

INDIGENOUS FOOD FRONTIERS IN THE EARLY AMERICAN WEST

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ABSTRACT: This article explores Indigenous food exchange patterns prior to Afroeurasian colonization and continuing today. It calls for the application of historical inquiry into early foodways—production, consumption, exchange, ecological adaptation—in the quest for solutions to looming global challenges of food justice, climate change, health, population, etc.

Keywords: Indigenous food systems; Native American foodways; cultural sovereignty; food frontiers

I am deeply honored to discuss my work in progress at the thirty-first Annual Whitsett Lecture. Since 1987, the lecture series has featured the work of scholars focusing on regions and periods across the West, and particularly in California. So perhaps the best place to begin my discussion exploring the deep historical legacy of Indigenous food systems—particularly those originating in Native California and the greater Far West—is to begin by describing a meal I recently shared with Vince Medina and members of his family.

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Vince is an enrolled member and elected tribal council member of the Chochenyo Ohlone Nation. He and his cousin Louis Trevino—also Ohlone and an enrolled member of the Rumsen Ohlone Nation—have started an all-Ohlone food café and catering company in Berkeley called Mak’amham (Ohlone for “our food”). The Ohlones have lived in the greater San Francisco-Monterey Bay Area for thousands of years. Like countless other Indigenous communities across North America, their connections to their Native culture, history, language, environment, and foodways run deep. In fact, their unique regional cuisine is etched on the landscape in the forests, rivers, meadows, and shorelines of northern and central California.

I was welcomed into Vince’s home on a beautiful and uncharacteristically warm June evening, where Vince explained the ethos behind the company. Ohlone communities, like their cuisine, are hidden in plain sight. Vince’s Chochenyo Ohlone community continue to speak their language, eat their traditional foods, and practice their most sacred ceremonies in the East Bay despite the centuries-long attacks by Spanish, Mexican, and ultimately American colonization. Vince and Louis’s efforts reflect a recent Indigenous reawakening of certain practices and a larger (albeit woefully incomplete) non-Native recognition of these cultural and historical legacies. Efforts at decolonization by Native Californians include revising their histories, resolving intertribal disputes, strengthening government-to-government relations, and challenging misrepresentation by the mainstream media. For Vince and Louis, Mak’amham is an effort to decolonize their diet. More profoundly, food is a portal into their past and future.

It turns out that the Mak’amham company serves as one of hundreds of examples led by Native communities across California, the West, and all around North America. Indigenous food sovereignty has entered tribal council initiatives, public policy circles, and academic discourse. Culinary training, bison ranching, seed saving, garden education, sustainable energy resource management—these and many other efforts are at the forefront of change within Native America. While kaleidoscopic in their applications, food sovereignty efforts all seek to recognize, strengthen, protect, and promote Indigenous food systems. As with any human endeavor, food systems are rooted within history.

My manuscript in progress, *Food Frontiers: Native Commodities, Landscapes, and Power in Early America*, seeks to identify and explore these themes—particularly within Native California and the American West.¹ *Food Frontiers* explores moments, places, and choices *before* and after the initiation of the Columbian Exchange, a phrase employed to capture the ecological reset button initiated by Christopher Columbus in 1492. At least two-thirds of all the world's varieties of fruits, vegetables, and other plant-based products originate from the Americas. This fact alone warrants a more comprehensive account—a full-throated historical recognition—of the Indigenous contours shaping world history. From the food served at McDonalds, to the energy consumed to preserve it, to the infrastructure created to deliver it, to the land cultivated at its starting point—all of these components were forged within the food frontiers around the world, but particularly across the Americas.

This book traces these Indigenous contributions to our current global food system. At its heart it is a story about choice. How did individual and community choices lead to the transformation of food, landscapes, and ecosystems? What did these choices say about human cultures, economies, and histories? About their relationships with non-human actors? And how did they shatter ecological boundaries—the food frontiers of North America—leading us to the global food system we inhabit today?

This book unravels these enduring questions, which in some ways remain historical puzzles. Eating certainly stands as the most subjective of human experiences and thus confounds experts, policy makers, and scholars attempting to quantify or categorize its value. Where does food end and culture begin? Such subjective questions may never have an answer. The very autonomous act of eating paradoxically relies on the most regimented and automatized techno-bureaucratic system ever devised in human history. In between these two polar opposites lies the “frontier,” another geographic and ideological space driving human experience since its earliest days. The frontier lies just beyond the intersection of past, present, and future, beyond familiar places. It is here where choice becomes etched onto the landscape. Understanding these particular moments can show us the malleability of our built environment,

1. The manuscript is under consideration at the University of California Press.

ground us in the surrounding landscape, and stretch our historical consciousness.

The title *Food Frontiers* evokes these questions and attempts to do some heavy lifting, transcending spatial and temporal boundaries to trace the history of distinct yet overlapping food systems. In this book, the term “food” not only refers to the final product that enters the mouth but also encompasses all of the other complex cultural, economic, and ecological layers resonating with each bite. This book travels through history by latching onto the biggest levers of a food system. But what is a food system? Such a question is still hotly debated and will always be contested. The simple answer is that a food system is a set of relationships defined by human demands to meet nourishment. But how do you draw a boundary around such an amorphous, all-consuming series of interactions? One can draw a circle around a regional or ecological boundary, political economic system, demographic group, or even, increasingly, our planet. Food systems analysis can be fine-grained or macro—individual, family, town, city, nation. Food systems are most frequently employed when tackling economic disparities (i.e. “food deserts”), environmental racism, or nutritional inequities. Those with wealth and power control more levers of the food system. Those without such advantages must fight for access.

Sophisticated GIS mapping has also shed light on the contours of distribution, production, and consumption, revealing both the bridges and walls of food systems. Armed with this data, policy analysts, scientists, farmers, ranchers, chefs, food purveyors, food justice advocates, and food studies scholars have worked to reimagine local, regional, and national food systems.² These efforts have begun to take root, particularly in urban areas that have served as incubators for innovation. It is in the cities where the majority of humanity now resides (since 2007), raising new questions about our relationship with food and the environment.³

As the bases for new policies and forward-thinking practices, understanding of the deeper historical ecology of particular places,

2. For a recent overview of food justice literature, see Garrett Broad, *More than Just Food: Food Justice and Community Change* (Berkeley: University of California Press, 2016).

3. For a bullish outlook on the potential of cities to mitigate environmental issues, see Edward Glaeser, *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier* (New York: Penguin Books, 2011).

regions, and systems will become essential tools for smart policies. Food justice advocates, though, more often than not look at our agricultural past through rose-colored glasses. In the sentiments of many forward-thinking policy makers and food producers, the industrialization of the food system acted as a fundamental break in our relationship with food, hence a “before” and “after.” In the “before” period, small family farmers lived in close contact with the rhythms of their plot, embracing an agrarian ethic of self-sufficiency buttressed against the encroaching market. The techno-environmental juggernaut that emerged during the second half of the nineteenth century and more fully unleashed during World War II, they might argue, led to the rapid and dramatic severance of farmers from this land ethic. The modern technocratic age and its accompanying demographic shifts towards the suburbs and cities further shifted consumer expectations. Seasonality, perishable items, and even the value of cooking were subsumed under the interests of time and convenience.⁴

These transitions to our modern supermarket culture resulted in unprecedented consequences. Sustainable ecological systems converted into industrial agricultural machines producing tens of millions of tons of commodity crops (corn, soy, wheat) and even more animals (chickens, cattle, and pigs). The funneling of the American palate into a set of narrow, primarily mono-cultural food choices offered predictability but facilitated the spread of diet-related disease (heart disease, diabetes, obesity).⁵ The overconsumption of meat has spread to other parts of the world, further stressing the environment and increasing health risks. In reaction to these trends that dramatically expanded during the post-war decades, we have now arrived at a world-historical juncture where a peaking global population of around ten billion (in just thirty years) will paradoxically require even more efficient methods of agriculture and techno-environmental-industrial

4. For nineteenth-century shifts, see Bonnie M. Miller, “The Pure Food Exhibits in the ‘Palace of Nibbling Arts’: Culinary Pluralism at the Panama-Pacific International Exposition, San Francisco, 1915,” *Southern California Quarterly* 100, no. 2 (Summer 2018): 150–82. For post-WWII, see Bryan L. McDonald, *Food Power: The Rise and Fall of the Postwar American Food System* (Oxford: Oxford University Press, 2016). For the rise and fall of agrarianism, see Edwin C. Hagenstein, Brian Donahue, and Sara M. Gregg, eds., *American Geographics: Writings on Farming, Culture, and the Land* (New Haven: Yale University Press, 2012).

5. The “corn regime” is most famously explored by Michael Pollan in *Omnivore’s Dilemma: A Natural History of Four Meals* (New York: Penguin Books 2007).

food production methods to sustain human appetites, lower carbon emissions, and reduce water pollution.

Can the two seemingly diametrically opposed food systems converge? Is there room for both? The future of our food system (and our global environment) rests on these questions and will require nuanced, collaborative approaches along with technological advances. Old and new must merge in order for us to forge ahead. A simple “before” and “after” must be removed from the equation. This is where history can play a vital role. A close understanding of the evolution of people, culture, and their food systems facilitated by a comprehensive, interdisciplinary lens can better inform the food justice movement and proponents of a new green revolution alike. History can bridge these sometimes diametrically opposed factions. This book argues that history can provide the path forward through these challenges.

And yet, there is no shortage of food history out there on the bookshelves, on the web, and in the media. You name the food item—coffee, salt, cod, tobacco, bread, rice, even pancakes—the list of commodity biographies, as they’ve come to be known, is as endless as any ingredient list you may conjure up. Many of these studies make the individual product the main attraction, tracing its usually humble origins, following its rise to global prominence, and making the case for its historical significance. Depending on the depth of the research or the skill of the writing, these commodity studies have adeptly shifted our focus away from the “great man” approach and towards “great ingredients” as drivers of history. Unsurprisingly, general readers have devoured these wildly successful books, coinciding with the flourishing and rapidly expanding foodie movement.⁶

Like the phrase “food systems,” “foodie” risks becoming an all-encompassing term, but a comprehensive definition might be: someone who loves the story of food. To be a foodie means to obsess

6. A few notable works include Mark Kurlansky, *Salt: A World History* (New York: Penguin Books, 2003); and *Cod: A Biography of the Fish that Changed the World* (New York: Penguin Books, 1998); Paul Greenberg, *Four Fish: The Future of the Last Wild Food* (New York: Penguin Books, 2011); Marjorie Shaffer, *Pepper: A History of the World's Most Influential Spice* (New York: St. Martin's Griffin, 2014); Mark Pendergrast, *Uncommon Grounds: The History of Coffee and How It Transformed Our World* (New York: Basic Books, 2010); and Sven Beckert, *Empire of Cotton: A Global History* (New York: Knopf Press, 2014). For an overview of recent food biographies, see Jeffrey Pilcher, “The Embodied Imagination in Recent Writings on Food History,” *American Historical Review* 121, no. 3 (June, 2016): 861–87.

over ingredients, but also to understand their unique journey to the plate. The foodie movement has centered on celebrity chefs, cookbooks, the Food Network (sometimes derided as “food porn”), chic farmers markets, Whole Foods, and affluent settings like those displayed on the cover of *Sunset* magazine. These two parallel movements: foodie and food justice do sometimes meet, but usually fleetingly and not without the sustained, difficult work necessary to address racial, economic, and environmental segregation.⁷ Where foodies tend to ignore the less glossy issues of labor exploitation or health disparities, food justice advocates sometimes deemphasize provenance of the ingredients. Despite these different inflection points, though, both tend to romanticize the agrarian past as something timeless, more sustainable, and uniformly shattered by the post-war homogenization of the food system. And who can blame them? The U.S. continues to face an epidemic of diet-related diseases that directly correlate with industrial food processing and marketing. Not to mention the moral issues associated with the mass slaughter of millions of animals every year to sustain meat-eating demands. These are existential challenges facing humanity, calling for bigger and more synthetic narratives linking people with commodities, systems with ingredients, traditional ecological knowledge with scientific methods, and pre-history with history. This book is just such an attempt.

The other half of the book’s title, *Frontier*, undertakes another kind of synthesis, a different type of reexamination. Sometimes known by historians as the “f-word,” it was ushered into the academy by historian Frederick Jackson Turner in 1893. Ever since, scholars have conceptualized the frontier as a place, an ideology, a process, a dividing line, and a singular historical moment. In popular culture, perhaps most pervasively, it remains an enduring, mythic genesis story. It is a term employed not just in the U.S., but across the globe wherever the dramatic process of “civilizing” the landscape has occurred. Like food and agrarian living, Americans romanticized the frontier as the place where people, environments, and institutions preceded modernization. The violent removal of “uncivilized” Indigenous communities is still seen as a tragic but necessary foundation for the world we live in today. In the century since the closing of the

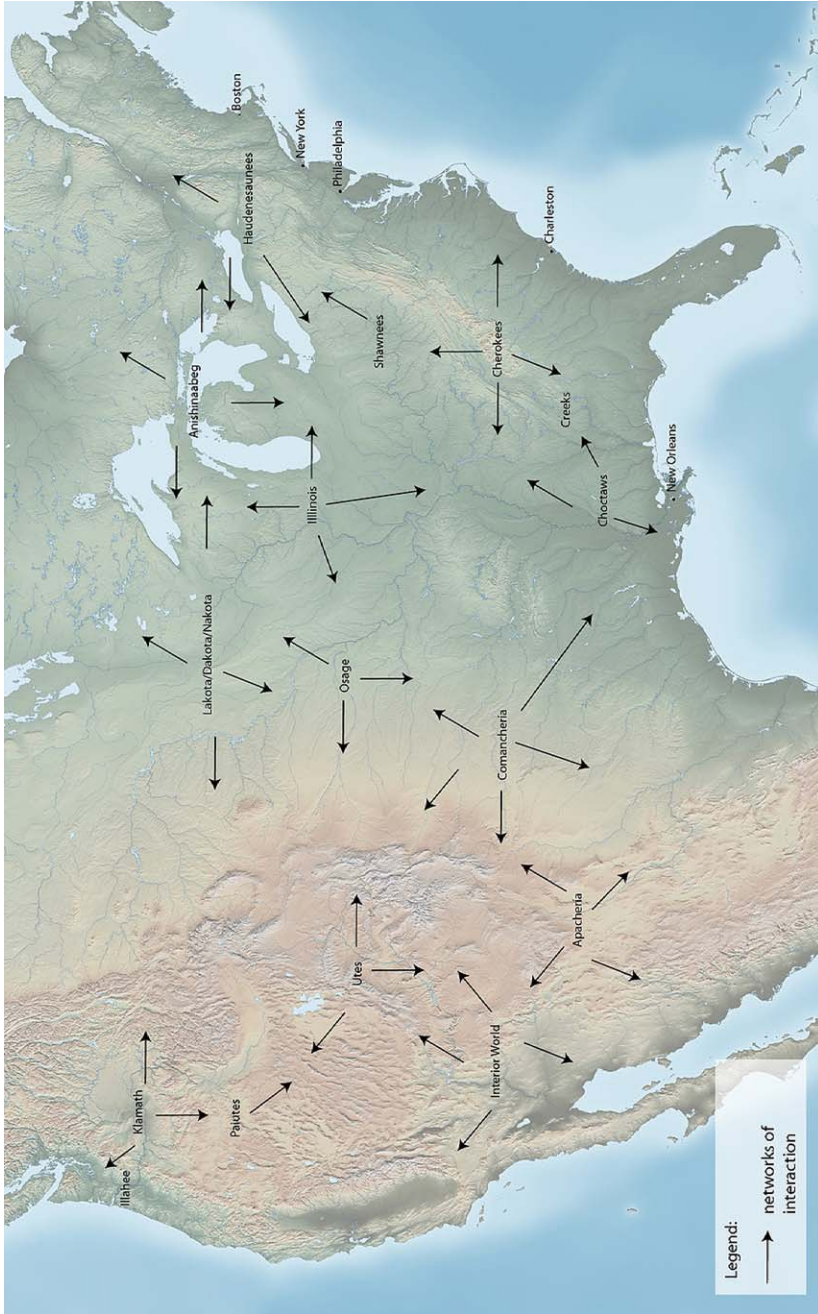
7. Alison Hope Alkon and Julian Agyeman, *Cultivating Food Justice: Race, Class, and Sustainability* (Cambridge: MIT Press, 2011).

“frontier” announced by Turner, this process has been revised, rejected, and embraced again under a “neo-Turnerian” gaze.⁸ Native communities, these new interpretations have argued, created their own frontiers that challenged outsiders from Africa, Europe, and Asia (hereafter known as Afroeurasians). For example, in *Food Frontiers*, independent Indigenous ranchers forged their own “revolutions in the grass” during the age of global revolutions between 1763 and 1848. On the so-called peripheral landscapes of the American West claimed by European empires and newly arising nation-states, bison hunters, pemmican manufacturers, and horse raiders managed their own Indigenous borderlands and frontiers that even plugged into global markets. Utes, Apaches, Comanches, Yokuts, Navajos, and other Native communities harnessed the energy of grass from the Great Plains, Great Basin, and California’s Central Valley to expand their territorial claims. Some Native communities—perhaps most notably the Comanches—controlled the flow of goods, food commodities, and captives through much of the “frontier.”⁹ Such political-economic dominance determined the history of the West until the decades after the Civil War. Emphasizing these Native frontiers further challenged the directionality of history that textbooks claimed moved from east to west. Instead, frontiers moved in all directions, and many times pushed against competing Afroeurasian expansion, including the spread of the missions into Alta California. While much has been written about the destruction of Native California at the hands of the mission system and the California gold rush, Native communities survived and remain part of California’s demographic landscape in part due to their protection of acorn orchards, fishing areas, hunting grounds, and transportation corridors.

But ultimately, even sympathetic interpretations of Native-defined frontiers maintain the linear narrative of a before and after. The logic is attractive to those taking a quick glance at the seeming abundance of non-Native people, cultures, ideas, and food systems. After all, the U.S. population contains only three million (less than 2 percent) people from officially designated tribes. But refocusing the

8. John Mack Faragher, *Rereading Frederick Jackson Turner: “The Significance of the Frontier in American History”* (New Haven: Yale University Press, 1999).

9. For a published version of this section from *Food Frontiers*, see Natale Zappia, “Revolutions in the Grass: Energy and Food Systems in Continental North America,” *Environmental History* 21, no. 1 (January 2016): 30–53.



Native Continental Networks of Interaction before 1800

Important Indigenous food networks of pre-Afroeurasian colonization of America. Historical knowledge of early Indigenous food networks, ecological management, corridors, and frontiers is essential to facing the global ecological, population, health, and sovereignty challenges of our times. *Map by Jennifer Zappia.*

lens, or even changing it to reflect different sets of points, parameters, and influences—as well as stretching the lens over time—creates an entirely new picture for modern Americans to view.

A glance at the infrastructure of a modern-day topographical map is instructive. Many of the interstate highways, canals, secondary roads, aqueducts, and railroads overlap earlier transportation networks created before (but still utilized during) the colonial period. A recent wave of early American scholarship points to these Native-dominated colonial networks, traders, alliances, and politics.¹⁰ Many if not most of the corridors of commerce that all Americans rely on today are Native-designed. It's not that non-Native people simply built over older trails. These lines connected trading and production centers; economic hubs and Native capitals; and, of course, interregional food systems. For example, the manufacturing of *olivella* shells on California's Channel Islands connected Chumash producers with Zuni pottery makers and Akimel O'Odham textile weavers almost one thousand miles east. Notably, these transportation corridors moved through inhospitable terrain and thus relied on able-bodied traders that consumed high-energy seeds (chia, acorn) to cross the Mojave Desert. Thus, trade was highly orchestrated, intentional, and calibrated by producers and consumers. Even as Native populations shrank relative to the ongoing demographic waves of Afroeurasians heading across the continent, they still dictated much of the direction of interaction, exchange, and settlement. The resulting contours, in turn, led to new infrastructure that supported growing population centers, which we inhabit today.¹¹

But even more, while much of the fertile landscape of the continent has felt the brunt of industrial agriculture (the Great Dust Bowl

10. The historiography on Indigenous power in colonial/early national America is similarly vast. Just a few recent approaches include Pekka Hämäläinen, *The Comanche Empire* (New Haven: Yale University Press, 2008); Andrew Lipman, *The Saltwater Frontier: Indians and the Contest for the Atlantic Coast* (New Haven: Yale University Press, 2015); Kathleen DuVal, *The Native Ground: Indians and Colonists in the Heart of the Continent* (Philadelphia: University of Pennsylvania Press, 2006); Joshua Reid, *The Sea Is My Country: The Maritime World of the Makahs* (New Haven: Yale University Press, 2015); Colin Calloway *One Vast Winter Count: The Native American West before Lewis and Clark* (Lincoln: University of Nebraska Press, 2003); and Elizabeth A. Fenn, *Encounters at the Heart of the World: A History of the Mandan People* (New York: Hill and Wang Press, 2014).

11. For Indigenous imprints on modern infrastructure, see Natale A. Zappia, *Traders and Raiders: The Indigenous World of the Colorado Basin* (Chapel Hill: University of North Carolina Press, 2014); Ashley Carse, *Beyond the Big Ditch: Politics, Ecology, and Infrastructure at the Panama Canal* (Cambridge: MIT Press, 2014). Also see Jared Diamond, *The World until Yesterday: What Can We Learn from Traditional Societies?* (New York: Penguin Press, 2012).

comes to mind), almost all of the environments in North America that we think of as “untouched”—from the forests to the grasslands and deserts—have been sculpted by Indigenous hands over millennia. Farmers, ranchers, forest managers, ecologists, soil scientists, and even policy makers now employ “traditional ecological knowledge” (known as TEK). Recognizing the global ecological crises unleashed by short-term and/or market driven agriculture, these groups have recognized the critical importance of Indigenous expertise in restoring habitats, cleaning watersheds, protecting forests, and maintaining healthy food systems. And these consultations, in turn, are converting into real economic and societal benefits.

Finally, and perhaps most importantly, Indigenous commodities dominate the global food system. No cuisine has been untouched by Native food. Imagine French, Irish, German, or almost any other European diet without potatoes. Or Italian food without tomatoes. Or Thai food without chilis. Or any of these without corn. Many books have rightly placed Native commodities as the primary engine of the “Columbian Exchange”—a term coined by Alfred Crosby to capture the global movement of goods, ideas, people, technology, and biota in all directions across the Atlantic and Pacific.¹² The phrase, though, privileges one admittedly prominent early initiator (Columbus) of this link. History books tend to accentuate the initiator instead of the recipients, resulting in a similar linear narrative. Yet like the “f-word,” the “Columbian Exchange” has had a few makeovers, and this book is another such effort to reverse the gaze from Europe to the Americas but also rethink the gaze itself. Indigenous commodities that Columbus first brought back to Europe, for example, were themselves products of Native labor, technology, and culture developed over generations. Afroeurasians needed to learn these techniques, customs, and practices in order to produce and consume them. For any successful gardener, the idea of simply planting a seed without any attention to the particular climate, temperature, soil, and nutrient needs is a recipe for failure.

These instructions can be seen as “archives” that newcomers struggled to read and translate before successfully reseeding them in other parts of the world. The very fact that the majority of the world’s

12. Alfred W. Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492* [30th Anniversary Edition] (Westport, CT: Praeger Press, 2003), and *Ecological Imperialism: The Biological Expansion of Europe, 900–1900* (Cambridge: Cambridge University Press, 1986).

crops are indigenous to the Americas not only reveals the incredible success of Native TEK but also the overwhelming reliance by Afroeurasians on these goods.¹³ Consumers may have divorced these deep layers of Indigenous history from the dish in front of them, but these connections are there nonetheless. The title *Food Frontiers* casts a wide and expansive net over space (continental) and time (one millennium), channeling what the historian Fernand Braudel called “the *longue durée*.” In his magisterial book on the Mediterranean, Braudel uses its common shoreline over a period of ten thousand years to identify shared histories, environments, and cultures. Braudel’s work challenged the scholars of his day preoccupied primarily with political history and the “hot chronology” of recent events.¹⁴ Braudel, in contrast, argued that history is at its best and most relevant when its practitioners dig deep into the rhythms of millennia rather than years or decades, locating historical relationships between human communities and their environments. In recent years, the Mediterranean has become a border to cross rather than a borderland to connect, and reading Braudel’s deep history might quell some of the fear so visceral on all sides of the sea. This work similarly hopes to connect us with an Indigenous past that shapes today.¹⁵

But big stories are built on the backs of smaller and smaller parts. Although a hackneyed term, “individual agency” is a vital part of this story, local actions rippled out across food systems to mold the larger pattern. Nearby groups similarly funneled in or rejected global forces. A ring of determinism—ecological, cultural, economic—echoes through many of the big histories exploring global climate change or European imperialism. Yet it is at the individual level where we all experience history. And during those early global interactions, Indigenous actors determined the fate of global food. In recent years, macro or “big” history has revolutionized the way scholars

13. See Charles Mann’s 1493: *Uncovering the New World Columbus Created* (New York: Vintage Press, 2012) for an overview of these Indigenous commodities.

14. See Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II* [two volumes] (Berkeley: University of California Press, 1996) [reprint of 1966 edition]. For the role of “hot chronology” in historiography, see Sarah Knott, “Narrating the Revolution,” *William and Mary Quarterly* 73, no. 1 (January 2016): 3–36.

15. For the *longue durée* in Native America, see Juliana Barr, “There’s No Such Thing as ‘Prehistory’: What the *Longue Durée* of Caddo and Pueblo History Tells Us about Colonial America,” *The William and Mary Quarterly* 74, no. 2 (2017): 203–40; and James Brooks, “Women, Men, and Cycles of Evangelism in the Southwest Borderlands, AD 750 to 1750,” *American Historical Review* 118, no. 3 (2013): 738–64.

think about humanity and its place in the *longue durée* of earth's 3.5-billion-year history. Even more provocatively, some historians reach towards physics and make the big bang the beginning of the story. Other historians have similarly argued that the humanities discipline must take a closer look at evolutionary forces to better understand human narratives through a process E. O. Wilson coined as "consilience." These epic approaches have forced notoriously siloed specialists to rethink research methods and their disciplinary perspectives. Stretching timescales, zooming in at the microscopic or even subatomic level, putting non-human or even inorganic elements at the center of history—such is the task at hand, "big" historians argue, during this unprecedented global conjuncture.¹⁶

At the same time, microhistory is needed now more than ever. The best of these practitioners take the seemingly mundane daily occurrences and turn them into extraordinary events. Microhistory gives us nuance, contingency, color, complexity, and most important of all, a great story with purpose and meaning. How else can we make sense of global climate change than by sifting through an archaeological site, abandoned village, colonial memoir, ritual ceremony, or explorer narrative? The forces of biology and physics certainly underpin all history, but it is the human touch that generates meaning through which to understand these same forces.¹⁷ This study is indebted to all of these approaches—infinitely small and exponentially large, grounded in familiar places but also sweeping in movement, a *longue durée* but also containing "hot" chronologies here and there, and featuring a large collection of non-human actors alongside singular individuals.

Combining these important interdisciplinary lineages, this study looks at the history of the frontier by tracing the evolution of Indigenous food and food systems in several far flung locales across the borderlands of the North American continent, focusing on the quintessential frontier—the American West—but also other regions

16. David Christian, *Maps of Time: An Introduction into Big History* (Berkeley: University of California Press, 2011); Edward O. Wilson, *Consilience: The Unity of Knowledge* (New York: Vintage Books, 1999); Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: Norton Press, 1999).

17. One of the "founding" works of microhistory is Carlo Ginzberg's, *The Cheese and the Worms: The Cosmos of a Sixteenth-Century Miller* (Baltimore: Johns Hopkins University Press, 2013). For a recent assessment of the field, see James F. Brooks, Christopher R. N. DeCorse, and John Walton, eds., *Small Worlds: Method, Meaning, and Narrative in Microhistory* (Santa Fe: School of Advanced Research Press, 2008).

exhibiting similar political-economic, cultural, technological, and environmental transformations that helped create new food systems across the vast distances of the early modern world—places like Siberia, Australia, Brazil, and Hawai'i. Within these regions, food systems required myriad supporting components, including infrastructure, transportation networks, producers, consumers, and irrigation. In similar ways, Indigenous and settler colonies (usually of the Euro-American variety) employed varying agricultural and horticultural techniques over a period of three centuries, ultimately converging on complex, overlapping systems of more mechanized food production by the mid-1800s. By closely examining the intimate connections between families, villages, migrations, and land use that stitched together disparate foodways into one global food system, we can better understand the ecological forces that paved the way for the modern world; such a complex approach also invites us to reimagine our own future foodscape.

Food Frontiers zooms in and out of several landscapes, relying on several key facets of the modern food system as guides to the earlier history of food: energy, ingredients, infrastructure, and the place where all terrestrial food emerges—the soil. The book is divided according to these themes and excavates numerous ecological histories in North America between the two great global warmings: the Medieval Climatic Anomaly (900–1300 AD) and the modern industrial revolution (1750–1850), whose climate shadow we inhabit today. While weather-related phenomena serve as the bookends, this narrative is driven by multiple characters sharing vivid, compelling stories dispersed in broken pots, abandoned fire pits, derelict canals, and neglected archives. *Food Frontiers* follows those paths leading to our modern food system.

Let us follow one of these paths into the Southwest-Great Plains borderlands to reimagine these foodscapes across time. In 1541, a Wichita (or possibly Pawnee) trader approached the Eastern Plains village of Kirikurus, located north of the Arkansas River somewhere between present-day Kansas and Oklahoma.¹⁸ It may have been

18. This case study from *Food Frontiers* will appear in “Food Systems in the Early American Great Plains,” in Kathleen Brosnan and Brian Frehner, eds., *Environmental History of the Great Plains* (forthcoming, University of Oklahoma Press). For Kirikurus, see Richard Flint and Shirley Cushing Flint, eds. *Documents of the Coronado Expedition, 1539–1542* (Albuquerque: University of New Mexico Press, 2012), 320.

several years since he visited this town filled with dozens of homes and extensive fields of maize, beans, and squash stretching for several square miles. The Spanish conquistador Francisco Vázquez de Coronado and a force of thirty others (Spanish, Pueblo, and Mixtec) accompanied him. As they entered town, Coronado's group may have recognized the piles of bison hides and baskets of pemmican on display at Kirikurus—commodities they first encountered at Pecos Pueblo on the opposite edge of the Plains. The residents of Kirikurus greeted this Native traveler by conversing in a sign language commonly used throughout the Plains—also something that impressed Coronado. Their silent hand gestures moved so quickly and fluently, in fact, that it seemed “as if they were talking.”¹⁹

His real name remains unknown, but the Spaniards called him Ysopete. Standing beside Ysopete, Coronado anxiously attempted to decipher this exchange. Earlier that year, he had organized a large army of roughly five thousand to head out onto the Great Plains. As with his fellow conquistadors across the Americas, Coronado sought to find promised riches in a place mistranslated as “Quivira.”²⁰ Another Wichita (or Pawnee) captive at the Pecos Pueblo in eastern New Mexico—nicknamed “El Turco” by Spaniards—fueled this speculation and convinced Coronado to sojourn out into the plains with El Turco as a guide.²¹

After a month of aimless wandering, depleted food reserves, and mixed results at hunting bison, Coronado's army grew increasingly desperate and impatient. By the time they reached Kirikurus, Coronado realized El Turco's real plan: to lure Spanish forces out into the disorienting grasslands and towards likely starvation. Furious with this deception, Coronado re-shackled El Turco and then relied on Ysopete (who may have tipped off Coronado to El Turco's plans) to guide them to Kirikurus. To Coronado's dismay, though, none of the treasures they hoped for materialized at Kirikurus, and after securing corn and pemmican from their hosts, the thirty remaining soldiers

19. Ibid.

20. Spanish explorers called the village “Quivira”—most likely a reference to the Arabic work “quivir” (big). The more accurate name (Kirikurus) stemmed from the Wichita vocabulary. See Frederick Webb Hodge, ed., *Handbook of American Indians North of Mexico* (2 vols., Washington: GPO, 1907); and Robert Julyan, *Place Names in New Mexico* (Albuquerque, New Mexico: University of New Mexico Press, 1996), 153.

21. Daryl W. Palmer, “Coronado and Aesop Fable and Violence on the Sixteenth-Century Plains,” *Great Plains Quarterly* 29, no. 2 (Spring 2009): 132.

from his expeditionary force (most had already turned back weeks earlier due to lack of food) returned to New Mexico.

The archives are unclear as to the fate of Ysopete. Perhaps he was able to remain in Kirikurus or resume trading back and forth across the Plains. Or perhaps he ended up sharing El Turco's demise—ferociously garroted with an iron collar and strangled to death. Thousands of other victims like El Turco no doubt felt the blows of frustrated perpetrators such as Coronado. Such was the violence that crisscrossed the region during the early modern period. But the deceptive nature of the Plains—seemingly empty, flat, depopulated, and bereft of valuable commodities—nonetheless stymied Spanish efforts at colonial domination.

Scholars have retraced Coronado's disastrous journey many times, devising new analyses along the way: the limitations of Spanish colonialism, relative autonomy of Indigenous captives, and the violence of borderlands slavery. This historiography has combed through numerous sixteenth-century accounts of conquistadors obsessed with seizing gold and silver.²² But these colonial documents also reveal a remarkably productive and elaborate foodscape—not unlike the Mediterranean world that resonated with Spaniards. Thus, while Coronado complained about “savages” and the lack of any riches, he simultaneously remarked that Kirikurus cultivated the “best land” he had seen since his arrival in New Spain and marveled at the plums, grapes, and mulberries reminiscent of Spain. One of Coronado's companions on the journey, Castañeda de Nájera, penned the most detailed account of the expedition. His writing lingered on the productive landscapes of the Plains:

[Quivira] is heavily populated . . . this land was seen to be very much like the [land] of Spain, in regard to its types of plants and fruits. There are plums like the ones in Spain, grapes, walnuts, blackberries, rye grass, oats, pennyroyal, oregano, and flax in great quantity . . . in its environs there are other very populous *provincias* with large numbers of people.²³

22. A few of these studies include Lisbeth Haas, *Saints and Citizens: Indigenous Histories of Colonial Missions and Mexican California* (Berkeley: University of California Press, 2013); Hämäläinen, *The Comanche Empire*; Juliana Barr, *Peace Came in the Form of a Woman: Indian and Spaniards in the Texas Borderlands* (Chapel Hill: University of North Carolina Press, 2007); DeLay, *War of a Thousand Deserts*; Richard White, *The Middle Ground: Indians, Empires, and Republics in the Great Lakes Region, 1650–1815* (Cambridge: Cambridge University Press, 1991); DuVal, *The Native Ground*; and James Brooks, *Captives and Cousins: Slavery, Kinship, and Community in the Southwest Borderlands* (Chapel Hill: University of North Carolina Press, 2002).

23. Flint and Flint, eds., *The Coronado Expedition*, 423.

Alongside this agricultural description, Nájera further offered a vivid account of bison processing:

Across these plains travel people in pursuit of the bison, hunting and curing hides in order to take them to the settled areas to sell during the winters . . . They dry their meat in the sun, cutting it thin like a sheet of paper. When it is dry, they grind it like flour in order to store it and to make porridge. To eat it they throw a handful into a pot. The pot is filled because the meat meal swells up considerably. They cook it with lard, which they always try to render when they kill a bison. They emptied a large intestine and filled it with blood. They slung [it] around their necks in order to drink when they were thirsty. When they have opened the stomach of a bison, they press the chewed grass to the bottom and drink the juice that remains on top. They cut open the bison along the back and cut them apart at the joints with a flint as large as a fin[gl]er, tied to a small stick . . . The speed with which they do [this] is something to see and observe.²⁴

What relationships, technologies, networks, and systems did El Turco wish to protect? And how might understanding Indigenous food on the Plains shed light on these networks? These earlier (and much longer) histories, in fact, created the unique set of cultural and environmental conditions that allowed the Indigenous Great Plains to navigate and even master the equestrian revolution of the seventeenth-to-nineteenth centuries on the plains. The “before,” then, created the “after.”²⁵ For many scholars, the dynamic history of interior spaces like the Great Plains only come into focus after the Age of Revolutions (1750s–1850s) and the relentless expansion of white settler societies arriving from the shorelines of the East and West. Others focus on Indigenous power but almost exclusively within the evolution and expansion of horse cultures. The Plains, no doubt, experienced its “hottest chronology” after the arrival of

24. Ibid.

25. Exciting new reinterpretations of “pre-history” on the plains include Geoff Cunfer and Bill Waiser, eds., *Bison and People on the North American Great Plains: A Deep Environmental History* (Austin: Texas A&M Press, 2016); Robert Morrissey, “The Power of the Ecotone: Bison, Slaves, and the Rise and Fall of the Grand Village of the Kaskaskia,” *Journal of American History* 102, no. 3 (December 2013): 667–92; and Adam Hodge’s forthcoming book, *Ecology and Ethnogenesis: An Environmental History of the Wind River Shoshone, 1000–1868* (Lincoln: University of Nebraska Press). See esp. chap. 3. New work on “pre” history includes Barr, “There’s No Such Thing as ‘Prehistory’”; and Daniel Lord Smail and Shryock Andrew’s “History and the ‘Pre,’” *American Historical Review* 118, no. 3 (2013): 709–37. For a discussion of “pre” history, see below. Charles Mann’s *1491* and *1493* attempts to make this point: *1491: New Revelations of the Americas before Columbus* (New York: Knopf Press, 2005) and *1493: Uncovering the New World Columbus Created*; also see the seminal work by Colin Calloway, *One Vast Winter Count: The Native American West Before Lewis and Clark* (Lincoln: University of Nebraska Press, 2003).

horses in the sixteenth century. New pastoral Indigenous state formation (even an empire, as Pekka Hämäläinen argues) points to perhaps the most formidable example of Indigenous techno-cultural engagement with the emerging world economy after these forces were unleashed during the Pueblo Uprising of 1680. In many ways, this event fostered the pastoral revolution leading to the largest transformation of the Plains since perhaps the end of the Pleistocene Era. Horses altered human migrations, shifted military power by enhancing a runaway gun trade, and most importantly led to the near-extinction of bison.²⁶

In recent years, this story has dominated Native American historiography while the dramatic ecological changes on the Plains became the focus of some of our best environmental histories.²⁷ The “longue durée,” though, has received less coverage than the “hot chronology” despite the important ecological and economic integration crisscrossing the Plains and only glimpsed briefly by Coronado.²⁸ The equestrian revolution, no doubt, served as a “big bang” that irrevocably altered the Plains. But stretching and emphasizing the conceptual, temporal, and spatial boundaries of the Plains in the period “before the horse” reveals the historical continuities that emerged and survived the period between 1300 and 1680.

26. For a discussion of Indigenous empires, see Hämäläinen, *The Comanche Empire*, (esp. introduction). For the Indigenous gun trade, see David Silverman, *Thundersticks: Firearms and the Violent Transformation of Native America* (Cambridge: Harvard University Press, 2016); Andrew Isenberg, *The Destruction of the Bison: An Environmental History* (Cambridge: Cambridge University Press, 2000); Dan Flores, “Bison Ecology and Bison Diplomacy: The Southern Plains from 1800 to 1850,” *Journal of American History* 78 (September 1991): 465–85. Sarah Knott, “Narrating the Revolution,” *William and Mary Quarterly* 73, no. 1 (January 2016): 3–36, explores the role of “hot chronology” at certain points in world history. For a recent reinterpretation of the Pueblo Uprising, see James Brooks, *Mesa of Sorrows: A History of the Awat’ovi Massacre* (New York: W.W. Norton, 2016), esp. chap. 4.

27. In addition to the scholars above, other seminal works include Theodore Binnema, *Common and Contested Ground: A Human and Environmental History of the Northwestern Plains* (Norman: University of Oklahoma Press, 2001); George Colpitts, *Pemmican Empire: Food, Trade, and the Last Bison Hunts in the North American Plains, 1780–1882* (Cambridge: Cambridge University Press, 2015); Elliott West, *The Contested Plains: Indians, Goldseekers, and the Rush to Colorado* (Lawrence: University of Kansas Press, 1998); Anne Hyde, *Empires, Nations, and Families: A History of the North American West, 1800–1860* (Lincoln: University of Nebraska Press, 2011); Fenn, *Encounters at the Heart of the World*.

28. Fernand Braudel coined the term “longue durée” to describe deeper historical relationships between human communities and their environments over millennia. See his *The Mediterranean and the Mediterranean World in the Age of Philip II*. For the *longue durée* in Native America, see Barr, “There’s No Such Thing as ‘Prehistory’”; and Brooks, “Women, Men, and Cycles of Evangelism in the Southwest Borderlands.”

To understand the period before the horse, we must remove the “pre” from prehistory. Fortunately, scholars of Native North America have increasingly looked to blurring or removing the line between “pre” and “post” 1492—the date most closely associated with the start of “history” in North America.²⁹ Afroeurasians of the sixteenth century chronicled as much when they waded haphazardly into the existing political-economic battles, rivalries, and networks shaping Native North America. In recent years, more historians than ever before have employed interdisciplinary methodologies and sources long utilized by anthropologists to further understand earlier histories on the Plains: archaeology, oral history, material/visual culture, and ethnography.³⁰

The physical sciences too have contributed to new interpretations of history before 1492. Climate and soil science, dendrochronology, starch grain analysis—all of these techniques corroborate changes in the food systems, migrations, and cultural geography in the pre-Columbian centuries. Thus, stretching the temporal boundaries of the Plains allows for more historical angles to peer into El Turco and Ysopete’s actions in 1541. Climate change research on the phenomenon known as the “Little Ice Age” (1300–1850) in particular, explains this history occurring not only in North America but also around the world during the earliest encounters between Natives and Afroeurasians.³¹

29. In addition to the scholars mentioned above, Daniel Richter makes a similar call to historians in *Before the Revolution: America’s Ancient Pasts* (Cambridge, MA: Belknap Press, 2011).

30. Some recent examples include Garrett Bailey and Daniel C. Swan, *Art of the Osage* (Seattle: University of Washington Press, 2004); Cunfer and Waiser, eds., *Bison and People on the North American Great Plains*; Calloway, *One Vast Winter Count*; David C. Posthumus, “All My Relatives: Exploring Nineteenth-Century Lakota Ontology and Belief,” *Ethnohistory* 64, no. 3 (July 2017); Clint Carroll, *Roots of Our Renewal: Ethnobotany and Cherokee Environmental Governance* (Minneapolis: University of Minnesota Press, 2015). Similar work has advanced in the Western Plains and Great Basin. See Adam Hodge, *Ecology and Ethnogenesis*. Also see Ned Blackhawk, *Violence Over the Land: Indians and Empires in the Early American West* (Cambridge: Cambridge University Press, 2008).

31. Recent works on early modern climate history include Anya Zilberstein, *A Temperate Empire: Making Climate Change in Early America* (Oxford: Oxford University Press, 2016). Also see the “Forum: Climate and Early American History” in *William and Mary Quarterly* 72, no. 1 (January 2015): 3–159. For soil ecology and history, see Richard R. Drass, “Corn, Beans, and Bison: Cultivated Plants and Changing Economies of the Late Prehistoric Villagers on the Plains of Oklahoma and Northwest Texas,” *Plains Anthropologist* 53, no. 205 (February 2008): 7–31; for starch grain analysis see Sonia Zarrillo and Brian Kooyman, “Evidence for Berry and Maize Processing on the Canadian Plains from Starch Grain Analysis,” *American Antiquity* 71, no. 3 (July 2006): 473–99.

El Turco's subversive efforts in 1540–41 succeeded in shielding a vibrant, dynamic, and widespread Indigenous agro-pastoral system. Indeed, his sacrifice stymied early Spanish colonization efforts and ultimately allowed for the rise of powerful Indigenous societies in the coming centuries like the Comanches, Osage, Lakotas, and Blackfeet.³² This Indigenous network rested upon an equally dynamic food system that reached back at least five hundred years but also experienced recent innovations, thanks in part to the onset of the Little Ice Age starting in the fourteenth century. This climate pattern resulted in a global temperature dip that altered food systems across Native North America, and perhaps nowhere else as dramatically as its continental grasslands.³³ Waxing and waning over more than four centuries, these effects included the expansion of glaciers and winters in the Northern Hemisphere, extensive drought, severe flooding, shrinking plant habitats, and shorter growing seasons. This led to the migration of people, plants, and other animals, sometimes resulting in the “ethnogenesis”—or better yet a “regeneration”—of new Indigenous cultures.³⁴

Across the northern hemisphere, in places like western Europe, North Africa, and East Asia, cultivation acreage shrank by as much as 25 percent as frost days crept further and further into the spring and fall. Drought plagued already-dry regions as well. Even more catastrophically, pandemic disease like the plague swept across Afroeurasia, striking close to 30 percent of the population.³⁵ In North

32. Silverman, *Thundersticks*; and Isenberg, *The Destruction of the Bison*; Flores, “Bison Ecology and Bison Diplomacy.” For the Osage, see Bailey and Swan, *Art of the Osage*; Jeffrey S. Girard, Timothy K. Perttula, and Mary Beth Trubitt, *Caddo Connections: Cultural Interactions Within and Beyond the Caddo World* (Lanham and Boulder: Rowman and Littlefield, 2014).

33. The Little Ice Age is having a historiographical “moment.” Recent works emphasizing this period include Daniel Richter, *Before the Revolution*; and Brian Fagan, *The Little Ice Age: How Climate Made History, 1300–1850* (New York: Basic Books, 2000). William Foster, *Climate and Culture Change in North America AD 900–1600* (Austin: University of Texas Press, 2012).

34. Patricia Galloway, *Choctaw Genesis: 1500–1700* (Lincoln, NE: University of Nebraska Press, 1998); Gary Clayton Anderson, *The Indian Southwest, 1580–1830: Ethnogenesis and Reinvention* (Norman, OK: University of Oklahoma Press, 2009); Robbie Ethridge, *From Chicaza to Chickasaw: The European Invasion and the Transformation of the Mississippian World, 1540–1715* (Chapel Hill: University of North Carolina Press, 2010). For “regeneration,” see Michael Witgen, *An Infinity of Nations: How the Native New World Shaped Early North America* (Philadelphia: University of Pennsylvania Press, 2013).

35. The historiography on medieval and early modern plagues across Afroeurasia is immense. For a recent study focusing on the plague that decimated fourteenth-century Europe, see John Kelly, *The Great Mortality: An Intimate History of the Black Death, the Most Devastating Plague of All Time* (New York: Harper Perennial [reprint] 2006); also see Dorothy H. Crawford, *Deadly Companions: How Microbes Shaped Our History* (Oxford: Oxford University Press, 2016).

America, the great urban centers suffered similar fates as maize harvests along the Mississippi River Valley experienced extensive and frequent flooding. At Chaco Canyon, Casas Grandes, and Lower Colorado River farming centers in the Southwest/Far West, drought afflicted maize production, leading to mass migrations.³⁶ The Plains (particularly the Southern Plains), in relative contrast, hosted cooler and wetter conditions nurturing grass and herbivore habitats. Bison herds grew and foraged in new pastures afforded by the Little Ice Age—but also thanks to increased Native practice of prescribed burning (discussed further below). This once obscure climate era, then, has received copious coverage by scholars looking to connect human relationships with global environmental phenomena.

The very name “Little Ice Age” connotes ecological difficulty or hardship, evoking Pleistocene hunter-gatherers clinging to the edge of existence around campfires in caves. It certainly acted as a “disruptor,” but the Little Ice Age also provided unique, even singular opportunities for humanity. It is more than coincidental, after all, that this period almost precisely parallels what is known as the early modern period: the age defined by the first true moment of globalization, expansion of empires, demographic explosions, and the industrial revolution. In Native North America, the Little Ice Age also provided extraordinary opportunities to innovate regional and continental food systems for all sorts of producers, traders, hunters, and foragers. This very dynamism that Coronado witnessed—“the best hunters and farmers” as he put it—was facilitated by the Little Ice Age and forged by a remarkably diverse network of Indigenous entrepreneurs that operated without a central political-economic or cultural “core” like those that existed between 900 and 1300—the era known as the Medieval Climatic Anomaly.³⁷

Those centuries had experienced global warming that expanded food production around the world. In North America, this led to a maize production revolution (sometimes associated with the “Cahokian big bang”) that produced a medieval urban Indigenous landscape. Major urban centers included Cahokia, Toltec, Chaco,

36. Jane Mt. Pleasant, “A New Paradigm for Pre-Columbian Agriculture in North America,” *Early American Studies: An Interdisciplinary Journal* 13, no. 2 (Spring 2015): 374–412.

37. Brian Fagan, *The Great Warming: Climate Change and the Rise and Fall of Civilizations* (New York: Bloomsbury Books, 2009).



The disruption of the Little Ice Age (1300–1850) led to human and cultural migrations. Thus, the cosmology of the later Osage in Oklahoma/Arkansan settlements mirrored elements of Cahokian culture represented in this birdman tablet, ca. 10th century, excavated at Cahokia in 1971. *Herb Roe/Wikimedia Commons.*

and Spiro—all dependent on maize cultivation.³⁸ After three centuries of ecological expansion, though, maize-based food systems reconfigured and even retreated as unpredictable weather patterns and growing seasons frequented cultivation areas. Urban centers in the Mississippian world shrank while other settlements along the edge of the Plains grew in reaction to the Little Ice Age. Many of the communities that Coronado encountered, in fact, were descendants of refugees from these urban spaces who engaged in either farming or hunting or both, sharing ideas, technology, and overlapping foodways. The Osage, for example incorporated Cahokian cosmology, urban grid design, and architecture in their Oklahoman/Arkansan settlements. Long after the decline of Cahokia, Osage leaders patterned their villages to mirror the abandoned Cahokian landscape, dividing their clans between the sky people and earth people on an

38. Major studies on Cahokia and the surrounding Mississippian world include Timothy Pauketat, ed., *Medieval Mississippians: The Cahokian World* (Santa Fe, NM: School for Advanced Research Press, 2015); Thomas E. Emerson, *Cahokia and the Archaeology of Power* (Tuscaloosa, AL: University of Alabama Press, 1997); Timothy R. Pauketat and Thomas E. Emerson, eds., *Cahokia: Domination and Ideology in the Mississippian World* (Lincoln: University of Nebraska Press, 1997); Timothy R. Pauketat, *Cahokia Mounds* (Oxford: Oxford University Press, 2004); also see Robert Morrissey, *Empire by Collaboration: Indians, Colonists, and Governments in Colonial Illinois Country* (Philadelphia: University of Pennsylvania Press, 2015), esp. chaps. 1–2.

east-west axis, with the lodges of the sky and earth chiefs bisected by the path of the sun. Such a pattern replicated the view of the cosmos that they inherited from their urban descendants at Cahokia, and even directly correlates with an excavated Cahokian site known as “mound 72.” The birdman tablet discovered there presents a stunning visual representation of Osage cosmology. Osage oral history further points to their earlier migration to a “new country” where they joined water, land, and sky. This settlement was a place “where the land was undefiled by decaying carcasses and where there were no visible signs of death.”³⁹

Osages were just one of a stunningly diverse array of communities engaged in the *longue durée* of the Plains. Osages, Wichitas, Caddos, Pawnees, Kansas, Mandans, Arikaras, Hidatsas, Jumanos, Apaches, Shoshones, Utes, Pueblos, Blackfeet, Dakotas—all of these and many more cultures inherited the food systems built on maize but also experimented with other effective food production strategies. Indeed, these “pre-horse” Plains communities simultaneously “burned” and “built” their food systems. By *burning*, I refer to pyrogenic landscapes created by Indigenous communities across the Plains—strategies ably analyzed by Julie Cartwright and Steven Pyne. Prescribed burning regenerated soil, kick-started seed dispersal and germination, kept forests at bay, and cultivated pastures for herbivores. But prescribed burners also integrated other food production strategies, include hunting and herding, agro-forestry, selective thinning and pruning, aquaculture, and intensive foraging.⁴⁰

Building refers to (primarily maize) cultivators but recognizes the particular set of techno-ecological relationships forged by Indigenous farmers during this time. Unlike wheat, maize planting required deliberate sowing with careful companion planting (beans, squash, sunflowers, tobacco) to help “build” the soil and maintain nitrogen levels,

39. Bailey and Swan, *Art of the Osage*; Girard, Pertulla, and Trubitt, *Caddo Connections*; Robert Hall, *An Archaeology of the Soul: North American Indian Belief and Ritual*; and Jean Dennison, *Colonial Entanglement: Constituting a Twenty-First-Century Osage Nation* (Chapel Hill: University of North Carolina Press, 2012).

40. Julie Courtwright, *Prairie Fire: A Great Plains History* (Lawrence: University of Kansas, 2011); Stephen J. Pyne, *Fire in America: A Cultural History of Wildland and Rural Fire* (Princeton: Princeton University Press, 1982); Thomas Vale, ed., *Fire, Native Peoples, and The Natural Landscape* (Washington and London: Island Press, 2002); and M. Kat Anderson, *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources* (Berkeley: University of California Press, 2005).

provide mulch, reduce compaction, and alleviate any need for plowing. This method of growing or building soil, as Jane Mt. Pleasant has recently argued, made maize a superior product that survived the ravages of the Little Ice Age and continued to thrive along the edges of the Plains (indeed maize culture would ultimately dominate the global market).⁴¹ Between roughly 900 and 1300 these strategies operated in parallel orbits aligning with the particular set of ecological parameters set by the Plains and the fertile lowland river valleys. But during the thirteenth to sixteenth centuries, builders and burners broke ecological barriers to forge new food systems.

CONCLUSION

The complex set of interactions in the Plains-Pueblo borderlands is just one of many examples that *Food Frontiers* explores. They reveal just as many points of historical continuity as there were disruptions. The grooves etched by Indigenous food systems continue to shape our lives—Native and non-Native. The ingenuity, flexibility, and sophistication of Indigenous foodways has much to teach us in our increasingly interconnected and fragile global food system. The success of people like Vince and Louis are indeed our success.

41. Jane Mt. Pleasant, "The Paradox of Plows and Productivity: An Agronomic Comparison of Cereal Grain Production under Iroquois Hoe Culture and European Plow Culture in the Seventeenth and Eighteenth Centuries," *Agricultural History* 85, no. 4 (Fall 2011): 460–92.