Berkeley
UNIVERSITY OF CALIFORNIA

College of Natural Resources

Discussing the Food Systems Minor at UC Berkeley

a three year report

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nature.berkeley.edu/food-systems-projects/

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Cover Image Credit: Jonathan Fong

Overview

This report is intended for undergraduate students who are considering the Food Systems minor (FS minor) at UC Berkeley, or who have a general interest in studying food systems.[1] The community of campus stakeholders may find this report of interest, as it also intends to provide suggestions to administrators on how to further improve the FS minor. In this report, we explore how, in its first three years, the FS minor has equipped students with the tools and knowledge necessary to think critically about food systems. We also advocate for further undergraduate student support, and the need for the minor to be self-reflexive, not only in terms of curriculum, but also in terms of its positionality within the larger political and social context of student food movements[2] on campus. We attempt to explain how the history of food studies[3] at UC Berkeley has shaped the positionality of the minor, specifically identifying what exactly a food systems education currently looks like at UC Berkeley.

In 2015, the FS minor was founded[4] in the College of Natural Resources (CNR) as a result of a collaborative effort across the UC Berkeley campus. The goal was to help undergraduate students achieve an interdisciplinary awareness of concepts and issues related to contemporary food and agricultural systems, domestically and internationally, in both urban and rural contexts. This minor not only explores themes related to the social, political, economic, environmental, cultural, nutritional, and public health issues of food systems, but also responds to the increasing student desire to understand the complexity of conversations surrounding food equity,[5] experiential learning,[6] and sustainability.[7]

This report highlights the accomplishments of the minor over the past three years, and will also identify areas for improvement, both in terms of student learning and outcomes. Specifically, this report explores: (1) The Food Systems Minor Curriculum; (2) The 2018 Food Systems Scholars Program (3) A Curriculum Snapshot of the Minor; and (5) Tensions/ Future Directions and Needs of the program. We hope to stimulate a conversation on how to showcase the importance of experiential education and critical thinking around food systems at public institutions of higher education like UC Berkeley.

Introduction

Image Credit: Rachel O'Neal, Spring 2017

HOME TO MORE THAN 150 FACULTY AND STAFF WHO TEACH AND CONDUCT RESEARCH ON FOOD AND AGRICULTURAL TOPICS and over 90 courses[8] with food-related content, the UC Berkeley campus is hardly an insignificant player in the food systems world. Faculty members specialize in topics ranging from environmental and food justice to public health and nutrition sciences. Seventeen of these faculty and staff are UC Cooperative Extension[9] specialists who contribute to outreach and extension programs for farmers, consumers and other stakeholders. Campus farms, gardens, and research stations have contributed to a rich heritage of activism and organizing, while also contributing to some of the world's most advanced agricultural biotechnology research and development. Suffice to say, the FS minor at UC Berkeley exists within – and is shaped by – a larger context of diverse food efforts on campus.

Yet until the formation of the FS minor, UC Berkeley did not offer undergraduate students a cross-cutting curriculum related to food. Following an unsuccessful attempt by graduate students to create the minor in 2008, seniors and Student Organic Garden Association[10] leaders Ellie Lum and Magnolia Barrett successfully advocated for the creation of the FS minor in 2013. In response to student action, The Berkeley Food Institute (BFI)[11] as well as a committee of CNR, Letters and Sciences (L&S), and School of Public Health faculty spearheaded the development of the minor. BFI's unique position as a research center on campus served as a bridge for faculty, students, and staff to design an interdisciplinary, experiential learning curriculum for the minor.[12]

Today, a group of faculty, staff, and students organize the FS minor committee, which guides the continued progress and development of the minor. While the FS minor was originally meant to be a campus-wide initiative, CNR insisted on making Environmental Science, Policy, & Management (ESPM) the minor's home department. Thus, the minor has to date been developed largely within the ESPM departmental administrative, academic, and funding context that included an ESPM lecturer hired from 2016-2018.

The minor is shared between three areas of emphasis that are required of the curriculum: environmental sciences, nutritional sciences, and social sciences. From the very beginning, the creators of the minor wanted to ensure interdisciplinary representation that would allow for cross-campus collaboration. The curriculum examines issues of contemporary food and agriculture from a whole-systems perspective, drawing from diverse fields as far ranging as ecology, sociology, the humanities, nutrition, history, and economics.

The minor also needed to be distinct from other curricula on campus. According to Professor Kathryn De Master, one of the leading FS minor committee members, "Sustainable agriculture studies tend to be associated with production, and nutrition science with consumption. With this minor, we wanted to comprehensively capture those elements while also including the social sciences to study the social, cultural, economic, and political drivers of food systems change." Through collaboration among several departments for the minor posed

Image Credit: Julia Tubert, Fall 2016

some initial challenges, their ultimate teamwork helped create a robust food systems curriculum. For more information on the history of the Food Systems minor, see Appendix 1: History of Food and Agriculture Education at UC Berkeley.

The most recent history of the FS minor has developed against a particularly interesting backdrop of community and institutional conditions on the UC Berkeley campus and beyond. Current environmental justice movements[13] are shaping understandings of food security[14] and the more radical visions of food sovereignty[15] on campus. The creation of the Berkeley Food Institute in 2013 and the establishment of The Global Food Initiative (GFI) in 2014 by UC President Janet Napolitano reflect the increased institutional awareness of food-related issues at various scales. More recent campus efforts to reduce student food insecurity include the UC Berkeley Food Pantry, CalFresh Clinics, Garden and Farming Skills and Harvest Day. Finally, the 2017 release of the Foodscape Map[16] at UC Berkeley, a BFI-led initiative through the Building Equitable and Inclusive Food Systems at UC Berkeley Project, reflects the vibrant dialogue on critical food issues that aim to identify and overcome barriers in food-related learning and practice for marginalized members of the campus community.

According to Ellie Lum, one of the student advocates responsible for the creation of the minor, "having an interdisciplinary education that exposes students to a wide range of ideas is the only way that graduates from UC Berkeley will go on to change the food system."

Using the testimonies provided by students, our own undergraduate experiences in the minor, and blog post reflections[17] regarding the Food Systems core course, Experiential Learning Through Engagement in Food Systems, we have identified several fundamental dimensions of the minor:

First, we explore how the FS minor serves as a hub for critical thinking on food systems for the entire campus. We then identify the minor as a catalyst for students to explore careers in food systems. Finally, we determine that the flexibility of the minor's curriculum allows students to link broader environmental justice and activism conversations to food-related topics.

The Food Systems Minor Curriculum

Image Credit: Leslie (Leke) Hutchins, Summer 2018

THE FS MINOR AIMS TO BROADEN STUDENTS' UNDERSTANDING OF FOOD SYSTEMS by selecting two core courses from the following breadth categories: Natural Sciences, Social Sciences, and Food and Community Health.[18]

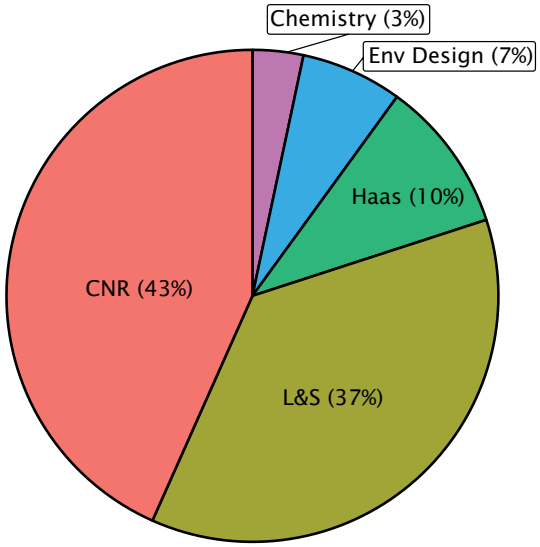
Students take a minimum of five courses from a list of elective courses. The current guidelines for the FS minor are available on the Student Advising website.[19] Instead of a thesis, students complete a community-based core course called *Experiential Learning through Engagement in Food Systems,*[20] which pairs students with private, public, and non-profit food-related organizations in California. Students are required to spend 90 hours in the semester working with the organization, and are expected to generate reflections on the larger environmental themes and messages that might surface during their internship.

This course is unique in that it emphasizes experiential learning through community partnerships. Students write about the challenges and opportunities to achieve greater equity, inclusivity, accessibility, and affordability in food systems. These goals are contextualized in the capitalist economic system of the United States by examining consumer food choices, labor conditions, distribution, and supply chains. Students learn concepts such as food apartheid (also called "food deserts"),[21] food security, food justice, and food sovereignty to investigate the situations that they

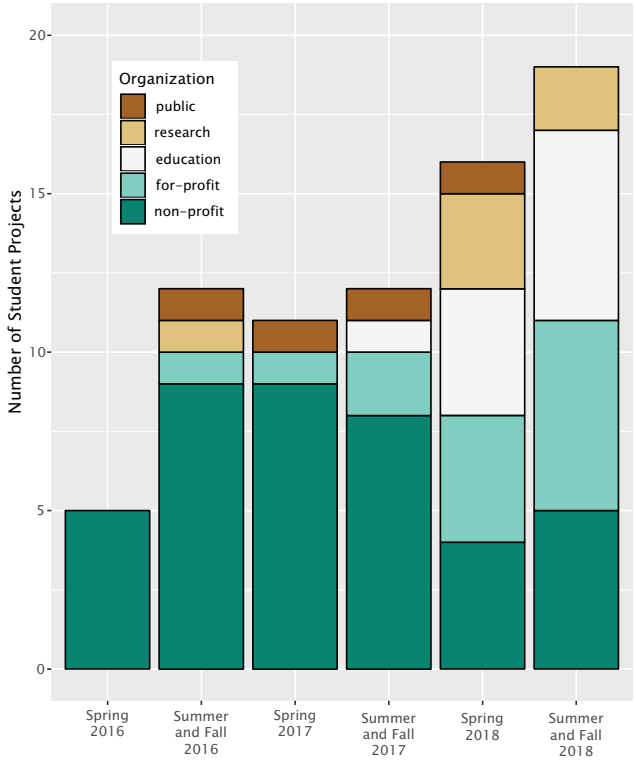
encounter while engaging with community-based issues in the food system.

The emphasis on experiential learning distinguishes the FS minor from other programs at UC Berkeley. Since the core course was first offered in Spring 2016, enrollment has steadily increased from a class size of 6 students to just under 20 students in Fall 2018. In addition to enrollment levels, the diversity of student-community partnerships continues to increase. Whereas the majority of student projects in the first two years of the core course involved organizations in the non-profit sector, the Spring through Fall semesters of 2018 had projects almost evenly split between the non-profit, for-profit, and educational sectors.

In the last three years, students have formed partnerships with 43 different organizations. Some of the most common partnerships have been with the Berkeley Unified School District, Berkeley Student Food Collective, Acta Non Verba, MESA, Terramino Foods, and UC Berkeley Basic Needs. See the FS minor blog[22] for more details about individual student projects. Increased student enrollment and the diversity of projects may be attributed to multiple factors. As the FS minor gains greater recognition, more students are choosing to integrate it into their studies at UC Berkeley.



The FS minor also offers a means for students from across campus to exchange ideas from their respective fields regarding food and agriculture. Of those students who have graduated with a minor in Food Systems as of Fall 2018, 43% of students were majors in the College of Natural Resources and 37% were majors in the College of Letters and Science. The remaining 20% of students were drawn from the Haas Business School, the College of Environmental Design, and the College of Chemistry. The most common majors of students minoring in Food Systems are currently Society and Environment, Public Health, and Business.



Given that UC Berkeley is an urban campus in the Bay Area, many student projects tackle the sustainability and ecology of urban places. Some projects take a historic look into decisions around the use of urban spaces, while others examine ongoing environmental stewardship, ecology, and beautification through current urban agriculture initiatives on campus and beyond. Student projects critically examine common misperceptions of rural life through engagements with small farms on the urban fringe and in California's Central Valley. Students also learn about philosophies and practices of sustainable agriculture coming from the traditions known as agroecology,[23] biodynamic agriculture,[24] and permaculture.[25] Others choose to spend the semester working with a for-profit food business, such as Regrained, Capay Mills, and Back to the Roots.

Food systems projects often involve community organizing and mobilization that build student leadership skills and a sense of self-empowerment. Political interventions in the food system require awareness of intersectionality[26] and intercultural competence.[27] Students witness organizations that disrupt complicity with white supremacy in sustainable food circles, such as Acta Non Verba,[28] a youth urban farm project in East Oakland. This emerges from a sense of responsibility and meaningful community relationships.

Ultimately, the goal is to learn strategies for creating greater transparency, democracy, and multiculturalism in food movements.

Student reflections from the FS minor core course are synthesized in the three sections that follow. They represent the topics, themes, and perspectives that emerge at the culmination of food systems studies at UC Berkeley.

A Hub for Critical Thinking About Food Systems for the Entire Campus

Kyle Ching, UC Berkeley graduate

The nascent FS minor is a focal point across the UC Berkeley campus for the exchange of ideas among undergraduate students on how to make food systems more sustainable and socially just. The minor is interdisciplinary and flexible in terms of curriculum, and yet strives to encourage critical thinking about food systems beyond just facts and figures. Sometimes this occurs by circumstance, as in the case of Julia Tubert, whose focus on racial justice was amplified by her attendance at the Community Forum on Black Liberation and the Food Movement.[29 30]

In other cases, students intentionally apply social justice principles to critique individualistic, consumer-driven approaches to food systems change.[31] Consumerism is not a means to an end or tackling problems head-on, but rather "a powerful and necessary complement to mobilization. It is a way to align our praxis with our ideology," states Kyle Ching.[32] Students also reflect on the the collective organizing required to make food systems change that includes the spectrum of how to keep government officials accountable, from voting to grassroots mobilization.[33]

The core projects often encounter unfamiliar social realities that elicit deep reflections on the current state of food systems in the United States.

Carly Childs viewed the work of Acta Non Verba as an example for how to make positive change happen, and the collaboration was an opportunity for students to learn across difference.[34]

This is also encapsulated by Sonia Brin's reflection on a project with Fresh Approach: "The women were still standing there chatting, and I quickly realized that they were trading recipes on how to best cook with kale. That moment, though small, felt like the perfect culmination of the entire semester's worth of work – two people meeting and trading knowledge over food, forming a connection and learning from each others' experiences."[35]

Experiential learning contextualizes the abstract conceptualizations students learn through their courses at UC Berkeley.

The core projects expose students to the "fractal-like complexity" of food systems issues.[36] Students reconcile theory and practice to "develop critical opinions though a personal connection," states Dani Solis.[37] A farm-based core project "helped me de-romanticize the commodified image of pristine American (and global) farms by exposing me to many of the struggles of maintaining sustainable production within an industrialized food system."[38]

Core projects lead to questioning meanings of health and nutrition.

On campus, Kaly Suarez notes that students choose convenience foods over nutritious basic staples: "Observing this got me thinking about the set mission of the food pantry, which is sustainability and nutrition, and how the students themselves may be overlooking this. Foods like rice and canned beans not only allow the intake of nutrients but they are also considered a staple food, meaning they will last a long time and will provide enough food for multiple meals. On the other hand, foods like pre-packaged frozen dinners will only satisfy one meal craving and may include high levels of fat, salt, and sugars."[39] Beyond individual choices, Sophia Navarro notes that "Oftentimes, when we blame individuals for eating poorly, we ignore the fact that their environment may not support healthy options. This is why we must begin to look upstream for the causes of health disparities rather than trying to correct for poor health behaviors."[40]

Core projects provide students with a chance to question their own assumptions.

"My thoughts and perspectives about large scale agriculture and the Central Valley were solely constructed from what I had heard in my food systems minor courses, as well as documentaries and books, such as Food Inc. and Omnivores Dilemma. Thus, the picture I envisioned in my head wasn't so positive to say the least. However, after spending some time in the Central Valley, I grew to love its landscape, history, and people. In particular, I grew to love the small-scale farmers [we worked with who] are responsible for a large portion of food production in the Central Valley. I challenge everyone working in the food system to actually visit Fresno, walk around, and talk to farmers. It is not enough to simply cast the Central Valley into a gray 'conventional bad agriculture' box and conduct research only in othe parts of California."[41] —Leke Hutchins

As with farming, students confront their preconceived notions of the potential for businesses to make contributions to food systems change. For example, "[Veritable Vegetable] contributes to the formation of an equitable food system by supporting organic farmers and maximizing their return on produce, increasing access to fresh produce, and fostering a fair workplace for employees."[42] Likewise, Terramino taught Anna Hirschorn that "it's possible to be both a successful company and to change the world."[43]

In some cases, projects challenge students, pointing for opportunities for continuing their own education. "One of my biggest takeaways from this internship was that the knowledge we gain in the classroom at Cal doesn't always translate to the practical, hands-on experience necessary to catalyzing change."[44] Yet, students also gain insights from putting their educator skills into practice. "By exposing youth to the concepts of nutrition and healthy consumption, we are laying the groundwork for a brighter future for all."[45]

Campus Story: Know Your Space

GARDEN SPACES SUCH AS THE STUDENT ORGANIC GARDEN (SOGA) HAVE BEEN CRITIQUED FOR THEIR EXCLUSIONARY PRACTICES AND CULTURE, namely the overwhelming dominance of white praxis and culture in the facilitation, organization, and pedagogy of the space. Unsurprisingly, students have taken the initiative to create campus spaces that not only promote community building among students of color, but also challenge current approaches to environmentalism.[78]

Facilitated by William Smith, Diego Jimenez, and Maya Boone in Spring 2018, the Guerilla Gardening[79] DeCal presents a unique struggle of land access and environmental justice on the UC Berkeley campus. Once called "Sustainable Campus Landscaping," the DeCal shifted its emphasis after students of color recognized the lack of inclusive spaces for people of color.

Having acquired permission from the administration to plant in vacant or poorly maintained plots, the facilitators created a class that encouraged students to think critically about the spaces they were using and the history behind them. An interview with William Smith, an undergraduate Conservation and Resource Studies major dedicated to several food efforts on campus, revealed the significance of the course as a source of critical thinking:

"It is important to note two things. First, we are on stolen land. This is on Ohlone territory, and indigenous practices were here long before institutions and colonizers came along. Secondly, whatever we are teaching, we try to implement both indigenous knowledge combined with data collection and research, because this is connected to our ancestors. We use practices that range from planting according to different phases of the moon, to the more basics of planting such as spacing. Most importantly, we try to use people's experiences as a way to teach the class. We try to let people talk about their experiences as lessons, trying to always deconstruct that facilitator-student relationship...It's a community learning process, for sure."

While efforts such as these represent student desire to think critically about the context in which food studies exist at UC Berkeley, the struggle for legitimacy of such efforts continues to hinder environmental justice initiatives. According to William, "[The administration] doesn't really know why we want to plant a garden. It's not just about having fun. It's about learning history and why people of color don't feel comfortable in places like SOGA. Gardening is so important, and so many issues are connected to food. We really need campus majors to come together in this space."

The DeCal eventually brought back the name "Sustainable Campus Landscaping," whose framing inspires dialogues regarding equitable land use on the UC Berkeley campus.

William Aubrey Smith IV, UC Berkeley graduate
Image credit: William Aubrey Smith IV

Preparing Students to Pursue Food Systems Careers

The core course invites students to exchange ideas and reflections with their peers as they collaborate with diverse partners, including farms, grassroots organizations, businesses, UC Cooperative Extension and research centers.

Through this experiential learning, they not only bridge diverse fields of knowledge but also develop skills and connections that will serve them in pursuing food systems careers.

Students learn to participate in multi-institutional collaboration toward food systems change.

Interacting with Hope Collaborative, Acta Non Verba, BuildOn, People's Grocery, and Youth Uprising, Lauryn Chan writes, "We all have the same passion and care for our city. Developing an event … takes many hands."[46] Learning to work as part of a team is an important aspect of many projects. "I am glad to find a group of supportive people who have the same passion and energy as I do."[47] Similarly, "The experience I gained as an intern was incredible, and the exposure to so many passionate changemakers truly empowered me to continue working in the food world."[48]

Students learn how to make meaningful connections between community, earth stewardship, and food.

A project with Acta Non Verba "reconnected me to the earth and with people who care for and respect the earth to the same degree that I do."[49] From another urban farm, Olivia Hardley reflects that "until I actually started planting, growing, and harvesting crops at the Gill Tract, I didn't really know what it was like to be an active participant in the food system."[50]

These kinds of relationships motivate, inspire, and clarify students' future paths in food systems. Hannah Spinner tells a poignant story of her inspiration garden-based science education:

Students Exploring Fava Bean Root Nodules. Image Credit: Hannah Spinner, Spring 2018

"We were cutting down some plants and turning them into the soil as a green manure. Within seconds of showing him what we were doing, he exclaimed, 'Oh, I get it! We're returning nutrients to the soil! Just like you talked about in your lesson!' This was one of the most rewarding moments of the entire internship. This student was able to grasp the very advanced material that I presented and apply that knowledge several hours later. These children are phenomenal, inspirational, and passionate learners. It is clear that they love this garden and everything they learn here."[51]

Stephanie Wang actually decided to move away from a career related to food studies, yet nevertheless hoped "to carry the same persistence and determination in whatever cause I chose to dedicate my life towards in the future."[52] However, more often projects solidify students' interest in a future that intersects with food systems. In the case of Sophia Navarro, "my experience this semester has reaffirmed by drive for public health nutrition."[53]

In addition to connections and inspiration, students learn skills through their projects that are relevant to careers in the food system. A shared sentiment among many students taking the FS minor core course was that it was "a major stepping stone in my journey towards figuring out my true interests and provided potential opportunities for the future."[54] Melissa Rubin developed her people skills as Brand Ambassador for ReGrained: "Not only did I have to draw people into my demo station, but then had to read them within seconds to determine what aspect of ReGrained they would most connect with."[55] Another student successfully

increased the social media following for her community partner by 20 percent by deciding "what was important, meaningful, informative and engaging and fit it into a limited space and time."[56]

A Flexible Curriculum That Reflects Students' Activism on Campus and Beyond

The FS minor allows students to both understand the historical processes that have shaped our current food system and gain insight into the theoretical background developed to analyze it.

In addition, the minor allows students to keep up with the current, everchanging food movement(s) that exist in the Bay Area and around the world. This is reflected on the UC Berkeley campus.

Jeff Noven, community partner and UC Berkeley graduate

In 2015, the Students of Color Environmental Collective (SCEC) showcased a series of photo projects[57] with the hashtag, #EnvironmentalismSoWhite to highlight the lack of acknowledgement of equity and oppression in mainstream environmental convesations. Students are also unsatisfied with the lack of diversity of CNR faculty, as demonstrated in their open letter to the SERC.[58] These critiques implicate food studies and food organizations at UC Berkeley, demonstrated by Grace Lihn's open letter[59] to the Berkeley Student Food Collective (BSFC) that challenges the store's complicity in white privilege and other systems of oppression.

Several students, including Kyle Ching and Charlie James, worked with the Berkeley Student Food Collective as their partner[60] for the FS minor core project. In response to undergraduate student Grace Lihn's open letter, the members of the BSFC took action. According to community partner Jeff Noven, students "developed the conceptual and logistical framework for the extant Anti-Oppression Committee (AOComm)[61] within our organization to combat systemic bias."[62]

From AOComm, a working dollar menu, a sliding scale price for member-prepared food, and a newfound commitment to food justice emerged. Both Kyle and Charlie's roles as coordinators for AOComm at the BSFC allowed them to not only achieve a greater awareness of the BSFC's activities, but also the larger social issues and ideologies that contextualize it.

Left to right: Dionys Melgara, Marlen Sanchez, Lucinda Laurence, Dani Solis, Mackenzie Feldman. Image Credit: BFI

While student movements are independent processes to the FS minor, it is important to note that many of the students pivotal in these conversations on campus are also present in spaces such as the FS minor. Students connect the political dimensions of the food systems curriculum and apply it to their various forms of activism in their own lives.

It is no coincidence that the students who served on the Food Systems Minor Committee are very active in other spaces of the campus community. In the Spring 2018 semester, FS committee members Dani Solis and Mackenzie Feldman, as well as the student representative of the Berkeley Food Institute Undergraduate Advisory Council, Lucinda Laurence, created the colloquium series called "Critical Discussions in Food Systems,"[63] which sought to spark cross-campus discussion on food sovereignty, food trade, and agroecology. Their first event, co-hosted by the Nicaraguan organization, Asociación de Trabajadores del Campo,

Left to right: Dewayne "Lee" Johnson, Mackenzie Feldman, and Bridget Gustafson at "My Fight For Justice", Fall 2018. Image Credit: Mackenzie Feldman.

featured two speakers who shared their perspectives as members of peasant networks[64] who are cooling the planet through agroecology, horizontal learning,[65] and land access. Mackenzie Feldman writes that "After learning so much about food systems in the classroom... It makes the readings we do in the classroom come to life, and the Friends of the ATC's work of empowering communities motivates me to learn as much as I can about food sovereignty."

In November 2018, Herbicide-Free Cal founders Mackenzie Feldman and Bridget Gustafson hosted a panel discussion with speakers including Dewayne "Lee" Johnson, the plaintiff in the recent Johnson v. Monsanto lawsuit.[66 67 68] Over 150 people attended, and the goal of the event was to inspire people through Mr. Johnson's story to take action and generate respect for the groundskeepers and farmworkers that put their lives at risk to maintain our grounds and pick our food. Since her graduation, Mackenzie has launched the campaign, Herbicide-Free UC, with the mission of eliminating the use of toxic herbicides from every University of California campus.[69] So far, the campaign has reached the UC Davis, UCLA, and UC Riverside campuses, with plans to expand to more universities across California and the United States.

Born out of student advocacy, the FS minor continues to be shaped by students who push for change from within and from the margins of the academic institution that is UC Berkeley.

For example, Charlie James, a former FS minor representative, served as President and Co-Founder of the food justice consulting organization FEED (Food, Equity, Entrepreneurship, & Development), which aims to provide business services to local non-profits and food justice inspired organizations. In documenting three other students' projects, Marisa Ahmed reflected that "Students are creating spaces to fulfill the needs of their peers and establish better infrastructure for the community at large."[70] Similarly, William Aubrey Smith IV said, "This semester's journey with food has taught me about the power of community and how our connection to each other is the only way we can combat the oppressive food systems we live in today. ... I've come to see that I am the person to help close those gaps and bring more inclusivity into the campus food systems."[71] Through the flexibility of the FS minor's core course, students find a sense of self-empowerment to shape institutions and movements.

In this way, the community partnerships formed through the FS minor core course offer students the chance to heal from the stressful conditions on campus and also provide students the opportunity to challenge oppressive social relationships. As Ayano Jeffers-Fabro writes, "Being stuck in the life of a college student can consume you but [Acta Non Verba] helped me break out of the systemic stresses that I found restricting my passion."[72] Through his project with the Berkeley Student Food Collective, Kyle Ching saw the BSFC as a testing ground "for movement and coalition building, with consumer choices being just a small part of a larger movement."[73] Charlie James goes further:

"To change the culture, the volunteers must put a collective consciousness sensitive to white bias into action. The store needs an overhaul; it's time to radicalize with the same spirit the BSFC was founded upon, except with a focus, instead of on food, on people."[74]

Students push for change beyond campus, as well. While problems in the food system are daunting, Sam Phillips reflects that "... I think we all must take our education as far as it can go to initiate positive local change. In addition, change happens by building bridges."[75]

Rachel O'Neal connected two farms in an effort to advance regional food sovereignty."The partnership between FGF and Urban Tilth will provide almost 200 families with affordable, healthy, fresh food in an ongoing relationship that encompasses both justice and sovereignty, securing affordable access and controlling your own food system".[76] This project demonstrates the potential for students to make lasting change through partnerships. However, it is also a chance for students to become familiar with grassroots organizations and people that are making change for the communities they serve. Change only happens through relationships based on mutual respect and friendship.

This is clearly articulated by Aliya Benudiz who writes about the residents of People's Park that:

"almost everyday, I was greeted with smiling faces and friendly hellos from groups hanging out in the park. I would hear music playing and people conversing and laughing, and see small camps of young homeless kids all supporting and protecting each other. They were finding their own ways to cope in such a stressful condition, and were even finding time to have fun and enjoy life in their own way. To me, it was absolutely beautiful. I began spending my free time hanging out in the park became acquainted with some of the people that relied on the park as a safe space. I wanted to know their stories and get to know them as friends. Over the years, my fondness for everyone there grew, and I made it a priority to check in with all my friends there frequently and offer any assistance I could. Through this, I was able to cultivate meaningful bonds with so many wonderful people, while also learning about their history and the history of the park."[77]

These are the critical connections that experiential learning programs such as the FS minor strive to offer the campus community.

2018 Food Systems Scholars Program

In 2017, Dr. Paul Rogé, lecturer for the FS minor core course, received a generous grant of $15,000 from the American Cultures Engaged Scholarship Program that financially supported undergraduate students to conduct their own community engaged scholarship.[80] Called the Food Systems Scholarship, this pilot program connected students with rural sectors or rural community-serving organizations. It specifically funds under-represented, first generation, rural, and low-income students. Improving access to potential career pathways in food systems for all students means also continuing to advocate and fundraise to support proactive programs like the Food Systems Scholarship.

In the summer of 2018, proposals for community-based scholarship from three undergraduates were accepted. The following excerpts of the testimonials from each student indicate the importance of community-engaged scholarship for student learning about critical issues in food systems:

Sophia Navarro partnered with the Nutrition Policy Institute to study the impacts of soda taxes, school food service redesigns, and healthy beverage policies in child care facilities:

"Through this experience, I was able to research the influence of one's food environment on their health and understand how community health inequities can emerge due to disparities in food education and the quality and accessibility of the food available."[81]

Leslie (Leke) Hutchins conducted research on traditional ecological knowledge with the Indigenous Cropping Systems lab at the University of Hawai'i at Manoa:

"Thanks to the scholarship I gained a lot in a short amount of time this summer. Firstly, I learned more about my Hawaiian culture and how my ancestors managed their productive and sustainable agro-ecosystems. Secondly, I advanced my data management and analysis skills. Thirdly, I cultivated relationships with Hawaiian farmers and scholars that will hopefully last a lifetime. And finally, I regrounded myself into the food system movement in Hawai'i. My experience this summer will allow me to be better prepared to support my lahui (community). In addition, it has solidified my aspirations to do research grounded in bridging the Indigenous and Western worlds in graduate school."[82]

Ella Smith, with guidance from the Berkeley Food Institute, conducted interviews with teachers, district officials, staffers in California assembly and senate offices, and staffers in the California Department of Education about K-12 school food programs:

"I talked about ideas with students, teachers, and district officials. I was fascinated with how low enrollment in SNAP and school nutrition programs are, so I had lengthy discussions about ideas on how to increase enrollment. I was not able to find someone who thought student hunger was not important. However, some people did not find it to be a priority. This is shocking to me, because over 20% of California's [K-12] students are in poverty and food insecure, respectively.

"To say student hunger is not a priority is a privilege."[83]

Tensions

Image Credit: Julie Gipple

THROUGHOUT UC BERKELEY'S HISTORY, TENSIONS HAVE SURROUNDED HOW TO APPROACH FOOD SYSTEMS RESEARCH, EDUCATION, AND OUTREACH. One example is the contrasting perspectives on food systems offered between courses that espouse neo-Malthusian arguments for increasing yields via industrialized agriculture[84] to feed a growing global population, and others that challenge this perspective by encouraging students to think critically about production and policy. Another example is that, for more than 30 years, the campus has been at the forefront of genetics research and development. Faculty have been divided between those who study and advance genetically modified organisms, and others who challenge their dispersal in the environment.

"It is an interesting question to ask: does the minor have a point of view? Is the point to expose students to have a wide range of opinions on what visions make sense pedagogically or politically? Or is it to have an agroecological education?"—Liz Carlisle, former lecturer for the FS minor core course

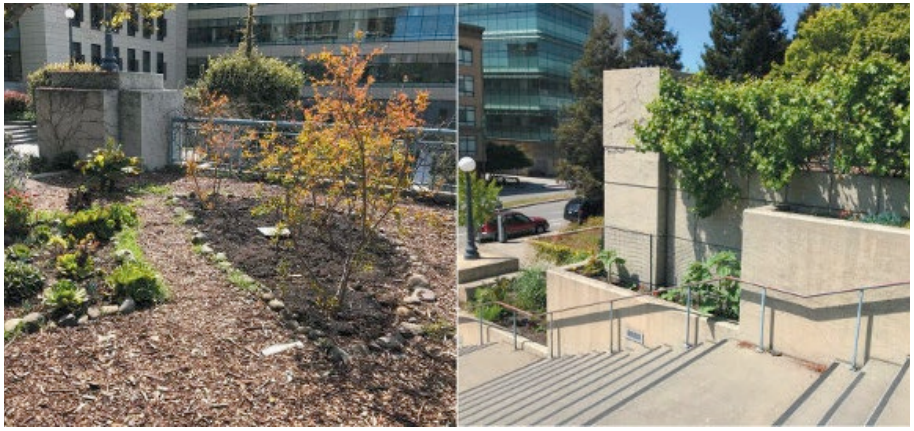
The question above frames an ongoing discussion that exists within the FS minor curriculum and the UC Berkeley campus. Can the FS minor exist as an investigation into a wide range of solutions while also offering students an agroecological education? Are students encouraged to have a certain position on solutions to food systems problems?

From our perspective, the answer is yes: The minor does have a point of view that is rooted in agroecology. We recognize that this poses a challenge as themes such as peasant knowledge and horizontal knowledge exchange, which are associated with agroecology, continue to struggle for legitimacy within academic institutions.

Also notable is the stigma associated with those discussions on the UC Berkeley campus. There is a common perception that an overwhelmingly white and upper middle class population dominates food-related faculty positions at UC Berkeley, which has various implications in making educational spaces culturally and academically inaccessible for all students. See the campus story for more details.

Debates on how to approach food systems often invoke concepts of food security and food sovereignty. Several responses to the industrial food system have emerged over the past four decades, many of which been critiqued by social justice scholars and activists alike for their exclusion of equity discussions.[85] [86] These ideas shape the foodscapes[87] on campus. Students create new food gardens and guerilla gardens; the Gill Tract and Oxford Tract land movements oppose the development plans of the University; and The Haas Business School hosts a course on Edible Education. How do these various directions for studying food systems influence the future direction of the minor? How does the minor intend to progress toward a "critical food systems" curriculum in addressing concepts like food sovereignty?

The flexibility of the minor and the attempt to present multiple positions on food systems solutions does not clearly articulate an agroecological education, which is a challenge especially to (and from) students who come from different



Barker Hall Garden after student work. Image Credit: William Aubrey Smith IV

colleges on the UC Berkeley campus.

The requirements of the minor, though interdisciplinary, can lead students to come out of the minor with divergent perspectives on food systems. Discrepancies often exists between students who wish to understand food studies and those who are more interested in the scientific or commercial potential of food. Though there are many who wish to study both, it is a reality that these tensions do exist among undergraduate students in the FS minor, and there are few opportunities for students with divergent perspectives to engage in discussions and to challenge each other's understandings.

To improve the dialogue around the minor, we recognize the need for the FS minor to host occasional town halls for participants to convene around such problems.

The Food Systems minor also lacks an established community for students. While the Berkeley Food Institute serves as a central hub for broad food conversations, the FS minor community is often disjointed. How can a physical hub be formed for Food Systems students to convene and discuss concerns? How can the FS minor be embedded within influential student groups such as SCEC and SERC? How does it intend to capture and retain transfer students who are already pressed for time in their curriculum? These are just a few questions that we encourage future minor participants and stakeholders to consider.

We encourage further advertisement of the minor outside of CNR, curricular and administrative collaboration with different departments such as Ethnic Studies and Geography, as well as events that allow Food Systems students to dialog with one another.

Working Dollar Menu.
Image Credit: The Berkeley Student Food Collective.

Future Directions and Needs

Core Course: Experiential Learning Through Engagement in Food Systems

Kathryn De Master, CNR Faculty.
Image Credit: Kathryn De Master

The College of Natural Resources and the Department of Environmental Science, Policy, and Management have generously funded the FS minor. CNR has committed a substantial fraction of the time of one CNR academic advisor to the minor. It is also the only minor program in the College of Natural Resources with a lecturer dedicated to an experiential learning core course from 2016–2018.

However, continuing campus-wide budgetary constraints and college and departmental prioritization of funding for lecturers who teach courses with high enrollment have led to a reduction in funding for the Food Systems lecturer appointment from 50% in 2016–2017 to 33% in 2017–2018. The core course is currently canceled for the spring 2019 semester, however it is expected to be taught starting Fall 2019 by Kathryn De Master, a tenure-track faculty member. Hopefully this change leads to an increased capacity to provide more structure to the core course, to organize year-round community partnerships, and to develop curricula related to community-based learning that will increase enrollment.

Given the constraints experienced over the past three years, students independently cultivated projects for the core course in the first month of each semester. This is not an ideal situation for students or community partners who are placed under pressure to create experiential learning projects with little notice. It is a problematic way to build long-term programs and community partnerships. It also adds even more strain on students at a time when many students are already struggling with high housing and living costs alongside rising tuition fees.

There are several ways to resolve the precarious situation facing

the FS minor's core course. We believe that the recommendations that follow will ensure the best possible educational experience for students. They may also greatly improve student enrollment.

We recommend that the core course receive a regular course number instead of ESPM 197, which gets easily confused with the various ESPM 197s taught by other faculty. The core course should be listed in the Schedule of Classes well in advance of each semester with an established meeting time and enrollment level. The course has been approved increasingly late, with the Fall 2018 course approved after the semester had started. Students have been unable to work the core course into their schedules in advance, which leads to many of them having time conflicts and uncertainty about completing the FS minor.

It is easier to justify a lecturer appointment over the summer than the normal academic year. However, the core course was only offered during the summer 2016 term. A provisional hiring pending sufficient enrollment levels would greatly facilitate planning and student recruitment in the course by a lecturer. While summer terms may not be accessible to students who depend on financial aid, they open up more possibilities for participation in already established summer internship programs commonly offered by community partners. Paid internships are one way to offset the additional costs of tuition.

Lecturers cannot build robust experiential learning programs while last minute semesterly hires continue. Likewise, academic senate faculty must have the bandwidth to take on the responsibility and commitment for relationship building with community partners.

Effective, meaningful partnerships take stability and long-term planning to prepare. Until a permanent lecturer or tenure track faculty with significant bandwidth takes on the core course, advisors and staff support is critical to maintain partnerships and matching students with community partners. A notable example is The Berkeley Food Institute's internship program with Berkeley and Oakland Unified School Districts. This partnership is a good model for how staff and advisors can cultivate community partnerships and guiding students in their selection of projects that meet their academic and career interests.

Originally, the core course was conceptualized as a capstone course. However, in our experience it is counterproductive toward the goal of increasing enrollment to limit the core course to students who are already pursuing or have declared the FS minor.

Most students declare minors just before graduation. The core course has the potential to provide important opportunities for experiential learning to students across the board. Participation may in turn inspire students to pursue the FS minor. This is a practice that has been taken by the Food Systems lecturer since the spring 2018 semester. Enrollment is increasing even given the uncertainties around the continuation of the core course.

A creative way to ensure the continuation of the core course would be to join efforts with other UC campuses or departments. As an example, UC Davis offers a major in Sustainable Agriculture and Food Systems that has a similar core requirement. Unifying core programs across UC campuses via online learning is likely to receive financial backing from the University of California Office of the President or other sources.

Further improvements can also be made to the core course itself. These could include bringing in guest speakers from outside organizations and clarifying how to design partnerships with community organizations, and teaching the fundamentals of community organizing. As Daisy Schadlich recommends, "Moving forward, it would be helpful for students to take some sort of communication or education class in addition to the food systems classes."[88] These kinds of changes would benefit from an increase in units for the core course to allow for more class time and theoretical material without detracting for student projects. Changes to the core course should conserve the existing emphasis on students' projects that counterbalances the abstract conceptualizations[89] that students frequently encounter in other courses at UC Berkeley.

The Food Systems Minor Curriculum, Generally

Stated earlier, while the minor is interdisciplinary, it can lead to students coming out of the minor with a very different perspective on food systems than the minor's intent. Even "food movements" may take forms other than progressive and radical ones, such as the "good food" movement that tends toward advocating mere shifts in consumer behavior such as the "voting with your fork" element of the food movement.

Ultimately, the education students receive depends heavily on the classes taken, and students can get away with completing the minor with little understanding of the historical and political contexts that shape food systems. General gaps in the coursework for the FS minor include themes surrounding community organizing, pedagogy and public speaking, and the history of food movements specific to the Bay Area, including the efforts of the Black Panther Party.

One strategy for continuing to develop coursework on these topics would be to broaden the FS minor committee to properly represent the variety of departments and faculty involved. This would also make the minor more visible and interesting to the whole campus, not just to students in CNR. It was intended as a campus-wide minor in food systems, even though administratively it is housed in CNR.

Another challenge to the curriculum regards advising for undergraduates completing the minor. While students should be allowed to explore different interests within the minor independently, a greater effort from advising staff should be taken to help guide students with their interests with both a coursework and career development perspective. Students have provided feedback that "There isn't very much advising, I would have liked some sort of faculty advising structure. I think that I could have chosen better courses for a specific path within food systems, instead of my focus being all over the place." In addition, "I would like more direction regarding what I can do with this minor. I have goals of my own, but I'd like to know how what I'm learning can be applicable in the workforce."

Community within Food Systems

Building a food systems community on a large campus is not easy, especially when many environmental and food groups already have smaller communities of their own. Yet, a three year mark serves as an opportunity to think about how to improve the community within food systems, engage more students in the minor, and let them know about food-related events on campus. Former FS minor student Charlie James states, "I wish that there could be events where other Food Systems minor students could congregate to meet each other and hear about each other's respective interests and pursuits in food systems." This would not only create a cohesive FS minor community, but introduce students to the minor that otherwise might not have exposure to it.

Concluding Remarks

We hope that this report provides useful guidance to faculty, staff, and students in making the FS minor an even more successful program than it already is. We also hope that this report serves as a place to retain institutional memory of the individuals that have and continue to shape the FS minor. Fundraising is a critical need for sustaining the FS minor. There is also a pressing need for undergraduate students to continue supporting the FS minor through representation on the FS minor committee. Over the past two years, both Mackenzie Feldman and Dani Solis have served as student representatives, offering their own perspectives to help guide the directions of the minor. However, their short time as undergraduates on the campus means that a new generation of food systems scholars must carry the legacy of student involvement for the minor's advancement in the years to come.

—Dani, Mackenzie, and Paul

"Special thanks to Paul, who volunteered countless hours of revision, data collection, and text editing to make this report a reality. Your guidance, support, and friendship will always be one of the best pieces of my academic career at UC Berkeley!"

—Dani

"Thank you, Paul, for believing in this vision and guiding me and Dani along the way! The Food Systems Minor would not exist without you, and the impact you have had on all of the students in this program that will go on to have careers in food is immeasurable. We are beyond grateful for your dedication to educate the next generation of leaders."

—Mackenzie

Meet the Authors

Daniela (Dani) Solis

Food Systems Committee Student Representative, 2016–2019
Urban Studies BA
Food Systems Minor Class of 2019

Dani is passionate about creating healthier, more resilient communities. Her background in Urban Studies has shaped her interest in the role of institutions and social organizing in changing food systems, while her lived experience continues to drive her passion to cultivate empathy and love within them. Dani is fascinated by the power of policy and place and hopes to pursue a career in food systems planning for underserved communities. She has been involved in many food efforts on campus, serving as an undergraduate research apprentice for the Rethinking School Lunch Oakland initiative[90] and spearheading the Critical Discussions in Food Systems colloquium,[91] a student-led speaker series to spark campus-wide conversations on issues of food sovereignty and agroecology. Dani currently serves as the Berkeley Food Institute Undergraduate Student Fellow[92] and chair of the BFI undergraduate student council, where she is spearheading the undergraduate campaign against UC Berkeley's pouring rights contract with PepsiCo.

Mackenzie Feldman

Food Systems Committee Student Representative, 2017–2018
Society and the Environment BS
Food Systems Minor Class of 2018

Mackenzie graduated from UC Berkeley in Spring 2018. She is passionate about many aspects of the food system, including food policy, sustainable agriculture, and issues involving labor rights and the corporate control of the food system.

At UC Berkeley, Mackenzie competed on the Beach Volleyball team, taught an Entrepreneurship Speaker Series class at the Haas School of Business, was the UC Global Food Initiative Student Ambassador,[93] and spearheaded the Critical Discussions in Food Systems colloquium with Dani Solis and Lucinda Laurence. Mackenzie also founded the Herbicide-Free Cal campaign and upon graduating and has expanded the campaign into a UC-wide Herbicide-Free campaign with the mission of stopping the use of toxic herbicides across all University of California campuses.[94]

Paul Rogé, PhD

Food Systems Lecturer, 2016–2018

From 2016–2018, Dr. Paul Rogé facilitated the Food Systems minor[95] capstone course called *Experiential Learning Through Engagement in Food Systems*. From 2017–2018, he received funding from the American Cultures Engaged Scholarship[96] program to completely redesign ESPM 117 – Urban Garden Ecosystems as an American Cultures course called Urban Agriculture and Food Justice. This funding also supported three undergraduate students to conduct community-engaged food systems scholarship during the summer of 2018. These are just a few of Dr. Rogé's contributions to growing opportunities for undergraduate students interested in studying food systems from multicultural, transdisciplinary, and social justice perspectives.

In addition to lecturing at UC Berkeley, Dr. Rogé is studying urban agroecology as a Staff Research Associate with Professor Timothy Bowles. He also collaborates on numerous projects with MESA,[97] including the formation of a multi-stakeholder cooperative farm in El Sobrante and an educator's circle for popular education in community food systems. Dr. Rogé is a partner in an edible insect company called Don Bugito[98] where he is primarily responsible for rearing insects in West Oakland. Dr. Rogé co-founded The Cooperative New School for Urban Studies and Environmental Justice,[99] a project at the cutting edge of web-based education for community-based activist scholars.

Environmental Sciences

1868–1900: The Early Years

UC Berkeley, founded in 1868, was both the first land-grant university and state-run Agricultural Experiment Station, all due to the 1862 Federal Morrill Act,[100] which granted federal lands to states for the purpose of establishing colleges oriented to the study of agriculture and mechanical science. The Experiment Station, founded in 1878,[101] was intended to teach students about cutting-edge research on agriculture and engineering.[102]

1900–1959: The End of an Era

Agricultural coursework of the 1900 through mid 1950s at UC Berkeley focused on fruit, vegetable, and forage crop production and animal husbandry, botany, irrigation, soil science, farm machine maintenance, food preparation and preservation, and farm management. Many field courses were held at the University Farm in Davis. The Center for Biological Control was established at Berkeley in 1944 with a laboratory on the Gill Tract. When UC Davis became its own university in 1959, sustainable agriculture research was primarily housed at UC Davis. The initial approach taken for reducing pesticide use was integrated pest management, a holistic approach to minimizing pest impact while maintaining ecosystem functions.[103] According to Liz Carlisle, "The shift away from biological controls and sustainable agriculture research happened ever since agriculture work shifted to UC Davis and the decision was made to not hire more people for biological control." At the same time, there a shift occurred away from sustainable agriculture toward conventional agriculture.[104]

1960s to the Present: Resistance in the Move Toward Genetics

Starting in the 1960s, researchers at UC Berkeley interested in sustainable agriculture began to lose institutional support as they became increasingly critical of agribusiness. An example comes from Robert Van der Bosch, Professor of Entomological Sciences, who published The Pesticide Conspiracy, one of the first books to be critical of the pesticide industry.[105]

Throughout the 1980s, the Departments of Genetics and Plant Pathology began offering courses in genetic engineering, with an increase in such

courses throughout the 1990s and 2000s.[106] UC Berkeley stopped leading efforts biological control in 1995 when, according to Professor Miguel Altieri, "Dean Raiser dismantled the division of biological control that had saved California public more than 1.9 billion dollars in pesticides. At that time, Novartis had given a grant to CNR for 50 million to pursue transgenic research which did not yield anything for the public good. This is all part of berkeley's betrayal to its land grant mission."

Nutritional Sciences

The study of nutrition started at UC Berkeley.[107] The University began conducting landmark research in human and animal nutrition in the 1870s, and its first courses on the subject were offered in the early 1900s. After completing a degree at Berkeley, Myer Ja became an assistant chemist of the Agricultural Experiment Station in 1879 and in 1918 was appointed as the first professor of nutrition in the nation. He chaired the Committee on Home Economics in 1913. Over the decades that followed, research units across campus made groundbreaking discoveries about human nutrition. When CNR was created in 1974, it included the Department of Nutritional Sciences. The department's scientists began exploring problems related to worldwide food distribution, collaborating with economists and other researchers. When CNR reorganized its structure in 1992, it grew its multidisciplinary research and outreach to include toxicology and to combat the nation's growing epidemic of obesity. Today, the Department of Nutritional Sciences and Toxicology focuses much of its research on metabolic studies using the tools of modern molecular biology.

Social Sciences

1971–2000s: Farm-to-Table

The roots of the farm-to-table movement run deep in Berkeley. Alice Waters, founder of Chez Panisse, and UC Berkeley Professor Michael Pollan are icons of the movement. Yet, as indicated by Kyle Ching's FS minor core project, there clear is criticism and tension around this particularly exclusive and elite "food movement." [108]

In 1974, the Schools of Agriculture and Forestry joined with other biological, environmental, and food sciences to become the College of Natural Resources.[109] Throughout the 1980s, the Departments of Genetics and Plant Pathology began offering courses in genetic engineering, with an increase in such courses throughout the 1990s and 2000s.[110]

Appendix 2:
Endnotes

1 Food systems are the activities, outcomes (such as food security, environmental security, and social welfare), and determinants (such as environmental, social, political, and economic) associated with food production through consumption (Ericksen, "Conceptualizing Food Systems for Global Environmental Change Research"). Food systems may be analyzed from a political lens within the corporate food regime and social movements (Holt Giménez and Shattuck, "Food Crises, Food Regimes and Food Movements").

2 Food movements are disparate forms of mobilizations in resistance to various aspects of the dominant corporate food regime (Wakefield, "Reflective Action in the Academy").

3 Food studies is considered an academic field that examines the historical, cultural, behavioral, biological and socioeconomic dimensions of food. It is an intellectual movement toward cultural studies – that culture is central to society – in the humanities and social sciences (Nestle and McIntosh, "Writing the Food Studies Movement").

4 https://www.kqed.org/bayareabites/99308/uc-berkeley-now-offers-a-minor-in-the-study-of-food-systems

5 Food equity is when "everyone, no matter their race, can access and afford a basic healthy diet and work to support a food system that produces this vision" (Center for Social Inclusion, "Food Equity").

6 Experiential learning refers to learning by doing, or rather "learning through reflection on doing" (Kaplan et al., "Learning from the Ground Up").

7 The National Environmental Policy Act of 1969 refers to sustainability as the creation and maintenance of "conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations."

8 http://food.berkeley.edu/wp-content/uploads/2014/07/UC-Berkeley-Initiatives-in-Food-and-Agriculture-for-BFI-website1.pdf

9 https://ucanr.edu

10 https://www.ocf.berkeley.edu/~soga/wordpress/

11 https://food.berkeley.edu

12 We acknowledge the following individuals for their time and dedication to the original approval of the FS minor in 2015: Rosalie Z. Fanshel (Program Manager for the Berkeley Food Institute), Ann Thrupp (former Executive Director of the Berkeley Food Institute), Keith Gilless (former CNR Dean), Alix Schwartz, Kathryn De Master, Nathan Sayre, Lynn Huntsinger, Karen Sokal-Gutierrez, Eva Wong, Christie Tobolski, Liz Carlisle, Aileen Suzara, Nora Gilbert, Albie Miles, and Jeff Noven.

13 According to the US EPA "Environmental Justice," the environmental justice movement, mostly led by people of color, sought to address the inequity of environmental protection in their communities.

14 "Food securiity exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (World Food Summit, Rome Declaration on World Food Security).

15 "Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations" (La Via Campesina, "Declaration of Nyéléni").

16 https://food.berkeley.edu/foodscape/map/

17 https://nature.berkeley.edu/food-systems-projects/student-projects/

18 https://nature.berkeley.edu/sites/default/files/FS%2520Minor%2520Snapshot_2.pdf

19 https://nature.berkeley.edu/advising/minors/food-systems

20 https://nature.berkeley.edu/food-systems-projects/

21 Food apartheid refers to the racially exclusionary practices that result in limited access to affordable and nutritious food, particularly in low income neighborhoods (Bradley and Galt, "Practicing Food Justice at Dig Deep Farms & Produce, East Bay Area, California").

22 https://nature.berkeley.edu/food-systems-projects/student-projects/

23 Agroecology may be defined as the science of sustainable food systems that includes perspectives from practitioners and social movements (Francis et al., "Agroecology"; Altieri and Toledo, "The Agroecological Revolution in Latin America"; Méndez, Bacon, and Cohen, "Agroecology as a Transdisciplinary, Participatory, and Action-Oriented Approach"). Agroecologists often refer to ecological and social principles that form the basis for sustainability across different contexts. Altieri ("Agroecology") proposes the following ecological principles: Enhance recycling of biomass; optimize nutrient availability; balance nutrient flow; enhance soil biotic activity; minimize losses due to flows of solar radiation, air and water; diversify agroecosystems in time and space; and enhance beneficial biological interactions and synergisms. Rosset and Torres ("Agroecología, Territorio, Recampesinización y Movimientos Sociales") associate the following social principles with agroecology: self-controlled and self-managed resource base; independence from external inputs; autonomy from banks, input commerce, and corporate intermediaries; rejection of many market elements; and a differentiated application depending on local context.

24 "Biodynamics is a holistic, ecological, and ethical approach to farming, gardening, food, and nutrition. Biodynamics is rooted in the work of philosopher and scientist Dr. Rudolf Steiner, whose 1924 lectures to farmers opened a new way to integrate scientific understanding with a recognition of spirit in nature" (Biodynamic Association, "Biodynamic Principles and Practices").

25 "Permaculture (permanent agriculture) is the conscious design and maintenance of agriculturally productive systems which have the diversity, stability, and resilience of natural ecosystems. It is the harmonious integration of the landscape with people providing their food, energy, shelter and other material and non-material needs in a sustainable way" (Mollison, Permaculture).

26 Intersectionality is a lens to analyze societal power dynamics based on the idea that singular categories do not adequately address the experiences of people who embody multiple identities, particularly the subordination of black women (Crenshaw, "Demarginalizing the Intersection of Race and Sex").

27 Intercultural competence are the knowledge, skills, and attitudes complementary to one's own values based on belonging to specific cultural groups that result in effective and appropriate communication across cultures (Byram, Nichols, and Stevens, Developing Intercultural Competence in Practice).

28 https://anvfarm.org

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33 Elsie Andreyev. 2017. "Defending Green Space: Community Gardens in Los Angeles."

https://nature.berkeley.edu/food-systems-projects/defending-green-space/

34 Carly Childs. 2016. "Food for Thought." https://nature.berkeley.edu/food-systems-projects/food-for-thought/

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45 Katia Kupelian. 2018. "The Power of Kids." https://nature.berkeley.edu/food-systems-projects/the-power-of-kids/

46 Lauryn Chan. 2016. "Introducing Affordable & Healthy Food to Food Deserts within Oakland." https://nature.berkeley.edu/food-systems-projects/affordable-healthy-food-oakland/

47 Clare Yue Lou. 2016. "Love, Roots, Reconnection." https://nature.berkeley.edu/food-systems-projects/love-roots-reconnection/

48 Arianna Maysonave. 2017. "Real Food Real Stories: Inspirations + Connections." https://nature.berkeley.edu/food-systems-projects/inspirations-connections/

49 Ayano Jeffers-Fabro. 2016. "'Love must be shown through Deeds Not Words.'" https://nature.berkeley.edu/food-systems-projects/love-through-deeds/

50 Olivia Hardley. 2018. "Connection with the Land, my Food System, and my Community." https://nature.berkeley.edu/food-systems-projects/land-food-system-community/

51 Hannah Spinner. 2018. "Elementary School Garden Lesson on Nitrogen Fixers!" https://nature.berkeley.edu/food-systems-projects/nitrogen-fixers/

52 Stephanie Wang. 2017. "Uncovering Identities and Finding Myself." https://nature.berkeley.edu/food-systems-projects/uncovering-identities/

53 Sophia Navarro. 2018. "Exploring the Nutrition Environment: From Research to Policy." https://nature.berkeley.edu/food-systems-projects/nutrition-environment/

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56 Hannah Berris. 2018. "Marketing Back to the Roots." https://nature.berkeley.edu/food-systems-projects/marketing-bttr/

57 https://emalis6.wixsite.com/envirosowhite/about

58 https://serc.berkeley.edu/letter-to-the-environmental-community-from-students-of-color/

59 https://serc.berkeley.edu/an-open-letter-to-the-food-collective-a-reflection-on-race-narrative-and-critical-consciousness/

60 https://nature.berkeley.edu/food-systems-projects/community-partners/bsfc/

61 http://www.foodcollective.org/committees/

62 "Systemic bias, also called institutional bias, is the inherent tendency of a process to support particular outcomes" (Wikipedia, "Systemic Bias").

63 https://food.berkeley.edu/from-the-field/berkeley-undergraduates-host-food-sovereignty-leaders-from-nicaragua/

64 "La Via Campesina is an international movement bringing together millions of peasants, small and medium size farmers, landless people, rural women and youth, indigenous people, migrants and agricultural workers from around the world" (La Via Campesina, "The International Peasant's Voice - Via Campesina").

65 "Decentralized, farmer-to-farmer models of education and transformation remain integral to the movement for food sovereignty" (Holt-Giménez, "The Campesino a Campesino Movement").

66 http://time.com/5460793/dewayne-lee-johnson-monsanto-lawsuit/

67 http://www.dailycal.org/2017/05/08/banning-herbicides/

68 https://sanfrancisco.cbslocal.com/2018/11/14/cancer-case-plaintiff-continues-crusade-against-monsanto/

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70 Marisa Ahmed. 2018. "Video Documentation of Garden-Based Learning." https://nature.berkeley.edu/food-systems-projects/garden-based-learning/

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72 Ayano Jeffers-Fabro. 2016. 'Love must be shown through Deeds Not Words.'" https://nature.berkeley.edu/food-systems-projects/love-through-deeds/"

73 Kyle Ching. 2016. "Changing the framework from consumerism to activism." https://nature.berkeley.edu/food-systems-projects/from-consumerism-to-activism/

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76 Rachel O'Neal. 2017. "Finding Our Way to Food Sovereignty." https://nature.berkeley.edu/food-systems-projects/finding-food-sovereignty/

77 Aliya Benudiz. 2018. "Cultivating People's Park." https://nature.berkeley.edu/food-systems-projects/cultivating-peoples-park/

78 Environmentalism is an inclusive paradigm shift that views humans as part of nature and that emphasizes cultural values such as community and well-being (Abbott and Harris, "Environmentalism as Cultural Paradigm").

79 Guerilla gardening refers to squatting land with gardens (Galt, Gray, and Hurley, "Subversive and Interstitial Food Spaces"). It has some prominent proponents like Ron Finley (Broad, "Competing Visions and the Food Justice Brand").

80 https://americancultures.berkeley.edu/collaborate/american-cultures-engaged-scholarship

81 Sophia Navarro. 2018. "Exploring the Nutrition Environment: Childcare Facilities." https://nature.berkeley.edu/food-systems-projects/the-nutrition-environment/

82 Leslie Hutchins. 2018. "Indigenous Science." https://nature.berkeley.edu/food-systems-projects/indigenous-science/

83 Ella Smith. 2018. "Hungry Students in California." https://nature.berkeley.edu/food-systems-projects/hungry-students-in-california/

84 Industrial agriculture refers to input-intensive crop monocultures and concentrated animal feeding operations (Agarwal et al., "Breaking Away from Industrial Food and Farming Systems").

85 Eric Holt Giménez & Annie Shattuck (2011) Food crises, food regimes and food movements: rumblings of reform or tides of transformation?, The Journal of Peasant Studies, 38:1, 109-144, DOI: 10.1080/03066150.2010.538578

86 Alkon, A.H. & Mares, T.M. Agric Hum Values (2012) 29: 347. https://doi.org/10.1007/s10460-012-9356-z

87 Foodscape is a "metaphorical landscape of foods and their production methods and cultural associations" (Wiktionary, "Foodscape").

88 Daisy Schadlich. 2017. "Reflections from Longfellow Middle School." https://nature.berkeley.edu/food-systems-projects/reflections-longfellow/

89 Abstract conceptualizations refer to one stage out of four in the idealized cycle of experiential learning that is closely relates to planning in daily life (Kaplan et al., "Learning from the Ground Up").

90 https://www.ecoliteracy.org/download/rethinking-school-lunch-oakland-feasibility-study

91 https://food.berkeley.edu/from-the-field/berkeley-undergraduates-host-food-sovereignty-leaders-from-nicaragua/

92 https://food.berkeley.edu/jobs/2018-19-uc-global-food-initiative-fellowship-student-ambassador/

93 http://www.ucop.edu/global-food-initiative/

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95 https://nature.berkeley.edu/advising/minors/food-systems

96 https://americancultures.berkeley.edu/collaborate/american-cultures-engaged-scholarship

97 https://www.mesaprogram.org/

98 https://www.donbugito.com/

99 https://cooperativenewschool.com/

100 https://food.berkeley.edu/foodscape/academic-units/food-and-agriculture-courses/

101 Marvin, Groza, and Pulcheon "Report, Experiment Station Research and History – Gill Tract."

102 https://www.universityofcalifornia.edu/news/morrill-act-honoring-our-land-grant-history

103 "The lack of institutional support for classical biological control, which appears to the uninitiated as just another academic turf war, upon closer inspection, reflected a fundamental conflict about the vision of California's agriculture for the next century" (Jennings, "The Killing Fields").

104 "In the case of the Division of Biological Control, these [administrative] changes have significantly diminished a decades-long tradition of challenging the dominant constituents of modern agriculture production practices based on an intensive use of capital and chemicals" (Jennings)

105 "Given the proliferation of substantial negative consequences surrounding the use of pesticides in agriculture, particularly given the emergence of many of these studies during the past decade, one might well expect to witness the blossoming of any research unit offering a possibility for avoiding such hazards. The fact that the Division at Berkeley offered one of the best demonstrated records for advancing such applications among various academic units should have resulted in its expansion, despite the reduction in funding experienced among various academic units with the loss of state and federal funding sources. Anticipating such an outcome, however, would confuse a compelling social need and an intellectually challenging project with the basis for organizing priorities in the modern university" (Jennings).

106 https://food.berkeley.edu/foodscape/academic-units/food-and-agriculture-courses/

107 https://nst.berkeley.edu/sites/nst.berkeley.edu/files/Kitchen%20Statement%20Final%20digital.pdf

108 Kyle Ching. 2016. "Changing the framework from consumerism to activism." https://nature.berkeley.edu/food-systems-projects/from-consumerism-to-activism/

109 https://nature.berkeley.edu/about

110 https://food.berkeley.edu/foodscape/academic-units/food-and-agriculture-courses/

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- https://publicservice.berkeley.edu/programs/aces
- https://teaching.berkeley.edu/programs/lecturer-teaching-fellows
- https://food.berkeley.edu

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