stuart notes, ‘News of Indian vegetarianism proved a radical challenge to Christian ideas of human dominance, and it contributed to a crisis in the European conscience. [I]t encouraged people to imagine that broadening the sphere of ethical responsibility was beneficial for humans as well as for nature itself’ (Stuart 2006, xxi).

This was a radical cultural concept for most UK citizens, given the centrality of meat and the symbolic importance of beef in Britain. While probably more people ate pork at the time, beef was symbolically important to this nation of ‘beefeaters’ who took ‘John Bull’ for its national mascot (*Anglomania* 2006). In this era before the discovery of vitamins, meat and cereals were thought to be the most strength-producing foods, while vegetables and fruits were pleasant but more an afterthought. They were even considered to be potentially dangerous, given their reputation as laxatives, along with their connection to cold and moist values through the ancient humoral theory that still held vestiges of influence. Malthusian fears of overpopulation stoked a broad national conversation that featured anxieties about not having enough meat to feed the civilized classes. What became known as the Great Food Question focused on meat and spurred action to secure a steady supply of beef and lamb from colonial outposts, including Ireland, Australia and New Zealand (Belasco 2006; Gregory 2009).

The vegetarians were partly reacting to the worst aspects of industrialization, the British ‘Satanic mills’ that were choking the air with billowing smoke from factories, exposing men, women and children who worked in those factories with few safeguards and meagre pay. Reformers saw vegetarianism as the means to improve the diet of the working classes. While there was a small contingency of working-class vegetarians, labourers mostly wanted what the elites had: a stable safe supply of meat on their tables. Furthermore, in addition to arguments for vegetarianism as being more healthful, vegetarians contended it was more economical, allowed better use of the land, was more in line with pacifism, and was morally preferable. As animal slaughter became concentrated and visible in dense urban cities, groups such as London’s Society for the Prevention of Cruelty to Animals (SPCA) protested animal cruelty and advocated avoiding meat eating. Literary figures such as Percy Blythe Shelley, George Bernard Shaw, and Leo Tolstoy joined the movement and wrote treatises and poems advocating vegetarianism (Gregory 2009; Stuart 2006; Lauden 2015). As the nineteenth century turned into the twentieth, English suffragettes linked vegetarianism to their oppression as they strove to win votes for women (Ewbank 2018).

The United States was going through its own vegetarian awakening in the nineteenth century. While there were small groups forming to protest animal cruelty, emerging Protestant religious traditions such as Seventh-Day Adventism prohibited meat consumption as a central tenant to its theology and religious practice. Andrew Shprintzen (2013) effectively traces the intellectual and commercial growth of vegetarianism as a

reform movement, including the roles of Presbyterian minister Sylvester Graham, through to the Seventh Day Adventist John Harvey Kellogg's Battle Creek Sanitarium, the latter being central to the promotion of meat substitutions in the United States. Meat (along with alcohol) was thought to inflame humans' dangerous 'animal instincts', and was therefore to be avoided at all costs. A vegetarian diet was considered healthier in a number of ways. Based on a combination of religious treatise and alternative health reforms, the 'San' as it was colloquially known became a popular place for the striving middle classes to take their health treatments. Kellogg combined his religion's penchant for fresh air, exercise, and avoidance of alcohol and meat with his medical training to create a health regimen which included lectures, classes, electrotherapy, hydrotherapy, and a plain vegetarian diet emphasizing whole grains, fruit, vegetables, and nuts.

Since most of the visitors to the Sanitarium were used to eating meat in quantities, Kellogg and the Sanitarium kitchen – not unlike the Asian monasteries of old – strove to create meat substitutes that somewhat simulated the textures and tastes of meat. He experimented with existing twice-baked hard cereal recipes, making them softer and easier to chew. This 'granola' was softened with milk and eaten as a porridge. Kellogg experimented with nuts as well, creating dense meat-like loaves that, while tasting only minimally like animal flesh, when sliced and plated could appear as an adequate visual and textural substitute for meat (Prichep 2017). Kellogg also developed other nut and cereal products with various names such as Nuttose, Nuttolene, Granose, and Protose. The latter, as Shprintzen (2013: 131) put it, 'set the standard for meat substitutes'. Protose, a combination of wheat gluten, cereal, and peanut butter, was packed in tin cans and marketed as 'vegetable meat'. An advertisement for Protose claimed it 'looks, smells, and tastes like meat and can be used in many ways as meat, yet has none of the harmful toxic effects' (Shprintzen 2013: 133). While these products would never financially compete with animal-derived meat, they were sold commercially, and did provide options for the small but growing number of vegetarians who sought substitutes. Moreover, as the Kellogg's brand of products grew and developed, such cereal and milk options gained in popularity and in the later twentieth century eventually overtook the traditional eggs and bacon breakfasts in the United States.

Vegetarianism spurred a number of commercial products as meat substitutes on both sides of the Atlantic Ocean. Dozens of cafes, lunchrooms and restaurants openly catered to British vegetarians. In London and elsewhere in England, vegetarians imported Kellogg's products and developed their own, with such names as Nutter, Albene, Nut Cream, Meatose, Vejola, Nut-vego, Savoury Nut Meat, and Nutton (Gregory 2009). Scientists at this time were synthesising flavours and new ways of preserving and manufacturing food. Chemist Justus von Liebig's experiments had yielded a meat extract in 1865 and had led to concentrated grain extracts from brewer's yeast, including Marmite in Britain and Vegemite in Australia, and the fruit concentrate Emprote (Gregory 2009) which vegetarians could spread on toast or use to add flavour to recipes.

TVP and Margarine: Technological Innovation and Novel Plant Product Substitutes of the Early Twentieth Century

As vitamins were discovered in the early twentieth century, fruits and vegetables came to have more value and importance. They had previously been considered pleasant meal additions at best and even regarded with some suspicion, given their place in the humoral system as discussed above. The fact that modern science revealed that fruits and vegetables were packed with nutrients heightened their importance to human health and nutrition. This new understanding occurred at the same time as the food supply was becoming more industrialized. As canned food became more affordable, safe, and palatable, manufacturers and advertisers promoted them in new ways (Bentley 2014; Zeide 2019).

By the early twentieth century advances in science and technology had led to the development of several plant-based meat and dairy alternatives that came to function as industrial commodities (textured vegetable protein), or products that eventually became a valued item in their own right (margarine). The genesis of these products was less about religion or secular ethics, than about technological innovation, modernity, and human mastery over nature (though they proved valuable to religious groups, as discussed below). These early



twentieth-century plant-derived products included margarine (a butter replacement), vegetable shortening such as Crisco (a lard replacement), non-dairy creamers such as Coffee mate, textured vegetable protein (TVP), and soy-based infant formula.

Advances in chemistry radically transformed twentieth-century global food systems, a transformation particularly evident as regards the soybean. Soybeans had been part of Asian diets for thousands of years and consumed as a wide array of products. As soybean production expanded in the West, however, particularly in the United States, they were transformed not into tofu, mock duck, and other edible dishes, but into cattle fodder and a hyper-processed ingredient in industrialized food products. US agricultural stations first experimented with soybeans as cattle feed in the late nineteenth century. By the 1930s, as the soy-processing technology advanced, the beans would be crushed, their oil removed for domestic and industrial uses, and the remaining high protein meal fed to livestock. As Matthew Roth (2018: 12) notes, 'By the 1960s the soybean was a fixture of American life but in a way entirely distinct from its role in Asia. The bounty of its protein did not sustain people directly; it did so indirectly through the massive expansion of meat production'. Millions of people across the globe were then sustained by soybeans, though in different forms: those on one continent by products made from soybeans, and those on another by animals fattened with soybeans. Soy cooking oil appeared in grocery stores and household pantries; by the 1970s seventy percent of all edible oils in the US were derived from soy (Lauden 2015). Soy-based textured vegetable protein (TVP) became a widely used meat extender, especially in government subsidized school lunches and processed hamburger mixes (Bentley 2021). While US vegetarians and Asian-Americans consumed soy in more recognizable forms, soy increasingly made its way into ultra-processed food products as lecithin and other chemical derivatives (Roth 2018).

As soybean and other vegetable-based oils were becoming more popular, in the same period the use of animal fats was declining, largely due to the development of margarine. A solid fat designed as a butter substitute, margarine was originally made of beef tallow, but as technological advances created hydrogenated oils (turning the liquid into a semi-solid product) margarine as a plant-based butter substitute proliferated in the twentieth-century US. Margarine proved useful during World War II, when rationed butter was scarce and expensive. The dairy industry, fearing that Americans would become so comfortable with margarine that butter sales would diminish after the war, succeeded in passing a law that required margarine to be sold white, accompanied by a packet of yellow food colouring that the consumer would have to knead into the product (a law that was repealed years later) (Bentley 1998).

Marketed as better and healthier than butter, margarine was a mainstay of American pantries for decades. It proved especially popular among Jewish Americans who could use the non-dairy margarine—as well as the lard substitute Crisco (vegetable shortening) and Coffee mate non-dairy creamer—with meat-based meals and still keep kosher (Kirshenblatt-Gimblett 1990). Initially regarded as healthful, these ultimately became mainstream, even beloved products, all made with hydrogenated vegetable oil, which in the early 2000s was found to be among the most harmful of fats (Nichols 2023; O'Leary 2023).

Boca Burgers and Tofurky: Secular and Eastern-Religion Influenced Approaches to the Earth and Its Inhabitants in the Late Twentieth-Century United States

The 1960s/70s United States counterculture movement, with its emphasis on challenging mainstream practices and beliefs, spawned a variety of meat substitutes and popularized such foods as tofu and yoghurt. First produced and marketed mainly to vegetarians in health food stores and coops, large food manufacturers eventually picked up on the trend and created more products, which were eventually commercialized and entered the mainstream food culture. While some groups still advocated meatless diets for religious reasons, including a new-found interest in non-Western forms of religion and spirituality, the prevailing ethos was not only concern for animal rights but also the environment, all part of the oppositional reaction to the excesses of mainstream American culture. New ideas about health and wellness also played a part.

In United States, the post-World War II demographic cluster known as baby boomers came of age in the 1960s and 1970s and made their mark on society. A small but powerful group of educated, mainly white, young adults created an influential subset known as the counterculture. Disillusioned with mainstream politics (Watergate, Vietnam War), misuses of science and technology (Agent Orange, DDT, the military-industrial complex), and unfettered capitalism, the counterculture deliberately sought out new ways to live. The counterculture generation were attracted to and influenced by Eastern religious traditions, including Buddhism, in part as a protest against global human and animal violence. Regarding eating as a political act, they looked to other cultures' food habits that contrasted with the American emphasis on meat, those that were more global in orientation and seemingly more environmentally friendly (Belasco 2006).

By looking into the past (the nut loafs of Battle Creek) as well as at other cuisines (Asian, Mediterranean), the counterculture developed a set of eating ideas and practices that mirrored standard American cuisine, but meatless. In the mid-twentieth century, most Americans' assumptions about a proper meal (vegetarian and omnivore alike) still conformed to the 'A + 2b' structure: an unspoken assumption that 'dinner' conformed to a meal grammar of 'A' being a large portion of animal flesh at the centre of the plate, and '2b' being smaller portions of usually one green or orange vegetable (peas, carrots) and one starchy vegetable or grain (potatoes, rice) (Douglas 1972; Bentley 1998). Counterculture vegetarians wanted to eat differently, but aside from some soups, stews, and pasta dishes, had not had a great deal of experience with non-A+2b types of meal structures. Thus, early vegetarian cookbooks featured some non-Western recipes which followed a core (starch)-fringe (sauces/meat as flavouring agent)-legume (beans, peas) culinary grammar (CFL). It was difficult to venture much beyond A+2b, however, as Americans were simply not used to other types of meal formation. While there were vegetarian chili recipes, for example, many early meatless recipes (e.g. walnut and cottage cheese casserole or baked tofu) mimicked the large portion of meat at the centre of the plate. While meat was the main concern, counterculture vegetarians also experimented with non-animal-based milks, including soy, coconut, and nut milks (Lappe 1971; Katzen 1974).

In the late twentieth century, creative entrepreneurs began to create and manufacture plant-based meat products, most of which were chopped meat patties and sausages that could easily mimic the real thing. Manufactured plant-based meat products first came on the market in the 1970s, including Garden Burger, Boca Burger, and the British VegeBurger, a dry mixture to which consumers could add liquid and create a patty at home (Smith 2014; Pritchep 2017; Watrous 2018). Tofurkey, the tofu and seitan mixture formed into a turkey shape popular at American Thanksgivings, came on the market in the late 1990s though the founder, Seth Tibbot, had been creating plant-based meat products under the name Turtle Island Foods for a couple of decades prior to that (Kauffman 2017). Boca Burgers, Tofurkey, tofu hot dogs, and other commercially prepared items were marketed mainly to vegetarians and sold in health food stores and coops. Not actively promoted to the broader population, it was thought that mainstream American omnivores would not be interested in these products—why would they, the thinking went, when they could get the more flavourful (the vegetarian meat substitutes were not necessarily valued for their taste), more familiar animal protein products they knew, loved and felt little reason to avoid.

A growing number of people in the United States and other Western countries, who would not necessarily call themselves vegetarians, were however interested in consuming more fruits and vegetables, largely for health reasons. Late twentieth-century scientific studies had begun to question the healthfulness of meat in large quantities. Restaurants and food businesses began to cater to this growing trend, evidenced in the rise of self-serve salad bars in restaurants. As Belasco points out, companies eventually co-opted these counterculture plant-based meat and dairy substitutes. Marketers, picking up on the health-halo auras of some counterculture foods, created similar products but more directly catering to mainstream American tastes: heavily sweetened yoghurts, sugary granola cereals, and salty, cheese-laden frozen 'ethnic' meals that could quickly be reheated in a microwave. The popularity of these foods grew as Americans became more comfortable and familiar with non-A + 2b meal configurations from non-Western cuisines, especially Asia (Belasco 2006).



Alt-Meat and Dairy: Novel Plant Product Substitutes of the Twenty-First Century

By the twenty-first century a confluence of push and pull factors—incontrovertible evidence of human-generated climate change, intensified concern for animal welfare, as well as a huge infusion of investment capital—led to a new generation of commercialized plant-based substitutes (Zimmeroff 2021; Kennedy 2023). The rapidly proliferating, dizzying array of plant-based—and increasingly cell-based—substitutes for conventional meat and dairy products were marketed now to the general population, who were on average more aware of the environmental and health costs of meat consumption (Wurgaft 2019; Guthman and Biltekoff 2021). A plant-based burger so reminiscent of the real thing that it could ‘bleed’, for example, could help reduce one’s meat consumption without necessarily giving up the pleasures, rituals, and tastes of a hamburger. They were also attractive to Silicon Valley investment bankers, many of whom were vegetarian or vegan, and whose worldview deemed technology the ultimate problem solver as well as profit generator. At present, as the novelty of these meat and dairy substitutes may have reached a plateau, the ultimate successes and failures remain to be seen. Olestra, an earlier industrially manufactured, plant-based, and calorie-free fat, decidedly failed with consumers (Rossen, 2023). Furthermore, while there is no doubt that these meat and dairy alternative products are more friendly to animals, it remains to be seen how nutritionally and environmentally advantageous they can be over animal products. There are also ethical questions to be reckoned with. What are the moral implications, for example, of wealthier developed nations aiming to set the agenda or send down virtuous proclamations about animal consumption to developing nations that wish to increase their meat consumption, or maintain long-held cultural food habits involving animal meat and dairy? How do hierarchies of power, wealth and privilege affect these dynamics?

These questions aside, there are other reasons beyond those discussed here, for which foods that act like other foods have been developed and become integrated into culinary cultures, including deprivation, creativity and artifice. Hunger has always driven humans to create edible stand-ins for beloved foods and dishes, as is evident, for example, in the Cuban dish *bistec de toronja*, thought to have originated in the so-called ‘Special Period’ of the 1990s, a time of substantial food and fuel shortages. Cubans would bread and fry grapefruit pith, the white spongy substance between the fruit and the outside peel. With its resulting taste and texture reminiscent of fried chicken or breaded beefsteak, the dish has since remained in Cuban foodways (Ferran 2017). Furthermore, chefs throughout history as well as in the current period have employed playfulness and creativity in dishes, disguising foods as other foods to entertain and perhaps gently tease their guests. The ancient Roman elite with such recipes as ‘patina of anchovy without anchovies’, as well as dishes of the twenty-first century’s modernist cuisine, such as a tiny bagel and lox made of ice cream, are humorous displays of skill (Apicius, 2006; DuFresne 2017). Creativity and artifice are also on full display, for example, when cake is employed in *trompe l’oeil* object deception. A recent internet sensation (and US spin-off show, *Is it Cake?*) plays tricks on viewers, who think they are seeing a human arm, or a boot, for example, that turns out to be a cake when cut with a knife. The inanimate (or in the case of a human arm, animate) object is always cake, an arguably ‘frivolous’ or luxury food, but the overall effect is both unsettling and humorous (Cao 2022).

Conclusion

This admittedly incomplete exploration of the history of plant-based meat and dairy alternative products focuses mainly on societies with robust existing meat and dairy consumption habits. As mentioned earlier, perhaps this is not a coincidence but a catalyst. Societies with meat and dairy as central fixtures in cuisine are likely to sense an acute absence and deficiency when animal products are restricted for whatever reason, be it religious, ethical, or health-related.

There have always been, of course, societies, regions, and cultures which do not feature meat and dairy prominently in their cuisines. Those relying more heavily on legumes and grains for primary sources of protein perhaps have had a different experience or trajectory with plant-based meat and dairy alternatives. If a cuisine has long-produced nutritious, delicious and culturally satisfying food without a heavy reliance on animal

proteins, perhaps there was no need to develop any substitutes, at least not until animal proteins became a fixture of modern cuisine transformation. Not being necessary to begin with, perhaps they might not appear at all.

But in heavy meat- and dairy-consuming cultures, both historically and today, non-animal eaters likely welcomed substitute products as alternatives to the real thing, though not necessarily for flavour, texture, or even nutrition reasons. Perhaps a main importance and function has been to make cuisine and commensality 'whole' again, to be able to eat with others eating meat, for example, without targeted comment or feelings of differentness, of estrangement. Such plant-based meat and dairy products, especially if granted an aura of modernity, as in the case of many industrially-processed products, have made eating together, one of the most important social activities, feel more culturally possible and socially comfortable. As mentioned in the introduction, it would be interesting to explore in more depth whether cuisines less reliant on animal products experienced any necessity or pressure (political, religious, or economic) to turn to plant-derived meat and dairy substitutes.

Finally, a paradox exists in that while there is growing percentage of the population interested in avoiding eating animal products, there is also a growing number of people, often but not exclusively in developing economies, who seek to increase their consumption of animal products. Religion will remain a factor driving food taboos, contributing to the use of plant-based protein alternatives. A greater factor driving the development of novel foods, however, will be the continued stresses on the earth's capacity to feed itself justly and sustainably. A foray into the past can help illuminate the motives and values for these products today.



References

- Albala K (2002) *Eating Right in the Renaissance*. Oakland: University of California Press.
- Albala K (2011a) Historical background to food and Christianity. In: K. Albala and T. Eden (eds) *Food and Faith in Christian Culture*. New York: Columbia University Press, pp. 7-20. DOI: 10.7312/columbia/9780231149976.003.0013.
- Albala K (2011b) The ideology of fasting in the reformation era. In: K. Albala and T. Eden (eds), *Food and Faith in Christian Culture*. New York: Columbia University Press, pp. 41-58. DOI: 10.7312/columbia/9780231149976.003.0013.
- AngloMania: Tradition and Transgression in British Fashion. (2006) Metropolitan Museum of Art exhibition brochure, p. 2. Available at: https://www.metmuseum.org/art/metpublications/AngloMania_Tradition_and_Transgression_in_British_Fashion (accessed 11 December 2023).
- Apicius: A Critical Edition with an Introduction and an English Translation. (2006) Eds. and trans. Christopher Grocock and Sally Grainger. Totnes: Prospect Books.
- Black M (2012) *The Medieval Cookbook*. Revised Edition. Los Angeles: J. Paul Getty Museum.
- Belasco WJ (1998) *Appetite for Change: How the Counterculture Took on the Food Industry*. Ithaca: Cornell University Press.
- Belasco WJ (2006) *Meals to Come: A History of the Future of Food*. Oakland: University of California Press.
- Bentley A (1998) *Eating for Victory: Food Rationing and the Politics of Domesticity*. Urbana and Chicago: University of Illinois Press.
- Bentley A (2014). *Inventing Baby Food: Taste, Health, and the Industrialization of the American Diet*. Oakland: University of California Press.
- Bentley A (2021). Ketchup as a vegetable: Condiments and the politics of school lunch in Reagan's America. *Gastronomica*. 21(1): 17-27. <https://doi.org/10.1525/gfc.2021.21.1.17>
- Campanini A (2019) *Food Cultures in Medieval Europe*. New York: Peter Lang.
- Cao M (2022) "Is it Cake?" builds on a lengthy trend of visual deception. *Smithsonian Magazine*, April 11. Available at: <https://www.smithsonianmag.com/arts-culture/is-it-cake-builds-on-lengthy-tradition-of-visual-deception-180979888/> (accessed 2 February 2024).
- Chapple CK (1993) *Nonviolence to Animals, Self, and Earth in Asian Traditions*. Albany, NY: State University of New York Press.
- Daly A and Thakchoe S (2023) Can a Buddhist eat meat? It's complicated. *The Conversation*, August 15. Available at: <https://theconversation.com/can-a-buddhist-eat-meat-its-complicated-207117> (accessed 11 December 2023).
- Douglas M (1972) Deciphering a meal. *Daedalus* 101(1) (Winter), pp. 61-81. Available at: <https://www.jstor.org/stable/20024058>.
- DuFresne W and Meehan P (2017) *wd~50: The Cookbook*. New York, NY: Anthony Bourdain/Ecco.
- Dunlop F (2023) *Invitation to a Banquet: The Story of Chinese Food*. New York and London: Norton.
- Erway C (2018) The Buddhist mock meats paradox. *TASTE*, April 25. Available at: <https://tastecooking.com/buddhist-mock-meats-paradox/> (accessed 11 December 2023).
- Ewbank A (2018) How vegetarian food fueled the British suffragette movement. *Atlas Obscura*, July 3. Available at: <https://www.atlasobscura.com/articles/what-did-british-suffragettes-eat> (accessed 3 December 2023).

- Ferran M (2017) Cinco alternativas de la cocina Cubana en el período especial. *Todo Cuba*, May 24. Available at: <https://www.todocuba.org/cinco-alternativas-la-cocina-cubana-periodo-especial/> (accessed 10 December 2023).
- Fiddes N (1992) *Meat: A Natural Symbol*. London: Routledge.
- Frost N (2017) How medieval chefs tackled meat free days. *Gastro Obscura*, July 27. Available at: <https://www.atlasobscura.com/articles/mock-medieval-foods> (accessed 2 December 2023).
- Gregory J (2009) *Of Victorians and Vegetarians: The Vegetarian Movement in Nineteenth Century Britain*. London: I.B. Tauris.
- Guthman J and Biltekoff C (2021) Magical disruption? Alternative protein and the promise of de-materialization. *Environment and Planning E: Nature and Space*. 4(4): 1199-1723. DOI: 10.1177/2514848620963125.
- Hauser J (2020) A frugal crescent: Perceptions of foodways in the Ottoman Empire and Egypt in nineteenth century vegetarian discourse. In Dmitriev K, Hauser J, and Orfali B (eds). *Insatiable Appetites: Food as Cultural Signifier in the Middle East and Beyond*. Leiden and Boston: Brill, pp. 292-316.
- Henish BA (1976) *Fast and Feast: Food in Medieval Society*. Philadelphia: University of Pennsylvania Press.
- Jain K (2019) Cow vigilantes and the rise of Hindu nationalism. *Harvard Kennedy School Review*, May 3. Available at: <https://hksspr.org/tag/hindu-nationalism/> (accessed 8 December 2023).
- Katzen M (1974) *Moosewood Cookbook*. Ithaca: New York: Moosewood Collective.
- Kennedy A (2023) *No Meat Required: The Cultural History and Culinary Future of Plant-Based Eating*. Boston: Beacon Press.
- Kirshenblatt-Gimblett B (1990) Kitchen Judaism. In: Braunstein and Joselit (Eds). *Getting Comfortable in New York: The American Jewish Home, 1880-1950*. New York: The Jewish Museum. pp 75-105.
- Lappé FM (1971) *Diet for a Small Planet*. New York: Ballentine Books.
- Lauden R (2015) *Cuisine and Empire: Cooking in World History*. University of California Press.
- Lott-Lavingna R (2019). The origins of fake meat are rooted in Chinese cooking. *Vice*, February 5. Available at: <https://www.vice.com/en/article/8xyqqz/the-origins-of-fake-meat-are-rooted-in-chinese-cooking> (accessed 2 December 2023).
- Napier Mrs. A. (ed) (1888). *A Noble Boke of Cookry*. London: Elliot Stock, p. 47.
- Nemeroff C and Rozin P (1989) You are what you eat: Applying the demand-free 'impressions' technique to an unacknowledged belief. *Ethos: The Journal of Psychological Anthropology* (17): 50-69.
- Nichols H (2023) The history of margarine goes all the way back to Napoleon. *The Daily Meal*. May 15. Available at: <https://www.thedailymeal.com/1286244/history-margarine-napoleon/> (accessed 10 December 2023).
- O'Leary J (2023). The Jewish history of margarine *The Nosh*. October 31. Available at: <https://www.myjewishlearning.com/the-nosh/the-jewish-history-of-margarine/> (accessed 10 December 2023).
- Pew Research Center (2022). Key Findings from the Global Religious Futures Project (December 21). Available at: <https://www.pewresearch.org/religion/2022/12/21/key-findings-from-the-global-religious-futures-project/> (accessed 2 December 2022).
- Prichep D (2017) The rise of mock meat: How its story reflects America's ever-changing values. *The Salt*. September 2. Available at: <https://www.npr.org/sections/thesalt/2017/09/02/547899191/the-rise-of-mock-meat-how-its-story-reflects-americas-ever-changing-values> (accessed 9 December 2023).
- Rossen J (2023) May cause anal leakage: The Olestra fat-free snack controversy of the 1990s. *Mental Floss*. June 5.



- Available at: <https://www.mentalfloss.com/article/619261/olestra-fat-free-snack-controversy-1990s> (accessed 10 December 2023).
- Roth M (2018) *Magic Bean: The Rise of Soy in America*. Lawrence: University Press of Kansas.
- Rozin P (1982) Human food selection: The interaction of biology, culture and individual experience. In: LM Barker (Ed.), *The Psychobiology of Human Food Selection*. Bridgeport, Connecticut: AVI, pp. 225-254.
- Shprintzen A (2013) *The Vegetarian Crusade: The rise of an American reform movement, 1817-1921*. Chapel Hill: University of North Carolina Press.
- Smith KA (2014) The History of the veggie burger. *Smithsonian Magazine*. March 19. Available at: <https://www.smithsonianmag.com/arts-culture/history-veggie-burger-180950163/> (accessed 9 December 2023).
- Spence M (2021) The national security case for lab-grown and plant-based meat. *Slate* (December 29). Available at: <https://slate.com/technology/2021/12/plant-cultivated-meat-national-security.html> (accessed 8 December 2023).
- Spencer C (1993) *Vegetarianism: A History*. New York and London: Four Walls Eight Windows.
- Stevens H and Ruperti Y (2023) Smart food: Novel foods, food security, and the smart nation in Singapore. *Food, Culture, & Society*. 27(3): 754-774. DOI: 10.1080/15528014.2022.2163455.
- Stuart T (2006) *The Bloodless Revolution: Radical Vegetarianism and the Discovery of India*. London: Harper Press.
- Torella K (2022) How Germany is kicking its meat habit. *Vox*, July 22. Available at: <https://www.vox.com/future-perfect/23273338/germany-less-meat-plant-based-vegan-vegetarian-flexitarian> (accessed 8 December 2023).
- Von Massow M and Gingrich M (2019) Lab-grown dairy: The next food frontier. *The Counter*. June 20. Available at: <https://thecounter.org/lab-grown-dairy-milk-butter-cheese-vegan/> (accessed 11 December 2023).
- Watrous M (2018) Kraft Heinz flips boca burger for a modern age. *Food Business News*, March 13. Available at: <https://www.foodbusinessnews.net/articles/11452-kraft-heinz-flips-boca-burger-for-modern-age> (accessed 9 December 2023).
- Wei C (2021) Plant-based meat has thrived in Asia for centuries, and it's still going strong. *Food and Wine* February 16. Available at: <https://www.foodandwine.com/cooking-techniques/plant-based-meat-china-taiwan-buddhist-vegetarian> (accessed 11 December 2023).
- Wurgaft BA (2019) *Meat Planet: Artificial Flesh and the Future of Food*. Oakland: University of California Press.
- Zeide A (2019) *Canned: The Rise and Fall of Consumer Confidence in the American Food Industry*. Oakland: University of California Press.
- Zimberoff L (2021) *Technically Food: Inside Silicon Valley's Mission to Change the Way We Eat*. New York: Harry N. Abrams.