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Superfood as spatial fix: the ascent of the almond

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Abstract
In the twenty-first century, a widening array of unassuming fruits, vegetables, seeds and grains have been crowned "superfoods." While many are exotic imports marketed to Western consumers through neocolonial narratives, others are familiar domestically-grown supermarket staples spectacularly rebranded. Why has "superfood" status become so central to the American produce industry? What sort of subjectivities does a superfood cultivate among consumers? This paper charts the ascent of the almond to superfood status as the latest in a series of spatial fixes alleviating the pains of chronic overproduction. The spatial-fix is a material-semiotic process with important psychosocial dimensions often downplayed in the historical materialist tradition. Drawing on historical archives, advertising materials, interviews with current and recently retired almond industry marketing professionals, and observation at the annual industry conference from 2015 to 2018, I show that as almond production surges the industry must constantly work to change the way consumers see almonds (from seasonal specialty to superfood) and the way they see themselves (from sophisticated to superhuman). While consumers resist and reinterpret the shifts in food meanings fashioned to compensate for overproduction, a century of effective material-semiotic fixes attests to the industry's influence on foodways. The case of almonds is used here to theorize the broader superfood trend and its imagined "super" subjects as produced through the political economy of industrial agriculture. Understanding the political economic underpinnings of superfoods reveals not only the historical foundation of this contested contemporary food phenomenon, but also sheds light on the metamorphoses of food meanings fundamental to agrarian capitalism.

Keywords Spatial fix · Material-semiotics · Critical nutrition · Superfood · California · Almond

Abbreviations
ABC Almond Board of California
CAGE California Almond Growers Exchange

Introduction

In the twenty-first century, a widening array of fruits, vegetables, seeds and grains have been crowned "superfoods." Products with superfood status are on the rise, as the market is expected to grow by more than 17% annually by 2023 (Technavio 2019). Many so-called superfoods carry exotic appeal. Sourced from distant lands and associated with traditional foodways of indigenous peoples, they have been "discovered" through neocolonial encounters (Sikka 2016). The sudden popularity of these products has dramatically reshaped the socioecological dynamics surrounding quinoa in South America (Jacobsen 2011; Kerssen 2015), acai berry in the Amazon (Weinstein and Moegenburg 2004), argan oil in Morocco (Lybbert et al. 2010; Turner 2014), and baobab fruit in Southern Africa (Wynberg et al. 2015), with many more cases yet to be explored. Other purported superfoods, however, are neither new nor exotic for American audiences. They are familiar, domestically grown (when in season), fruits and vegetables gaining unprecedented acclaim: almonds, blueberries, broccoli, cranberries, Brussel sprouts, spinach, carrots, avocado, apple, beet root, the list goes on. Why have such unassuming features of the produce aisle suddenly become heralded as superfoods? What kind of subjectivity does this new superfood framing cultivate among eaters? This paper examines the case of almonds as a first crack at linking the political economic foundations of a domestic superfood phenomenon with the qualitative distinctions of superfood subjectivity.

As I will show, almonds have risen to superfood status through consistent efforts by almond producer groups to alleviate the pains of chronic overproduction. Rising

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production from increased acreage and agricultural intensification prompted the Almond Board of California in the 1990s to begin funding nutrition science, influencing health-claim labeling, and advertising almonds as a healthy food. The spectacular success of these efforts, as well as concurrent trends toward high protein diets and increased snacking, sent American almond consumption soaring. Such popularity, combined with high-yielding orchard management, super-charged growers' profits and attracted new kinds of investment capital. A resulting planting frenzy promises to boost production by 30% in just 4 years (Fleischmann and Muir 2018), threatening a price crash. While almond marketers expand geographically to increase sales around the world, the American market requires a shift in strategy to boost buying. As the health message no longer suffices to grow sales, advertisers have shifted registers from wholesome sustenance to superfood spectacle.

The centrality of advertising to the California almond industry's success presents an illustrative opportunity to link bodily spatial fixes with the meaning-making practices embedded in efforts to actively shift foodways. To analyze how and why almonds have become a superfood, I draw on historical archives, advertising materials, interviews with current or recently retired almond industry marketing professionals, and observation at the annual industry conference taking place in 2015, 2016 and 2018.[1] This study does not attempt to characterize almond consumers and their direct experiences but rather showcases how the industry progressively reimagines the meanings ascribed to almonds in hopes of increasing sales.

Why has "superfood" status become so central to the almond industry at this specific historical moment and what kinds of consumer subjectivities does it cultivate? Superfood claims have risen astronomically since 2011 and are expected to proliferate (Mintel Group 2016; TechNavio 2019). Understanding their political economic context reveals not only the historical foundation of this contested contemporary food phenomenon, but perhaps more significantly, sheds light on the metamorphoses of food meanings fundamental to agrarian capitalism. First, I root my analysis by arguing the importance of semiotics to the spatial fix, contextualizing the superfood phenomenon, and grounding my analysis in critical nutrition scholarship. Then I delve into the almond case study, charting the ascent of the almond in American culinary culture as a series of material-semiotic fixes to familiar crises of agrarian capitalism. Finally, I use the case of almonds to consider the broader superfood trend and its imagined "super" subjects as produced through the political economy of American agriculture.

Engaging the semiotics of the spatial fix

The perpetual expansion of the almond industry both dmestically and abroad exemplifies the familiar pattern of a spatial fix to capitalism's internal crises. David Harvey's theorization of the spatial fix makes two significant claims: (1) that the instability of overproduction provokes geographic restructuring and (2) that this restructuring is always in tension with the place-bound quality of infrastructures necessary for the production and circulation of capital (1981).

Capitalist economies suffer from cyclical episodes of surplus accumulation which then pose a risk of rapid devaluation. To avoid a painful devaluation period, the ever unstable accumulation of surplus capital buys itself time through market expansion (Harvey 2006). The drive to expand markets as a spatial fix to overproduction is characteristic of imperialism and the uneven development of globalization (Jessop 2006; Smith 2008). Importantly, the spatial fix is imagined as a solution but functions more like the fleeting "fix" of an addiction, as the problem soon returns (Harvey 2001). The spatial fix provides short term relief but the underlying predicament is ultimately magnified (Schoenberger 2004).

As elaborated by Harvey, fixity is a central problem within capitalism because there is always tension between capital's mobility and its fixedness in a particular place (2001). While capital accumulation requires new frontiers for expansion, it also requires territorial configurations such as factories, roads, water conveyance or other infrastructures that fix capital to specific spaces. These infrastructures create a degree of path dependency and rigidity despite pressures toward flexibility and expansion. States are thus implicated both in territorializing capital as well as facilitating its global circulation (Brenner 1998).

It is well documented that American agriculture suffers from chronic overproduction (Cochrane 1993; Winders 2009). Where supply management has failed, farm economic viability has depended upon the expansion of foreign markets for American agricultural products (Graddy-Lovelace and Diamond 2017). Expansionism is limited, however, by the purchasing power of those new customers and/or the willingness of the state to subsidize foreign market development. Reallocation of agricultural products to non-food uses, such as biofuels, serves as another strategy, albeit with risks for exacerbating food insecurity (Gillon 2016). While non-food uses might be viable for grains sold for pennies per pound, almonds selling on the commodity market for over

[1] The interviews with seven almond industry professionals at Blue Diamond and the Almond Board of California described here formed part of a larger study involving 70 interviews with growers, researchers, farm service providers and industry representatives. All interviews took place in California between June 2018 and March 2019. Conferences presented an especially instructive opportunity to witness how worrisome overproduction is for the industry and the specific strategies almond marketers deploy to foment almond consumption.

30 times that price can only profitably be sold for human consumption.[2]

Human digestive systems can only physically process so much, making demand for food highly inelastic. In addition, the famed economic principle Engel's Law states that as wealth increases the portion of income spent on food falls (Zimmerman 1932). For these reasons, the food business is supremely competitive. Thus in addition to off-loading American products abroad and shifting agricultural products toward non-food uses, the body of American consumers itself is increasingly a site of an eternally inadequate spatial fix (Guthman 2015). This is evident in the fact that food marketing over the past few decades has progressively enticed consumers to eat more (Nestle 2013), a pattern of "accumulation by engorgement" (Guthman and DuPuis 2006, p. 442) with significant public health implications. This spatial fix at the site of the body demonstrates the mutual constitution of production and consumption (Coles 2016), as capitalist processes reshape not only agricultural production but also eating practices and bodily processes. The meaning-making processes accompanying such material reorderings merit closer attention.

The spatial-fix is a material-semiotic process, with important psychosocial dimensions often downplayed in the historical materialist tradition. As an ontological claim, material-semiotics asserts that matter and meaning are fundamentally inseparable (Barad 2007). As an analytical approach, material-semiotics looks for the active, ongoing ways in which matter and meaning are relationally enacted (Law 2019; Mol 1999). In a seminal text insisting on the unity of matter and meaning, Donna Haraway describes bodies as "material-semiotic nodes" that cannot be understood physiologically without their array of accompanying conceptual apparatuses (Haraway 1991, p. 208). Political economic analyses of capital accumulation often trace commodity flows without attending to the on-going meaning-making practices required for them to function. On the other hand, studies of discourse in the Foucauldian tradition, often fail to address the materiality inherent to discursive practice. Following Haraway's merging of Marxian attention to the material with post-modern attention to the semiotic (Eglash 2013), I seek to draw political economic and cultural studies of food closer together through a material-semiotic analysis of the relationship between overproduction of a food and its shifting culinary culture. Superfoods, as a distinctly discursive and profoundly political economic phenomenon, provide an illustrative case.

[2] Fruits and vegetables with relatively lower prices per weight than nuts also contain a high level of water weight, making them heavy to transport and generally inefficient for non-food uses.

Through the almond case, I find that the semiotics of a spatial fix parallel Harvey's two postulates concerning the material ordering of capitalist economies. (1) The instability of overproduction provokes *semiotic* restructuring; the meanings of almonds must shift to expand their profitable consumption. This fix is the addictive sort which delays, rather than solves, the crisis as meanings (tightly linked with their target markets) become saturated. (2) Meaning-making practices are, like material infrastructure, significant investments which fix the industry to a semiotic configuration from which it is unlikely to deviate without significant cost. Rather than deem this process a distinct "semiotic fix", I wish to highlight the simultaneity of material and semiotic reordering as an inherent, underappreciated, quality of the spatial fix.

Contextualizing superfoods

Before diving into the details of superfoods as the latest iteration of a material-semiotic spatial fix, it is important to contextualize the superfood phenomenon. There is no agreed upon definition of a superfood beyond a recognition that such a broad claim likely does more to drive sales than to inform eaters ("Superfoods or Superhype?" 2018). The term superfood, however, has become so widely used that it entered the Oxford English Dictionary in 2007 as "a nutrient-rich food considered to be especially beneficial for health and well-being." As the qualifiers "considered" and "especially" suggest, the superfood concept reflects belief that a single food can possess an exceptional level of quality. In practice, superfood is a discourse more than a designation of material substance (Loyer 2016).

The term superfood fits within the functional foods category but with important distinctions. According to nutrition scientists, functional foods are those which "provide health benefits beyond the provision of essential nutrients (e.g. vitamins and minerals) when they are consumed at efficacious levels as part of a varied diet on a regular basis" (Hasler 2002). The framing of functional foods relies on a mechanistic model of the body in which a targeted input can produce a desired result. For example, Omega-3 fatty acids are claimed to reduce levels of LDL cholesterol which in turn reduces risk of heart disease. By contrast, the superfood designation, while rooted in many of the same reductionist claims of nutritionism (Scrinis 2013) and a factory-like conception of metabolism (Landecker 2013), embraces the indeterminate outcomes of a given food. The superfood narrative supplements functionality with an element of enchantment, often suggesting that the benefits of a given food are intangible felt experiences of vitality, high spirits and the glow of overall wellness (Wolfe 2009). Superfoods claim to stack functions, providing a high density of beneficial dimensions within a single item. They also convey a sense

of limitless benefits to consumers, shifting away from the recommended dosage medically-styled discourse of functional foods and towards a designation of inherent incalculable goodness. Functional foods call awareness to specific phytochemicals and their benefits, whereas the superfood message is simplicity. Above all, the word superfood rolls off the tongue more readily and has gained powerful momentum as a culinary meme. Product introductions including the word "superfood" more than tripled between 2011 and 2015 (Mintel Group 2016), and food industry analysts predict an astounding 17% compounded annual growth rate in the superfoods market by 2023 (TechNavio 2019).

The superfood phenomenon is part of a broader counter-culture critique of industrial food systems emphasizing whole foods and, to a lesser extent, intergenerational culinary wisdom. Yet it is also a powerful advertising tool eagerly adopted my food marketers. This dualism is less a contradiction than the norm (Belasco 2007). Even more importantly, the superfood concept would not be possible without extensive single-food scientific research overwhelmingly, if not exclusively, funded by industry groups (Nestle 2018). Nutrition scientists are typically much more interested in understanding the impact of diet or specific nutrients on the body than assessing the merits of a single food. Yet for academics relying on external funding for professional advancement, food industry grants are an appealing opportunity to pursue rigorous research that centers on the "compatible interests" of academics and industry (Dixon and Banwell 2004). For nutrition scientists at private consulting firms or working within the food industry the need for contributions to broader nutritional knowledge diminishes. The relationship between research and industry is a central tension within the field, as evidenced by controversies resulting in a 2009 code of ethics (American Dietetic Association and Commission on Dietetic Registration 2009) and ongoing debates about the influence of global food corporations on scientific associations (Simon 2015). A similar concern has surfaced in pharmaceutical trials, where industry funding is consistently associated with more favorable results (Sismondo 2008). Unpacking potential bias towards industry in nutrition research would require a systematic review, one which would be severely complicated by the scarcity of non-industry funded studies about single foods such as almonds.

While nutrition science cumulatively contributes to the functional food and superfood trends, both terms have raised alarm among nutrition scientists who warn consumers against believing in "magic bullets or panaceas" (Hasler 2002) and emphasize the need for a well-rounded diet (Lunn 2006). The European Union actually banned the use of the word "superfood" on product labels unless accompanied by an authorized health claim in 2007. Thus superfoods appear to be the latest trend in the corporate co-optation of both the alternative food movement and scientific institutions.

Theorizing superfood subjectivities

Eating right has become a powerful "technology of the self" (Foucault 1988) through which individuals govern their own bodies, thoughts, and behaviors. Nutritionism, which considers isolated nutrients as the fundamental unit of food knowledge, is now the dominant paradigm for relating food to wellbeing (Scrinis 2008). The rise of the nutricentric citizen is part of a century-long food system transformation "that has mobilized the material and symbolic values of nutrition with 'a will to govern'" (Dixon 2009).

Critical nutrition scholars point to the ideological projects embedded in American food reform. Early nutrition research emphasized economic efficiency to avoid labor unrest. World War II mobilized nutrition as a tool for instilling service to the nation as a daily routine (Biltekoff 2013). Mid-century dietary guidelines centered the laboratory as the ultimate site of food expertise in order to control food discourses and forge subjects accepting of state authority over household affairs (Mudry 2009). Alternative food movements emerging in the late twentieth century, knowingly or unknowingly reinforce neoliberal subjectivities of autonomy, individual responsibility, entrepreneurship, and self-improvement (Biltekoff 2013; Guthman 2008; Türken et al. 2016). Over the last century food has taken on increasing political weight as a site of perpetual anxiety and a forum for governing our relationship to our bodies (Scrinis 2013). As Melanie Dupuis suggests, the distinctly American "ingestive subjectivity" which posits that acts of choice have the power to purify the individual also reflects persistent attempts to purify the societal body from unwanted otherness (DuPuis 2015). Food reform is social reform whether enacted by social workers, scientists, governments, or celebrity chefs.

Analyses of food reform movements have emphasized the influence of dieticians, nutrition scientists, social workers and counter-culture entrepreneurs in shaping ideologies of eating, but what of agribusiness? The idealized eaters conjured in corporate food advertisements can be just as moralizing as those of nutritional guidelines or foodie blogs. Exposure to advertising has increased with the digital age (Media Dynamics Inc. 2014), and US advertising spending hit an all-time high in 2018 (MAGNA 2018), likely expanding the influence of private sector visions for proper eating. Scholars and popular critics increasingly blame food advertising for undermining food reform efforts by encouraging children to consume fast food, processed foods and sugary drinks (Bittman 2012; see Boyland et al. 2016 for a meta-analysis of this extensive literature). With the exception of milk (DuPuis 2002) however, little been said about the social values embedded in promotional campaigns in line with (and at times directly influencing) recommended nutritional guidelines. While agribusiness-funded ads for whole foods might be presumed to reinforce the message of

government-issued dietary rules, the controversy surrounding superfoods shows this is not always the case.

Of course, the public and private sectors permeate one another constantly. As political scientists Guardino and Snyder argue, the state is an active participant in the expanded role of corporate promotional media. They define the Capitalist Advertising and Marketing Complex (CAMC) as a "range of closely connected corporate and state institutions involved in widening the scope and advancing the power of commercial promotion in the broader economy" (2017). Produce advertising is far less controversial than marketing soda to second graders, but it is no less a pillar of twenty-first century state-supported agrarian capitalism. While Nestle warns consumers against believing industry-funded nutrition science touting the benefits of blueberries, pomegranates or pecans (2018), she does not venture an analysis of how superfood messaging might influence consumers beyond misinforming them. Why has "superfood" status become so central to the US produce industry? What kind of work does the superfood phenomenon do for agrarian capitalism? The ascent of the almond provides some clues.

The ascent of the almond

Overcoming the seasons

A century ago almonds in American culinary culture were a strictly seasonal treat. This is a bit surprising considering there is no urgency to consume them directly after harvest, as with perishable fruits and vegetables. It is a reminder, however, that food cultures have historically been closely tied to the temporality of farming. In the Northern Hemisphere almonds are harvested in late August through October, sold and processed in October and November and, until the mid-twentieth century, marketed exclusively as a winter holiday specialty. Almond cultivation was likely introduced to California by the Spanish missionaries but did not take on a commercial scale until the post Gold Rush population boom of migrating Anglo-Americans in the 1860s. Orchards gradually took root across along the Sacramento River Valley when a growing settler population and a surplus of capital made farming an attractive business opportunity. As word spread of the crop's lucrative potential and orchards expanded, almonds' popularity among farmers began to clash with its culinary niche. There were simply too many almonds to sell them for only a few months out of the year.

Prices were unstable, and growers grumbled they were at the mercy of middle-men who pitted them against one another to keep prices low. The global grain glut of the 1890s prompted a golden age of cooperative organizing in American agriculture (Filley 1929; Saker 1990; Stoll 1998), and almond growers soon followed suit by selling collectively at regional hubs. These regional cooperatives, however, continued to undersell one another. After a painstaking process to overcome mistrust, alliances were forged in 1910 to bring 80% of production under the umbrella of a single entity: the California Almond Growers Exchange. The influence of this momentous unification cannot be overstated. California affords the only climatic conditions in North America suitable for almond cultivation and growers suddenly had a near monopoly on their product.[3] Cooperation brought astonishing results. In the decade following the formation of the Exchange, growers received prices 50% higher than before it was established (Tucker 1920, p. 5).

Good prices set off a planting boom, and fears of overproduction were not far behind. In 1919 the crop was double that of 1918. The president of the Exchange warned almond growers of a grim future if they failed to address the looming surplus of their product. The charismatic leader of the young organization, T. C. Tucker, sent out a special booklet pleading with growers to fund advertising that would increase demand. "The success of the Exchange, with the consequent higher prices to the grower, has resulted in a large increase in the acreage of almonds in California. This increase is making it necessary to develop new markets to absorb the greater tonnage and this can only be done effectively or satisfactorily be cooperative effort" (Taylor 1918, p. 47). Because almonds take three to five years to produce their first crop, rapidly expanding young orchards were visible evidence of mounting production on the horizon. Unlike an annual crop, which could be changed year to year in response to market signals, a permanent crop with substantial up-front investment prompted growers to dig in their heels.

"You will have much to worry about… if you fail to supply the necessary funds for advertising and development," Tucker warned in hopes of bolstering his organization's budget (Tucker 1920, p. 16). While today nearly all almonds are removed from their shell before reaching consumers, in the early twentieth century California almonds were sold in-shell to be cracked and eaten around the fireside during the winter holiday season. Imported almonds from Europe arrived in the US pre-shelled, to be used as an ingredient in baking and candy bars. Due to the high costs of labor in California, shelling (done by hand with small mallets or simple crank machinery) was uneconomical. Thus to increase demand, the nascent California almond industry aimed the full force of its advertising zeal at shifting patterns of home consumption.

[3] Imports from Europe were not directly in competition with California almonds at this time because European almonds were sold shelled to reduce shipping weight and were largely destined for the confectionary trade.

"The consumer will consume only to the extent that you create a demand by educating him in the value and attractiveness of your product" Tucker instructed growers (Tucker 1920, p. 7). The industry faced two challenges: almonds were sold strictly seasonally and were closely associated with special occasions. The exchange found convincing a wholesaler or retailer to stock almonds after January 1 to be "impossible" (Tucker 1920, p. 5). Space was at a premium for small grocers, and culinary custom made it unthinkable that anyone would buy almonds once Christmas and New Years had passed. The American Nut Journal concluded that to keep up with production, the place of almonds in the American diet must be shifted to "year-round consumption as food" ("The Year's Opportunity" 1920). An early catalogue advertisement implored readers to "think of them not as an appetizer merely, or some rare delicacy to be enjoyed at Christmas and then disappear, but rather as an article of food to be kept always in the house" (Cobb Bates & Yerba Co. 1910). Almonds were so tightly linked to the holiday season as to be considered more of a treat, a social activity or a finishing touch than as a source of nourishment.

A spatial fix to overcome the seasonality of almond consumption and expand materially into the spaces of retailers' shelves required marketers to fundamentally shift the meanings of almonds. Coordinated advertising was a semiotic tool for enacting a temporary fix to the economic strain of overproduction. Harvey's theorization of the spatial fix underscores how capitalism's tendency towards overproduction requires expansion and material reorganization to compensate for falling rates of profit, yet he stops short of linking these processes to the meanings embedded in objects as they are experienced in people's everyday lives. The semiotic infrastructure laid down by the California Almond Growers Exchange in the early twentieth century was just as essential as the warehouses and railroads that transported almonds to market and similarly would shape the semiotic possibilities of the industry's future. In retrospect, it is striking that while today almonds are popularly touted as a *superfood*, just a century ago it was novel for Americans to even consider them in the same category as food.

Becoming an "essential food"

It would not be until the 1960s, after 40 years of relentless marketing by the industry, that the seasonal pattern of almond purchasing would transition to year-round buying (Allen 2000, p. 128). Consumers are not passive recipients of the gastronomic ideals proffered in advertising; culinary conversion takes work. In the meantime, a successful lobbying effort in the 1920s to raise tariffs on shelled almonds from Europe opened up the ingredient sector to California growers. With a new competitive edge, almond growers expanded their confectionary customer base while continuing to demonstrate that almonds were suitable for year-round home consumption as food.

During the Great Depression, when economic collapse drove many to hunger amidst food surpluses, the emerging field of nutrition science took on increasing political import. Under the USDA's expanding role, policy makers sought to educate homemakers in stretching meager budgets through economically efficient nutrition (Atwater 1895). A mechanical view of the body as engine-like simplified food into energetic inputs and outputs, advocating rational calculation over personal satisfaction or cultural significance (Mudry 2009). Eager to be viewed favorably under the influential nutritionist paradigm, the California Almond Growers Exchange contracted with a private firm, the California Foods Research Institute, to perform state-of-the-art analyses of the nutritive values of almonds. This institute "worked closely with the exchange's advertising agency, … developed recipes for distribution to news media" and "got the nutrition story to newspapers, radio stations, magazines, cooking schools and scientific publications" as well as to nutrition teachers in rural areas, "dietitians of private and government hospitals, and quartermasters of the Army, Navy and Marines" (Allen 2000, p. 91). The Institute appeared to be laboratory, advertising consultant and public relations firm all-in-one and was, unsurprisingly, hired by other California commodity groups of the time.

The second world war transformed the California almond industry. The US government feared that insufficient nutrition would mean "a slowing down of industrial production [and] a danger to military strength" (Mudry 2009, p. 61). Armed with quantified nutrition data emphasizing caloric density and energy-building fats, the California Almond Grower's Exchange successfully lobbied to have almonds designated an "essential food" by the War Manpower Commission (Allen 2000, p. 93). This meant almond growers received preferential access to gasoline, equipment, and Mexican labor contracted through the Bracero program[4] while other industries were constrained by rations. As military dollars poured into the chocolate industry for soldiers' supplies, demand for almonds as a confectionary ingredient rose in tandem. For almond production to materially expand into military rations and the national food supply it had to successfully morph meanings.

The spatial fix to overproduction during wartime would not have been possible without enrolling scientific authority to literally redefine almonds as "essential" in the eyes of policy-makers. At each moment of impending crisis, historical

[4] The Bracero Program, operating from 1942 to 1964, was a set of legal and diplomatic arrangements facilitating temporary work permits for Mexicans in the United States to fill low-wage, primarily agricultural, jobs. For an extensive analysis see Mitchell (2012).

specificities influence the semiotic strategies of the spatial fix. Wartime shifted the audience of the industry's efforts from homemakers and retailers to government institutions, and the mechanism for forging new meanings shifted accordingly from calls in popular magazines for a change in culinary culture to the mobilization of scientific authority and mechanistic rationale. The nutritional profile of an almond is itself a material-semiotic object, a characterization of molecules inseparable from their implications for human health. The materiality of the almond could be deployed as political leverage only when investments were made in the semiotic practices of science to inscribe the nut with a new type of significance for national defense. As with each iteration of the almond industry's spatial fix, the semiotic track laid by nutrition science enabled expansion while simultaneously fixing specific configurations of meaning in place.

Scrambling to sell

In the post-war era, anxiety over surpluses reemerged as almond production exceeded domestic consumption before the war. In 1945 President Truman reversed a slew of tariffs which had buoyed American farmers since 1930 and had made California almond growers competitive in the shelled-almond market for confectionary. Producers feared imports from regions with lower labor costs would flood the market. The industry responded with product differentiation, creating canned and flavored nuts as well as new forms of chopped and slivered nuts to top sweet treats. They secured a purchasing agreement with the USDA school lunch program to buy 5 million pounds of almonds each year. Most significantly, after 3 years of lobbying in Washington DC, California growers succeeded in amending the Agricultural Adjustment Act to include almonds and filberts. This meant growers could elect to form a Federal Marketing Order. While originally intended to manage surpluses by restricting sales during bumper crop years and formalizing quality standards, the Marketing Order would eventually become an unprecedented advertising and nutrition research powerhouse.

As a Federal Marketing Order, the Almond Control Board legally required all almond producers to abide by its standards and to pay a fee per pound for the functioning of the organization. To keep prices from falling, the Board could set aside stockpiles of almonds, amounting to as much as 25% of the total crop in 1951. The Board also created a two-tier pricing structure, selling almonds abroad at half the price of domestic almonds in order to open new markets and off-load the surplus (GAO 1985). But they could not stop growers from planting. Mechanization, increased use of petrochemicals, and technical support from the land grant universities boosted production per acre as almond acreage continued to expand. Average yields climbed 64% between 1949 and 1961. In 1959 the industry faced a crop four times the size of the year prior and launched the "Colossal Almond Crop" promotional campaign. Unlike the war era focus on nutritional substance, mid-century advertising emphasized almonds as a versatile ingredient for home-makers and in the expanding market of consumer packaged goods. The Exchange produced a film titled *Elegance is an Almond*, featured almond recipes in women's magazines, made almonds the standard airline in-flight snack, and deployed almonds to dress up frozen dinners. The success of these efforts attracted even more farmers to convert their land to almonds. In 1966 the almond industry and then Governor of California Pat Brown considered acreage limits or removal of immature fruits to reign in surpluses, but citing enforcement challenges, determined new markets were the most feasible option (Allen 2000).

Sales from the Exchange doubled between 1960 and 1970. In 1972, almond growers and other commodity groups drowning in surpluses successfully lobbied Congress to amend the marketing order program and allow funds to be used for advertising and market research (GAO 1985). These expenditures had been expressly forbidden under prior legislation. The change was nothing short of revolutionary. By 1981, the Board spent 97% of its total budget on advertising, promotion and research and development. Marketing has dominated spending ever since.

The Board also incentivized handlers, like the Exchange (officially renamed Blue Diamond Growers in 1980), to advertise independently by giving them a credit towards their dues for money spent promoting their own brand. "The incentive is to spend more than you would have had you just given it to the Board" a senior marketer for Blue Diamond described. Another marketer underscored the importance of the outsized advertising spree. "Blue Diamond spent… because it was kind of free. Because we were getting it back from the Almond Board. So what that did is, you had 20 years of advertising that the size of the business didn't warrant." Government mandated payments and incentives for brands to spend created a flood of promotion. The humble, local co-operative began hiring seasoned marketers from New York City with experience at Nestle and Unilever, the largest food companies in the world.

Just as the first million-dollar advertising campaign went public, American purchasing power declined due to oil embargoes and high interest rates. Both Blue Diamond and the Almond Control Board went to work abroad to boost sales, with matching funds from the USDA Foreign Market Development Program. After another decade of making miracles for growers, the Blue Diamond President lamented in 1979 "virtually every significant potential market in the world is now open to our product… there are no longer the many opportunities for new development that existed some years ago" (Allen 2000, p. 155). Further compounding

Fig. 1 In the 1986 "A can a week is all we ask" campaign, Blue Diamond growers pleaded with American consumers to help the industry cope with mounting surpluses

growers' woes were Reagan Era economic policies which strengthened the dollar and made almonds more expensive abroad. To maintain and expand markets, almond exporters received government funding through the Targeted Export Incentive Program which allowed almonds to be sold abroad at below market rates. Over the course of the 1970s almond acreage doubled again, with "a substantial portion of recent plantings … traced to investment syndicates, large corporations, other handlers and speculators" (Allen 2000, p. 148).

Given limited international interest, and lower profit margins for products sold abroad, almond growers focused on boosting per capita consumption in the US. The CAGE President underscored the stark situation, "One doesn't normally ask someone to increase the consumption of a product by more than 40% in a single year … but that, in a sense, is what we are being asked to do" (Allen 2000, p. 158). The cooperative launched an atypically frank television advertisement exemplifying the surplus crisis. Almond growers buried up to their elbows in almonds pleaded with shoppers*: a can a week is all we ask* (Fig. 1).

The candid and humorous tone of the ads gave almond growers an unexpected 15 min of fame as many were invited on popular talk shows and radio programs. The 1980s US Farm Crisis—in which surplus production drove down prices, farmer debt soared, and government leaders famously advised growers to "get big or get out"—was becoming legible to broader publics at the time through events like the celebrity sponsored Farm Aid concert of 1985. Almond marketers leveraged the idea of supporting farmers as a civic duty and pursued a fix to their crisis of overproduction by framing consistent almond purchases as an act of solidarity. As with previous fixes, the semiotic strategies employed reflect historical geographic specificities. The "Can a Week" message aligned with media coverage of America's farm crisis and placed almond growers within a larger narrative of rural struggle amidst surplus. The catch phrase was broadcast extensively in part because the state, through the Federal Marketing Order, incentivized a modestly sized cooperative to overspend on advertising. Thus somewhat ironically, the fleeting material-semiotic fix of the late 1980s was buoyed by the state while resonating with a farm crisis message reflecting the state's failure to adequately support farmers' long-term economic viability.

Harnessing the health halo

The word "healthy" had begun popping up in almond advertisements in the 1970s as marketers caught on to emerging trends in "natural" or "whole" foods (Belasco 2007). But it wasn't until the 1990s that the almond industry would begin funding a veritable onslaught of nutrition research to back promotional claims. The motivation was twofold. First, the FDA had become increasingly restrictive about health claims made by food advertisers and required scientifically-backed justification. Second, a small group of almond handlers unhappy with the requirement to pay for collective advertising by the Almond Board sued, claiming the obligation infringed upon their freedom of speech. They were successful, and in 1994 brought advertising spending to a screeching halt. The Almond Board, with an estimated $11.14 million budget in 1995,[5] decided that while waiting for an appeal they would shift part of their formidable advertising budget into nutrition research. The first order of business was to challenge the low-fat diet craze by showing that almonds contained "good" fats.

"When I first arrived at Almond Board of California in 1999, only two almond nutrition research papers had been published" the Board's current Chief Scientific Officer Dr. Karen Lapsley described in 2018. "To date we have 158 nutrition research peer-reviewed published papers" (Almond Board of California 2018b). She estimated in our interview that roughly 75% of existing worldwide knowledge about almonds, possibly more, has been supported in some way by the Almond Board.[6]

Advertisers were particularly keen on finding a recognized icon that would validate their health message. The American Heart Association's "heart-check" food certification program provided just such an opportunity, but the AHA

[5] $11.14 million (1995 crop of 557.1 million lbs at 0.2/lb), of which at least 60% was likely intended for advertising.

[6] It may be even higher, considering after substantial searching I failed to find a single academic paper exclusively dedicated to almond nutrition produced without ABC involvement.

held to a strict limit on the fat content of its approved products. Almonds were ineligible. The FDA similarly rejected a proposed statement that nuts reduce the risk of heart disease. After substantial industry efforts, the FDA approved a qualified health claim stating, "scientific evidence suggests but does not prove that eating 1.5 oz per day of most nuts, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease." The almond industry continued arguing their case to the AHA and eventually succeed in obtaining the heart-check stamp of approval. But it was not easy and almost certainly never would have happened without ABC's hefty investment.

Health messaging transformed the almond market. The current Marketing Director of the Almond Board elucidated how the "health halo" effect has allowed products with almonds as an ingredient to be viewed as healthy by association. "If you think of almonds as healthy and almonds as a great snack, then having an almond as an ingredient in a bar, there's a positive halo that goes to that bar… [it] makes you feel a little better even about eating chocolate, because you're balancing things out." The health halo means any product appears healthier to consumers because it contains an ingredient recognized as healthy. Enthusiasm for the marketing power of the "health halo" is fitting though slightly ironic. The "halo" description was originally a critique of diet foods made by health professionals worried about the tendency for such labels to give consumers permission to binge eat (Chernev 2011; Provencher et al. 2009). Among marketers the "halo" has lost all hint of disapproval. For driving volume, it's a godsend.

At the Almond Board, the Nutrition Research subcommittee originally reported directly to the Marketing Committee. While the team explored a wide range of topics "the whole point is to sell more almonds" a senior marketer and longtime Marketing Committee member reported.

> It wasn't so direct as the marketing people say 'I want you to work on this, this and that.' There was a dialogue. 'Well what are you working on that shows some promise for application?' And they'd tell us. And some wise guy like me would say, 'Well #1 and #2 actually have commercial application but #3, 4, 5 just stop. It's a waste of time. Just don't do it.' I mean, there always has to be a certain amount of pure research because you never know what you might learn. I don't want to make it too black and white, but it was marketing driven. Getting back to the mandate of the marketing order itself. It's all about enhancing the value of almonds, expanding markets and basically driving up the price and selling to more people around the world.

As the almond industry set their sights on new international markets, they partnered with nutrition researchers in target countries to root their health claims on foreign soil. They contracted with private nutrition research firms and enticed junior faculty and doctoral students with funding for research investigating almonds' health effects. Almond Board staff are co-authors on some publications, meaning they have a direct role in study design and analyses of results. For most studies the Board is careful to distance itself from the research process, however, the selection of projects is by-design oriented towards perceived sales opportunities. Likewise, researchers prepare proposals to suit the anticipated desires of the Almond Board.

Unsurprisingly, studies that show little advantage of almonds over other foods drift into relative obscurity while those validating health claims receive top billing in the Almond Board's nutrition research reports. As veteran food marketers explained, for large consumer packaged goods companies, almonds are too small a portion of their budget to justify a nutrition research investment. More specialized companies lack the funds to pursue such research and are less motivated because the benefits would be spread across the industry.

As a material-semiotic spatial fix, health messaging expanded markets by imploring consumers to rethink the role of almonds in their lives. No longer merely a source of sustenance or an aid to family farms, almonds now served as a shield against rising rates of heart disease and Type 2 diabetes, the so-called "diseases of affluence." The heart logo and its connotation of medical expertise became a powerful semiotic tool in the quest to have almonds redefined as a protective food. This health message spoke to historically situated concerns over the consequences of an American diet high in animal products and processed sugar, themselves commodities suffering chronic overproduction for which the body has been the site of a spatial fix. Through the Almond Board's capacity to tax growers for labeling advocacy and to fund research which individual companies were unlikely to pursue, state facilitation was fundamental to this nutri-centric turn. Without the political tool of the marketing order, and the constant threat of oversupply that it simultaneously alleviates and exacerbates, almonds would likely never have been crowned with a "health halo" at all.

Securing superfood status

Industry leaders credit the health message with a spectacular growth in domestic consumption. In the 1990s

annual US almond consumption remained relatively stable, averaging 0.63 lb (0.29 kg) per capita. By 2017 it reached 2.36 lb (1.07 kg), a rise of 375% in less than two decades (USDA 2018). Trends toward high protein diets (Luscombe-Marsh 2015), increased snacking (Piernas and Popkin 2009) and alternative milks[7] (Sethi et al. 2016) undoubtedly aided the popularity of the nut. Tree nuts sales overall are on the rise, yet almond sales have experienced far more growth than any other nut (USDA 2019). This is likely a testament to the almond industry's unmatched marketing efforts[8] and the use of health messaging emphasizing protein and fiber to give almonds a competitive advantage over potential substitutes.[9]

In the early 2000s, phenomenal sales in the US and abroad, in combination with intensified farming practices, boosted profits for growers. Value per acre averaged $1644 in the 1990s; by 2011 it topped $5000 per acre and peaked in 2014 at an unheard-of $8600 per acre. Lured by attractive returns, California growers converted row crops like cotton and tomatoes to almonds and investors rushed to join the boom. Bearing acreage surged from an average 430,000 acres in the 1990s to over 1000,000 acres in 2016. An intensifying drought beginning in 2012 drove prices even higher as buyers feared reduced irrigation would produce a short crop. By 2016, the Almond Board anticipated a 30% increase in production within 4 years. Fearing an oversupply, the Board successfully petitioned growers and the USDA to raise the per-pound fee by 33% for 3 years in order to fund additional marketing efforts (7 CFR § 981 2016).

At roughly the same moment, the Board shifted its nutrition research program from "health conditions" such as heart disease and diabetes towards "wellness and vitality" (Dreher 2017).[10] A member of the marketing committee explained:

> "There's a study that was done not by us, by somebody else, that basically shows health practitioners and nutritionists, their rating of the nutritional value of different foods. And then it's compared to what consumers rate as being nutritionally good for you. And almonds rank up in the in the very top righthand quadrant, #2 on the list. So that information told us that this health message was resonating with the consumers and being reinforced by the nutritionists out there, and we really didn't feel a compelling reason to continue to emphasize it…. They're all on board, now it's the next chapter, and what do we say about the product without losing touch with what got us there."

Successful advertising, this interviewee reminded me, is about the cumulative effect of a consist message over time. Building on existing health messages would have a greater impact than starting from scratch. His explanation of the pivot from disease prevention towards vitality reveals three key dynamics. First, the industry had reached saturation with existing health messages at the same moment when surpluses loomed, requiring a new strategy for driving consumption. Second, investment in nutrition research and messaging created a sense of path-dependency as consistent messages are more cost effective. This resonates with Harvey's theorization of fixity where in prior investments limit mobility by rooting an industry to a certain space, in this case a semiotic space. Third, through decades of sustained nutrition research, the almond industry had successfully shifted a critical portion of its advertising message over to health professionals and nutritionists who would likely continue working to their benefit at very little expense.

Consumers do not uncritically adopt the health messages offered by nutrition research and industry, yet health has been such a successful advertising platform that the Almond Board now uses receptivity to health messages, as well as snacking behavior, as the primary criteria for selecting which new countries their marketing campaigns will enter. Importantly this carries a gender and class dimension. According to marketers I interviewed, women and those with higher incomes and education are correlated with health message receptivity. To continue growing consumption in the US, however, almonds had to do more than sustain health or prevent disease; they needed to surpass the status quo. Under the new wellness and vitality mandate, the committee began funding research on cognitive performance, "skin health" (more accurately, wrinkle prevention), and optimizing gut function. Meanwhile the marketing committee and its contracted advertising firm had been gradually shifting the advertising message from healthy lifestyles to something more ambitious.

Advertisers increasingly positioned almonds as the source of endless energy required for a non-stop action-packed lifestyle. The advertising team "determined our primary target to be productive to the extreme, driven by their desire to accomplish a seemingly endless number of tasks in a day" (Sterling-Rice Group 2018). In an interview the Marketing

[7] Almond milk, like most beverages, contains a relatively low quantity of almonds per unit weight and thus its popularity is unlikely to be the primary driver of increased almond consumption. Due to its relatively low almond composition, suitability for low-grade almonds and high resale value however, almond milk has substantially contributed to industry profitability.

[8] Because Marketing Order budgets are determined by a fee per unit weight, the relatively large size of the almond industry is reflected in its sizable marketing funds relative to other US grown nuts.

[9] Particularly when courting food industry customers, almond marketers routinely compare the nutrition profile almonds to other nuts in order to legitimate their distinctive healthfulness.

[10] The Chairman of the Nutrition Research Committee cited here, Mark Dreher, is a nutrition science consultant who has developed strategic research plans for food industry multi-nationals such as Nabisco and Frito-Lay.

Director told me "for some people that life would feel very frenzied and out of whack, but for this consumer, they love it." Presenting a less optimistic take, marketers presenting at the annual industry conference described "one major force shaping snacking habits are the stress levels of younger generations," with an accompanying bar graph showing progressively greater stress ratings between generations X, Y, and Z. They quoted focus group participants describing a "hectic lifestyle" and wishing there were more hours in the day. Almond advertisers want these potential customers to "think of [almonds] as not just the best snack choice but the snack that would give them the energy to keep powering through" (Sterling-Rice Group 2018).

The Almond Board website identifies 10 unique almond snacking occasions as moments of self-regulation amidst a white-collar working woman's demanding day: the recovery, the morning prep, the crunch-time rush, the mid-morning battle, the salad plus-up, the chip switch, the afternoon lull, the on-the-goer, the trail mixer, and the late-nighter (Almond Board of California 2018a). The accompanying narrative describes almonds as the snack solution for a life of vigorous early morning exercise, constant errands, shuttling children to-and-fro, eating at a desk or while walking, moderating meals and curbing cravings. While the Almond Board has chosen not to use the term superfood in advertisements, fearing it might connote a fad, they support the widespread acclaim almonds have received as a nutrition "powerhouse." In 2018, Blue Diamond embraced the superfood attribution by adopting the slogan "Don't deny your cravings. Eat them. All the flavors you crave… in a superfood." At the annual conference marketers explained it would be most efficient and effective to shift the group of "medium [almond] users" into the category of "heavy users" than to find messages that would attract brand new almond eaters. While preventative-health framing of almonds emphasized restraint and acquiescence to expertise, the superfood era encourages health-conscious consumers to subtly challenge dietary recommendations and see themselves as potentially unlimited.

Shifts in the advertising strategy accompanying the almond industry's transition from "health" to "vitality" paint a vivid portrait of how the superfood concept reshapes expectations of wellness from disease prevention to hyper productivity. In 2017, advertisers shifted from positioning almonds as an ingredient in a healthy lifestyle to a means for maximizing output. The "Carpe PM" marketing campaign satirized afternoon fatigue as a dire medical condition instantaneously alleviated by the first taste of an almond. While intended to be humorous, the campaign medicalized even the slightest fluctuations in energy, responsibilized workers for fatigue, and encouraged consumers to see eating almonds as a source of renewed potential. The 2018 "Own Your Everyday" campaign featured the power of almonds to not only alleviate but enchant the most minute frustrations of a privileged life, such as helping one's husband find the TV remote or changing the office printer's toner cartridge with a swivel of the hips. In each vignette of the series an "Almond Snacker" introduces a surreal moment of productivity-enhancing enlightenment, infusing trivial decisions with the potential for grandeur. The superfood framing of almonds instructs (predominantly female) eaters that if they make the right eating choices, they can not only meet but exceed expectations while making magic of the mundane.

As a spatial fix, the pivot from preventative health to productivity required semiotic strategies both suited to the historical context—the gendered neoliberal subjectivity of early twenty-first century US culture—and consonant with existing configurations of meaning fixed through hefty investments in nutrition science and health advertising. Almond producers could not expand their real estate within the stomach of American consumers without simultaneously expanding the territory of almonds within the landscape of food meanings, now presenting almonds as an aid for every possible domestic and professional task.

Superfood as spatial fix

As almond production surges, the industry must constantly work to shift the way consumers see almonds, from seasonal specialty to superfood, and the way they see themselves, from sophisticated to superhuman. At each narrowly averted crisis of overproduction a new type of imagined subject emerges. In the early twentieth century, it was a woman seeking to become more modern by letting go of traditional seasonal eating patterns. Throughout the mid-century, almond marketers envisioned a government official or homemaker eager to apply scientific rationale to strengthen the national body. In the 1980s, almond ads evoked a sense of rural nostalgia and civic duty to support American farmers through regular purchasing habits. During the turn of the twenty-first century, almond marketers envisioned consumers eager to avoid diet-related diseases through informed food choices. Now, as this market for preventative health offers little room for expansion, they envision women striving to maximize productivity in each minute moment with boundless energy. At each stage the subjectivity of the eater is reimagined to suit the needs of a spatial fix to chronic agricultural surplus.

Understanding the spatial fix as material-semiotic illuminates the importance of meaning-making practices to political economic patterns. Harvey theorized the spatial fix as a temporary solution that functions much like the fleeting fix of addiction. While he treats space as a material configuration, a parallel pattern is evident in the shifting configuration of meanings. Just as markets can be saturated, meanings can be saturated. They are inseparable.

Harvey highlights the tension between capital's need for mobility and the fixidness of necessary material infrastructures in a specific location. Likewise, the almond case reveals this tension occurring through meanings. Expanding markets requires new meanings, and yet to be effective advertisers cannot stray far from existing investments in historically cultivated meanings and the semiotic infrastructure of scientifically legitimated nutrition claims. While consumers maintain skepticism, reflexive resistance and complex social behaviors surrounding food choice, they increasingly rely on experts (Dixon and Banwell 2004). Marketers find it more efficient to increase the quantity consumed by existing almond eaters rather than to recruit new customers because the hard-won semiotic foundation has already been laid.

It is well known that the state enables spatial fixes to agrarian capitalism. Export subsidies, public university research to intensify production, and infrastructures of commodity circulation all facilitate a material reordering of agriculture that can temporarily alleviate overproduction. Far less recognized is the state's role in enabling the accompanying semiotic shifts. As the almond case demonstrates, state-mandated payments to the Almond Board have been essential to the industry's ability to execute sophisticated advertising campaigns, fund nutrition research, and advocate for recognized health labels. While early cooperation prior to the federal marketing order propelled the industry's profitability, mandated payments enabled an explosion of marketing activity.

This case study has periodized a series of material-semiotic spatial fixes in the United States, the California almond industry's largest market, but such spatial fixes are geographically specific. Export growth is another a key strategy pursued by marketers. While in the US almond meanings have been built out through the discourse of nutrition, in Korea the industry is constructing its semiotic infrastructure through the discourse of beauty. Just as an expanding industry must adapt to new material conditions like climate, so too must it reorient its semiotic strategy to suit new cultures of food and the body.

Advertisers often describe themselves as simply identifying existing needs and positioning their product as fulfilling these needs. The historical shifts in almond advertising undoubtedly reflect far-reaching and well-documented social phenomena: the promotion of modernity, the expanded authority of science in domestic activities, growing concern over heart disease and obesity, and the physical and psychological strain of mounting expectations for working women. Yet advertising is not just any mirror to societal change. It is a funhouse mirror, warped along multiple axes to magnify desire. Advertising presents consumption as an assertion of identity, and in doing so makes powerful claims about what characteristics of identity should be desired.

In the case of almonds, superfood status extends beyond touting the health-promoting chemical composition of a food. It fosters a consumer culture in which food is a coping mechanism for life in overdrive. This resonates with analyses of the neoliberal entrepreneurial self as governed by ambition, calculation, autonomy, and an unrelenting expectation of self-improvement (Brown 2003; Rose 1992; Scharff 2016). Superfood eaters are encouraged to see food as fuel, and themselves as engines of productivity with perpetually unmet potential. While preventative health messaging advocated self-management, it lacked the entrepreneurial emphasis on maximizing output. Even the language of cravings and constant snacking amplifies a vision of the self as simultaneously self-regulating and insatiable.

The recent turn towards a superfood framing does not rewrite the many existing meanings ascribed to almonds by consumers: it is merely the semiotic frontier. People may seek out almond products as a substitute for animal protein motivated by environmental or health concerns, or because they are a staple of family recipes, or for other complex motivations an in-depth consumer study might reveal. Marketers do not expect all almond eaters to adopt the hyper-productive subjectivities of superfood eaters, but they do see this vitality message as the growth edge of the industry. Superfood status for the almond industry is a spatial fix, an ever-incomplete process of prolonging agrarian capitalism despite repeated crises of overproduction. As this case demonstrates, the food meanings forged at such frontiers of accumulation carry lasting cultural implications and yet are always destined to be refashioned.

Analyzing a single commodity carries obvious limits, and this work would be greatly enhanced by similar analyses of domestic foods gaining superfood acclaim. Tracing a single commodity historically, however, reveals how intimately agrarian political economy and food culture are knitted together through time. Chronic overproduction, coupled with state-facilitated cooperation and marketing, have pursued spatial fixes which reshape flows of food materials and meanings alike. As the array of superfoods expands in the coming years, it is worth asking for whom superfoods are ultimately so super.

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Compliance with ethical standards

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