Berkeley Student Farms:
A Community-Informed Model for Urban Agriculture Education at UC Berkeley

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ABSTRACT

Despite UC Berkeley's historical divestment from agricultural studies a rising student movement, largely organized under the coalition of Berkeley Student Farms (BSF), is reimagining the role of urban land grant institutions today. Applying a constructivist, community-based participatory approach, this thesis engaged administrators, staff, faculty, and students from across UC Berkeley's food system through participatory mapping, formal interviews, and an experimental classroom to synthesize and evaluate their collective visions for what an alternative urban agriculture (UA) education might look like. Analysis of participatory maps informed a site plan for the largest tracts of Berkeley Student Farms to be developed into a student-led and campus-allied Center for Land-Based Learning featuring an agroecology in residence program to support land-based educational programming for students from a diversity of disciplines. Interview results defined a five part pedagogy of agroecology, and outline how UC Berkeley might incorporate (1) interdisciplinary, (2) place-based, (3) intercultural, (4) embodied, and (5) democratic pedagogies into such an UA program. Outcomes of the experimental classroom, affirm that the pedagogy effectively improves proficiency, but reveal challenges with the accessibility of land-based learning and difficulties scaffolding democratism at the classroom level. In thinking about how BSF might grow towards offering an UA program and developing a Center for Land-Based Learning, this thesis concludes with recommendations for maintaining diverse income streams, outreaching community partnerships–particularly with faculty and the Basic Needs Center–and building from the existing infrastructure of the food system minor.

KEYWORDS

Agroecology, Food Sovereignty, Liberation, Pedagogy, Community-based participatory research

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PREFACE

How do we move through worldwide ruination?

The Ohlone people remember their art of survival through a myth that binds them in kinship and reciprocity to the surrounding ecology of Huichin. Their creation story of Rumsien, remembers a time when the world was covered by water apart from the two peaks that make up Tuyshtak (also known as Mt. Diablo). When life formed the water level began to recede but it was not until the more-than-human species found balance between each other that people were created. In the myth, it was the Coyote that, when the tide broke, helped bear and rear the Ohlone people, passing on lessons for survival (V. Medina and L. Trevino, *personal communications*).

Today very few residents of Huichin (also known as Berkeley) would look to the Coyote to learn the arts of survival, nevermind recognize one if not while dodging its carcass on Highway 80. Yet, each night during the quarrels of quarantine when all sense of normalcy seized and many of us feared for our survival, neighborhoods around the Bay joined together in a howling, cry of collective solidarity. And, eventually, the Coyote joined too.

The stories that follow are entangled in our present predicament of worldwide ruination; writing these words I sit sheltered in place looking outside into a world saturated with smoke, forward into bleak uncertainty, and anywhere for signs of stabilizing democracy. But what's to come is not a story about ruination. Rather it is rooted in eight undeveloped patches of land scattered across Huichin, where community members and students at the University of California, Berkeley are remembering and reimagining liberation through stewardship. Weaving together stories of the land and their stewards, I offer an accumulation of lessons and a vision for a way out of ruins, considering how might our stewardship practices teach today's arts of survival? These lessons, like the farmland they concern, are entangled, intimate, and still growing. And as a story*teller*, I too am influenced by their teachings and strive for my words to embody the pedagogy of the land, of agroecology, and of liberation that I discuss. As such, the stories themselves are a *method*. Following the liminal lands and alternative ways of knowing, I have tried to not to fall into the

standardizing epistemology of academia. Rather, I weave in my own stories, as any storyteller would, I commune with the stories of others, and I share histories as well as futures.

INTRODUCTION

The University of California, Berkeley sits on the unceded homelands of the Chochenyo speaking Lisan Ohlone on the village of Huichin. The Ohlone peoples' tribes, foodways, and languages are as diverse as the ecosystems they once stewarded (Sogorea te' 2021). Before the Spanish arrived in Berkeley in the late 1700's, the Ohlone organized their communities around sacred shellmounds that served as burial grounds, ceremonial sites, and otherwise sustained their ancestral connections (Sogorea te' 2021, Gould and Young 2020, City of Berkeley 2000). However, during the second wave of contact, these shellmonds were ground into calcium-rich fertilizer and used to erect colonial institutions across California by way of agricultural production (Nelson 1909, Magliari 2012, Anderson 2016, Gould and Young 2020).

Unlike the Midwest or New England, California never saw a phase of family farming (Reinhart and Barlett 1989, Guthman 2008). Rather farms in California have always operated within a capitalist market (Mann and Dickinson 1978). The state's promise as a fertile provider to US hegemony, was celebrated with tremendous financial support and institutional establishment by the federal government. Among these investments was the creation of the land grant university and college of agriculture system, passed by the Morrill Act, which mandated practical and professional development for the industrial working class and created agriculture as we know it today (Morrill Act 1862, Parr 2007). As the premier land grant institution, the University of California, Berkeley *pioneered*[1] this new era in research and development of agriculture and its entangled livelihoods.

[1] This work was explicitly that of *pioneering*, as the construction of UC Berkeley occupies the Ohlone village of Huichin and has since contributed to and benefited from the colonization and genocide of Indigenous peoples not only by way of physical displacement and land altercation but also through academic erasure and forced assimilation.

With the mission of forwarding agriculture innovation and research, UC Berkeley's history reveals a peculiar evolution; from a settler agriculture outpost to an institution without any lasting agricultural Bachelor's degree. Despite earning its initial reputation as a leading contributor to sustainable agriculture through its research at the Experimental Station (now known as the Gill Tract) on biological control, by the late 20th century the University's research agenda became defined by its corporate relationships—including a $25 million partnership with the Novartis Agricultural Discovery Institute (known today as Syngenta) (Food and Water Watch 2012, McKnight 2016). This shift in research was mirrored in the classroom, such that by 1992 the University ceased to offer a specialized agriculture major (UC Berkeley 2004). Subsequent urbanization of the surrounding city of Berkeley and recent booms in non-agricultural economic sectors, namely technology, have exponentiated the loss of the original agricultural focus of UC Berkeley as a land grant institution (Darling 2014, McKnight 2016). These digressions and divestments obscure the founding promises of the Land Grant system, but with the remaining arable sites under constant threat of development, predominantly for market-rate student housing, this new wave of neoliberal development reveals a steadfast co-creation of new frontiers for capitalist accumulation.

Yet there has persisted a kind of double movement in Berkeley (Polanyi 2001). From Indigenous resistance against the desecration of Ohlone shellmounds (City of Berkeley 2000, Gould and Young 2020, Sogorea Te' 2021) to the planting of the first garden at People's Park (Axelrod 1984), and the Occupation of the Gill Tract (Darling 2014, McKnight 2016), Berkeley has been the site of social movements to liberate land. UC Berkeley in particular, as one of the largest landowners in the San Francisco Bay Area, sits at the center of many of these movements (McClintock 2011, Zuk and Chapel 2015).

While UC Berkeley has been divesting in sustainable agriculture research and education, today Urban Agriculture (UA) is gaining traction as a one-stop solution to the web of issues facing urban populations. Within the past decade, UA has garnered the attention of activists, academics, and community members alike citing a breath of benefits spanning climate change mitigation, public

health, improved nutrition and food security, mental health, as well as community economic development and empowerment (McClintock and Cooper 2010, Golden 2016, Siegner et al. 2018).

On the fringes of UC Berkeley, the urban agriculture movement is taking root. Students are improving and expanding access to agricultural spaces centering interdisciplinarity to build coalitions across campus, enacting resistance to industrialization and corporatization, and refusing the colonial traditions of the Land Grant system (Bernstein 2010, Berkeley Student Farms 2020). Largely organized under the umbrella coalition of Berkeley Student Farms (BSF), which has gleaned inspiration from agroecology and land liberation work across the Global South, the coalition forwards values of food sovereignty, wellness, land decolonization, cross-campus partnerships, and intercultural and place-based learning opportunities (Berkeley Student Farms 2020). While these intentions are largely held by students, Berkeley Student Farms continues to build partnerships across the University and City aiming to reimagine the potential for the Land Grant system to support the promises of urban agriculture. Such work of BSF calls into question what possibilities might emerge for the movement towards land-based education from within one of the premiere settler colonial institutions on Turtle Island?

It is here, in the toils between capitalist development and the new frontiers of academia, that this thesis aims to develop a community-informed model for urban agriculture education. Acknowledging the fast turn over of Berkeley student farmers that make up the movement, this thesis intends to serve simultaneously as a rebel archive of the University's history, a hymn of hope, and a blueprint for resistance. By asking “what could an alternative urban agriculture education look like?” both in practice and in promise, this thesis draws from historical models of decolonial food sovereignty movements to engage the local community through interviews, participatory mapping, and an experimental classroom. From their stories, I seek to understand (1) what are the community’s priorities for the content, structure, and form of an UA education, (2) how might BSF land use develop to reflect these priorities, and (3) how might BSF strategically ally with the University to meet their needs? Collectively, the community’s responses outline an alternative model for land use and land-based education that contests the University’s history, founding mission, and current perils from the wake of ecological, economic, and social ruination.

THE REBEL ARCHIVE

A. The History of Urban Agriculture in the Bay Area

While the Bay Area stands out as a hub of urban agriculture within the Global North its history as a site for food activism is but seldom told and frequently misconstrued. Notably, it is near impossible to untangle the histories of land in the Bay Area from that of UC Berkeley. After all, the University facilitated much of the town and gown developments that have since constructed the both physical and ideological landscape of the Bay (Food and Water Watch 2012, Darling 2014, Troschitz 2018). In any case, the ecology reveals a rebel archive that reminds us not only of the ongoing history of colonial accumulation but of the potential for solidarity, both between oppressed peoples as well as across species.

Before contact, shellmonds were a critical part of the ecology in the Bay (City of Berkeley 2000, Gould and Young 2020, Sogorea te' 2021). They facilitated a hub of the life cycle, where life and death cycled out of each other–crustancions left behind their shells to slowly feed the soil, humans gathered to bury their loved ones and reconnect with ancestors, and villages lit fires to communicate across the Bay (Sogorea te' 2021). In this way, the shellmonds embodied a sacred bridge between non-humans and humans, a symbol of multi-species solidarity.

Such centrality to Ohlone lifeways, in turn, have made the shellmonds targets for colonial accumulation (Gould and Young 2020). Ground into calcium rich fertilizer and applied across California's agricultural fields, the desecration of shellmonds laid the foundation of capitalism in California (Nelson 1909), embedding the structure of settler colonialism within the state's ecology. Soils previously sustained by the slow decomposition of shellmonds, were force-fed fertilizer, violently disrupting ecological rhythms of reciprocity. Such a loss of such ecological agency and subsequent creation of new industrial frontiers, for chemicals, additives, and machinery, parrell the experience of Ohlone peoples themselves. Native Californians endure state violence and genocide across inumerable frontiers; including genocide, forced assimilation, displacement, and

enslavement on Spanish *encomienda*-style mission agriculture estates (Magiari 2012). Notably, these frontieres continue to be salvaged and reinforced, which can be seen in the present movement to save the West Berkeley Shellmound from further development. Understanding these mechanisms of settler colonialism reveal the ways in which the current system's, of western hegemony and of agro-industrialism, rely on Indigenous bodies and lifeways as sites of extraction and disposability. And as such they also reveal the significance of land-based liberation. If social and ecological health follow each other, heal and toe, then how might decolonization and Indigenous sovereignty position itself to remedy histories of land-based trauma?

Today, Indigenous movements to rematriate the land and restore native foodways offer emergent ways out of centuries of sustained ruination (Tuck and Yang 2012, Gould and Young 2020, Rawal 2020, Sogorea te' 2021). By centering food sovereignty,

"the belief that all people are able to determine their own food producing systems and policies that provide every one of us with good quality, adequate, affordable, healthy, and culturally appropriate food (Nyeleni 2007)"

these movements acknowledge diet's keystone role in nourishing cultural memory and community empowerment. Present movements including work by the Sogorea Te' Land Trust, an urban women-led land trust in the Bay Area focused on rematriation, as well as Ohlone Cafe, which seeks to improve access to and knowledge of Ohlone foodways, have demonstrated how food activism in the Bay Area can decolonize and offer strategies of resistance (Sogorea te' 2020, Cafe Ohlone 2021). Notably, by turning to land stewardship, by way of food production, these movements also highlight the connectivity between cultural and ecology health. In being bound to the health of the land, Indigenous efforts to rematriate foodways function much like the shellmonds to create monuments of abundance that support the fertility of the land and in turn offer opportunities for ancestral reconnection and community.

But if we think of land stewardship, like shellmonds, as offering an emergent strategy of repair (Tsing 2015) it is important to remember their role in connecting communities across the Bay. In

this way, it becomes essential to consider land stewardship as a mode of solidarity to connect all peoples whose land-based cultures have been impacted by colonization. In the Bay, it would be ingenuine to discuss the food sovereignty movement, without mentioning the role of Black leadership and specifically the Black Panther Party for Self-Defense (BPP) (Patel 2011). Founded in the ’60s by Huey Newton and Bobby Seale, the Oakland-based Black power organization worked to build community safety net programs to challenge institutionalized violence and impoverishment of people of color as well as create alternative systems and spaces to serve their community’s basic needs (Patel 2011). Arguably the Black Panther’s most radical strategy was giving school children a free breakfast. What started in the basement of an Oakland Church grew into school gardens and an edible education that empowered communities with self-sufficiency and autonomy over their basic needs (Patel 2011). These projects operated within food apartheids where redlining projects by refusing communities of color finance credit had effectively blocked community development programs, including the construction of grocery stores, which left many without access to healthy food. Recognizing food sovereignty as a political mode of resistance, the BPP employed similar strategies of land-based liberation as local Indigenous movements. Notably, while the Black Panther’s are no longer a formally organized group, their movement lives on in the work of organizations like the People’s Breakfast Program (PBO), which supplies houseless residents with free food along with other basic needs, as well as Black Earth Farms, a movement of the Black diaspora providing culturally relevant food and medicine on a sliding scale to the Bay Area’s most vulnerable. And in the Panther’s spirit of solidarity, there continues to be an evolving and deepening relationship between Black farmers in the Bay and their Indigenous neighbors, whose collaborative work is harmonizing resistance and refusal.

However, this is not to say urban agriculture projects are alone a golden-ticket to liberation. In certain instances the development of UA has contributed to modern systems of colonial displacement (Maantay and Maroko 2018). Urban agriculture has the potential to contribute to gentrification and displace lower-income communities of color by raising local property values (Black and Richards 2020). But moreover, the aesthetics of urban agriculture and common dependence on volunteer labor makes UA more accessible to economically-privileged, white populations (Bitten 2018, Siegner et al. 2018). These latent risks, call into question how land-based

liberation can support revolution rather than reform. And perhaps the most glaring debate therein is the question regarding the extent to which UA relieves fundamental stresses of systemic poverty by actually addressing food security (Siegner et al. 2018). In a comprehensive review conducted by UC Berkeley cooperative extension agents urban agriculture projects lacking the overhead support of public policy and city planning, were found to be largely inaccessible to the Bay Area's most vulnerable (Siegner et al. 2018), citing barriers such physical inaccessibility, conflicts between community hours and the work schedule, and cultural relevance of food grown. This study speaks to the history of UA in the Bay at large, namely suggesting that the most effective organizing of UA to reduce poverty happens when it is embedded within and grown by the communities who need it and are better positioned to organically work around potential barriers (McClintock and Cooper 2010, Siegner et al. 2018). Yet it also suggests a significant opportunity for co-optation that obscures the potential for UA to facilitate liberation, by healing land-based traumas and offering autonomy over basic needs, into an apolitical argument for green space and beautification. Such risks have been imprinted into the archive of food activism in the Bay, such that while it was the work of Black Panthers that influenced state-wide policy ensuring every child in California is entitled to a free school lunch (Patel 2011), today the credit for such an edible education is synonymous with Alice Waters. Without suggesting a hierarchy of food activism work, there is potency to the discrepancy of the stories society chooses to remember. The erasure of BIPOC narratives and apoliticising of an edible education reinforces the very mechanisms—of co-optation, of displacement, and of exploitation of BIPOC labor—that imprison the food system. Thus any attempt to expand or improve the accessibility of UA, must reconcile its abolitionary epistemologies as a tool of land-based liberation within the multi-directional legacies of settler colonialism.

B. UC Berkeley Co.

When I first visited Cal, on prospective student day in 2017, I was sold on the school by a faculty chair and her promise of an academic environment that offered students land-based experience in tackling the many crises facing our food system. Then I spent my first year stuffed into giant,

window-less lectures wondering about that *land-based experience*, and what happened to it? And by my second year, when I finally found it, I was standing on the fringes of the institution, as part of a guerilla gardening movement that was faced off with an administration looking to develop the only arable lands left in Berkeley. But the real irony was that the school's reputation as a hub of radical activism had brought together the very people who taught me about resistance. The group of guerilla gardeners, though non-hierarchical in nature, included founding members of Black Earth Farms, Herbicide Free Campus, and budding farmers and food activists, who bore the sweat of Alice Waters' "Edible Education." In two years they doubled the number of gardens across campus, from four to eight, launched a successful campaign to ban herbicides from campus (which has since been adopted nationally), and created underground networks of food sharing for houseless students (Berkeley Student Farms 2020). While their *praxis* was steeped in tangibility, their approach was grounded in an understanding of the internal mechanisms of the injustices they opposed. And with it, they took the 90's logic that *food is a weapon* and turned it on its head: agroecology became their political revolution.

The work of the guerilla gardeners called attention to a robust culture of precarity within the University. Students, who were going into debt to the University, were also having to strategize for their collective survival within it. On one hand these student-led movements, of guerilla gardeners and presently of Berkeley Student Farms, face similar structural injustices—of colonial legacies and of neoliberal co-optation and accumulation—as those that precipitated broader food movements around the Bay Area. But on the other hand, the movement's unique context of being embedded within one of the premier colonial institutions on Turtle Island calls into question what possibilities for liberation might exist within academia? In order to understand how urban agriculture as pedagogy for land-based liberation can move beyond the fringes of any University, it is important to first remember what histories have placed it there, and how those structures currently being supported.

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When UC Berkeley was founded in 1868 by the Morrill Act, its emphasis was within the College of Agriculture (UC Berkeley 2004). As a land grant institution, the University aimed to train the

working class and evolve industry, which Marx reminds us was a mechanism to create a class of wage workers and expand frontiers of accumulation (Morrill 1862, Marx 1967, Parr et al. 2007). The University of California was central to engineering the productivity and reliability of agriculture inputs, building state-wide infrastructure, and creating a model for industrial farming (Food and Water Watch 2012). With the help of a cooperative extension program it placed agents of academia across the state and used satellite spaces, including what is now UC Davis and UC Riverside, to implement R&D across rural communities (Feller 1987, Kerr 1988). As these projects were largely funded by the state and federal government for over a century, the role of the University functioned as a handmaiden to national hegemony. However such dynamics were dramatically impacted by the onset of neoliberalism. In line with the free-market philosophy of neoliberalism, public universities, including UC Berkeley, experienced major federal budget cuts in the 1980's and at the around the same time, with the passage of the Bayh-Dole Act in 1980, were encouraged to relieve finance stress by building private partnerships. And with this shift in funding, the future role of the University went up for sale (Food and Water Watch 2012, Troschitz 2018).

By the time of the Bayh-Dole Act, in the mid-20th century, when the agriculture we know today began to take root, UC Berkeley had earned itself a reputation as a lighthouse among the movement to reform industrial agriculture (Jennings 1997, Keesling 2014, McKnight 2016). Research from its experimental station (now known as the Gill Tract), for example, had developed agrochemical alternatives for farmers across the state looking to adapt their practices in light of a nationwide campaign exposing the hazards of synthetic additives (Kogan 1998). Notably, this work operated under the guise of sustainability and while at best it reduced the toxicity of agricultural inputs, at worst it further armed agroindustry with an illusion of reformability (Jennings 1997). In truth, many of non-chemical biological controls co-oped Indigenous land stewardship practices and thus only expanded opportunities for accumulation along California's agricultural frontier that had been first created by the desecration of shellmounds (Jennings 1997). Such a reformist approach, however, was only accelerated following the passage of the Bayh-Dole Act when the University began accepting $237 million annually from private donors (Food and Water Watch 2012). Within the College of Agriculture (which by then had expanded into the College of Agricultural Sciences

and School of Forestry and Conservation), the majority of partnerships were made with biotech companies, the most formative of which totalling $25 million with agrochemical giant Novartis (later renamed Syngenta) (UC Berkeley 2004, Darling 2014, McKnight 2016). Under these new contracts, the University's role transitioned into the R&D frontier for plant genomics and biotechnology (Food and Water Watch 2012).

The deal gave Novartis first right or refusal over UC Berkeley research findings, effectively monopolizing its intellectual property rights (Food and Water Watch 2012). Shifting research focuses towards biotech were mirrored in the classroom, as what once was the College of Agricultural Sciences and School of Forestry and Conservation was continuously rearranged such that by the late 90's the only agricultural programming remaining was embedded in the "agricultural resource economics" major, which has since become further generalized to environmental economics (UC Berkeley 2004).

Notably, the 1998 deal was signed by then dean, Gordan Rausser who recently a purchased the renaming rights of the now, *Rausser College of Natural Resources*[2], after a record-breaking donation of $50 million (Keesling 2014, Darling 2016). Rausser, who served under Nixon as his Chief Economic Advisor helping to launch the war on drugs, totes a pedigree of allegiance to agro-industry that maintains a stronghold over education, research, and development focuses within UC Berkeley (Gupta et al. 2020). Rausser, however, represents a symptom of a much larger institutional predicament.

Among academics, the hollowing of UC Berkeley's educational funds is lamented as a shortcoming of liberalist deregulation and privatization of the economy. The metaphor used in their lectures is that public universities are now run like for-profit businesses in which the students are treated as consumers (Troschitz 2018). But to students, neoliberal theory is as real as paying $14,000 if you live in-state and $22,000 if you live out-of state, knowing that a generation before tuition for UC undergraduate residents was $630 (UC Berkeley Financial Aid Office). While

[2] This thesis rejects the renaming of the College of Natural Resources in light of both his political and economic privillaging of corporations over environmental health, as well as student testimonies condemning Rausser for inappropriate and discriminatory behavior.

tuition hikes do not directly contribute to the loss of agricultural education, they reveal the University's commitment to *evolve industry with the times* (UC Berkeley 2004). While public education once served state and federal interest, namely support for California's agricultural economy, the back-door privatization of public Universities has influenced their new modes of accumulation, be it by fulfilling the needs of biotech contracts, treating students as consumers, or invoking their role as a landlord.

Critical to the discussion of these new frontiers of accumulation are the latent implications for student's basic needs. The increasing costs associated with modern systems of higher education have manifested in serious crises of both housing and food insecurity; such that 41% of undergraduates experience food insecurity and 4% experience homelessness, a number that climbs exponentially among minority demographics (Global Food Initiative 2017). Where the two undeniable issues come to head is on the Gill Tract, Oxford Tract, and Student Organic Garden Association (SOGA) which collectively represent the remaining arable land accessible to UC Berkeley and all face threats of developing market-rate student housing (McKnight 2016, Oxford Tract Planning Committee 2018). In this development debate the University repeatedly positions the two crises in competition with each other; undermining the strength of both movements in the process (Gupta 2019).

The crisis of homelessness and the issue of food security share entangled stories of disposability. The precarity of survival in Berkeley is not unique to the age of neoliberalism, nor is the assumption that issues of insecurity can only be resolved through supply. At its core, neoliberalism operates within logics of scarcity; from here expansion can always be legitimized (Guthman 2008). But when has building more market-rate student housing ever fixed financial dispossession? The over promises of capacity made by the University to its increasing student body are not miscalculations. As the largest landowner in the Bay Area, the University of California itself must acknowledge its responsibility in manufacturing staggering market-rate rent prices and turning away from food supportive education (Zuk and Chapel 2015). But in doing so, we must be weary of the potential for the University to co-op these crises into opportunities for reform—in which reform only strengthens the facade of the machine itself (Gilmore 2009). Hence, an effort to build

another market-rate dorm on is not a step towards supportive housing but a new frontier of accumulation desecrating an otherwise liberated space. These crises, as with all frontiers of accumulation, require solutions that step outside of the framework of scarcity and expansion, that decouple the boxed logics of academia, and prioritize abolitionary means of liberation. Only here can we conceive how overlapping crises of dispossession might also share overlapping solutions––in other words, that the remaining blocks of urban farmland in Berkeley might grow both housing *and* food security.

The development of urban agricultural education at UC Berkeley, thus, must not seek to return to its roots as a land-grant insulation, but to entirely reimagine what land-based education can offer. If the broader movements across the Bay Area teach us that land is a precursor for liberation than how might Berkeley Student Farms use their land to reconcile with and resist the multidirectional legacies of settler colonialism, described above?

C. The Urban Problem

While UC Berkeley continues to salvage and accumulate profit from its position as a landlord to the Bay Area, it is met with an ancestral movement for land liberation. The ongoing struggle to develop and defend public land embodies a sort of double-movement. The double movement, as described by Polyani, offers a dialectical framework for which to understand the push and pull between community needs and decisions of political economy (Polanyi 1944). In Berkeley, it threads ongoing rematriation work of Ohlone Indigenous movements, efforts to preserve public green-space imbued with histories of counter-culture as fronted by the movement to *Save People's Park*, and resistance to developing arable farmland represented in the Occupy the Farm movement (City of Berkeley 2000, Gould and Young 2020, Sogorea Te' 2021). One one hand, land development has become a premiere mode for the University to financially establish itself during the neoliberalization of public education. While on the other, land access has become conditioned into the fight to protect basic needs through food and medicine production, housing encampments, and the protection of Indigenous lifeways. In any case, the precarious tension has made land stewardship in Berkeley inherently political.

The work of Berkeley Student Farms, as a movement towards food sovereignty and land liberation, exists in a lineage that, amongst its UC Berkeley relatives, traces back to the Gill Tract. In 2012, for nearly a month, hundreds of Bay Area residents gathered on the Gill Tract and planted 15,000 seeds in resistance to encroaching development that would sell the 10 acres of arable farmland to Whole Foods for the construction of a supermarket (Darling 2014, McKnight 2016). The Occupy the Farm movement embodied the potential for liminal land within institutions of settler colonialism to be repurposed for collective healing, as it strove to create a community farm that would help facilitate food sovereignty for local residents and deliver the multi-disciplinary benefits of UA. During the occupation, alliances with sustainable agriculture researchers, community members, and students materialized to navigate water-shut-offs, police raids, and administrative push-back. The movement successfully protected roughly half of the acreage from development, including a community farm and rematriated land currently under the stewardship of the Sogorea Te' Land Trust (Gill Tract Community Farm 2021). However, its legacy created a contentious relationship between the University and its *tenant* farmers. With development threats still looming over many of Berkeley Student Farms–including the remaining acres of the Gill Tract, the Oxford Tract, and SOGA–the movement to reclaim land-based education remains political, challenging the founding *mission* and ruinous legacies of the University.

The double movement of land liberation, embodied by Berkeley Student Farms, is entangled with the dialectical history of urbanization, both physical and ideological, that has developed to delegitimize agriculture in the Bay Area. Decades before occupying farmland was a thing of political praxis, when UC Berkeley was looking to expand its agricultural studies, it did so by establishing satellite departments, including *the* University Farm (now known as UC Davis), with explicit mention that,

> "the central concern of the college will be with the renewable resources of all *non-urban* lands of the state forests, grasslands, farms, brushfields, and barren lands," (UC Berkeley 2004).

These satellites enabled geographically specialized research, and close communication with rural farmers, which in turn created a pipeline for development (Feller 1987). They drew from logics of rural *development*, mirrored in nationwide politics of extraction, that commodified rural spaces as building blocks for cities (Mann and Dickinson 1978, Dunlap and Jakobsen 2015; Edelman 2019). Just as the Midwestern Heartland fed cities across the country, the Central Valley became California's own microcosm of industrial agriculture, allowing for population growth and industrial wealth to precipitate in urban areas (Reinhart and Barlett 1989; Guthman 2008). In this way, the urban-rural divide can be considered as geographic-scales of capitalism, whereby cities represent zones of accumulation and rural spaces exist as relatively impoverished sites for extraction (Davis et al. 2019). Thus UC Berkeley's use of satellite farms, extension agents, and other technologies of extraction conditioned not only a material understanding of the urban-rural divide across California but the very epistemology that imprisons rural communities to both the service and savorism of urban spaces. It is this same construction that obscures the need for urban agriculture.There is no *need* to grow corn in downtown Berkeley if there already exists an industrial agriculture complex with a pipeline to the Central Valley.

It is important to consider that the neglected need for agriculture in urban areas is also obscured by the argument that agriculture is logistically incompatible with the urban environment (Oxford Tract Planning Committee 2018). So often that in the past four years I have heard it used by three different CNR Deans to disarm movements defending Berkeley Student Farms from development. However, even when agriculture is nearly swallowed by concrete, every spring I watch as the monarchs find and pollinate flowering mugwort. Supporting my own observations, the blooming field of urban agriculture has extensively demonstrated that agricultural processes largely function the same across the urban-rural divide (Altieri et al. 2017). While some notable exceptions include the potential for greater soil contamination and compaction (Duiker 2004), these challenges are routinely observed in rural landscapes as well (Batey 2009). Although the mechanisms of ecological degradation may vary between urban and rural landscapes, the capitalist logics of extraction remain the same. So if agroecological principles can be translated from rural communities in the Global South (where they were derived) to urban centers in the Global North, the question remains: *what* is the significance of interrupting the urban-rural divide by embedding

agriculture into urban, capitalist systems? And, moreover, what then is unique about an *urban* agriculture education?

In order to engage these questions, it can be helpful to examine what patterns of racial capitalism drive the production of urbanized space and embody the essence of the urban-rural divide. Perhaps most glaring is the geography within a slave plantation. On the plantation the oppressive hierarchies between master and slave conditioned similar logics of extraction and dispossession as what we might observe across urban-rural landscapes (Davis et al. 2018). While these *plantation logics* affirm the exploitative nature of capitalism they also call in stories of resistance. Seldom told are the stories of slaves planting their own gardens to grow their own food on the liminal and discarded soils around the plantation. These slave gardens can be considered sites of resistance as they empowered agency within victims of extraction to tend their own basic needs (Davis et al. 2018). These were their arts of survival. And similar to the ways in which slave gardens grew their own survival, pending revolution of course, urban agriculture represents an opportunity to resist the plantation logics of urbanization on a much broader scale (Davis et al. 2018). If we consider urban agriculture as akin to slave gardens, an oasis of liberation within a food aparteid, its political praxis becomes undeniable. *Urban* agriculture is often distinguished from rural equivalents in discussion of scale and diversity. It's assumed that UA concerns smaller scales of production servicing more diverse communities. However, I would argue that the most distinguishing feature of *urban* agriculture is its inherent politicism. A social justice lens might be applied to an agricultural education at a rural institution, but there is an inherent politicization in choosing to steward urban soils and block new frontiers of accumulation. This primes urban agricultural education to offer just as much of a political experience as practical instruction.

While the monarch reminds us that farming is not impossible in urban areas, the history and development of cities suggest urban agriculture as a necessary step to undoing structural injustices. In today's ruination with climate change already making swaths of the city inhabitable and the salvage economy displacing locals with skyrocketing rent, the need for a resistant double movement is unquestionable. However, the way out is not simply a way forward. Thinking of urban agriculture in a legacy with slave gardens, occupation movements, and Indigenous

movements towards rematriation, forces us to reconcile with UC Berkeley's histories of dispossession in order to scaffold an alternative approach to healing that reckons with past injustices of the land. The creation of an urban agriculture education program, thus, is not a mechanism to reaffirm UC Berkeley's position as the premier land-grant university, but to grapple with and reimagine the liberatory potential for land-based education.

D. The Rise of Berkeley Student Farms

While CNR and the UC Berkeley's administration have divested from sustainable agriculture, there have been a number of liminal efforts championing the growth of urban agriculture. Inside of the institution, the establishment of the Berkeley Food Institute (BFI) in 2013 stands out for its interdisciplinary work, connecting research, policy, law, city planning, and student efforts to support local efforts to the food movement (Berkeley Food Institute 2021). Likewise, the launching the Global Food Initiative has brought together ten UC system schools and various other institutions to forge solutions to the world's most pressing food issues—through which UC Berkeley has received recognition for its work supporting food justice (Napolitano 2014).

However, much of this work builds upon the student-led efforts to self-educate and uplift sustainable agriculture. In 1971, a cohort of conservation and resource students adopted the counter-culture dogma of going *back to the land,* taking over a 1.4 acre plot a block away from central campus and establishing the Student Organic Garden Association[3] (SOGA) (Berkeley Student Farms 2021). Fifty years later, SOGA remains an active hub for place-based education, community building, and organic farming.

Notably, like the College of Natural Resources at large, SOGA has historically engaged a white and economically privileged majority, echoing aforementioned concerns of eco-gentrification associated with the urban agriculture movement (Bitten 2018).

[3] First named the Conservation and Resources Studies Garden intended to support experiential learning opportunities for CRS students (Berkeley Student Farms 2021).

In response to historical issues of whiteness and racial exclusivity in SOGA, in 2017 BIPOC students collectivized to establish a network of *guerilla* gardens across campus (Berkeley Student Farms 2021). These gardens, while supported in part by University grants and faculty, largely resisted institutionalization. Their acknowledgement of the histories of land-based traumas perpetuated by the University and their purposeful working on the fringes made land stewardship accessible to a more diverse cohort of students—many of whom were greatly supported by the food security the gardens provided. Such spaces include: the Fannie Lou Hamer Garden, established in 2018 in conjunction with the Black Resource Center, the Multicultural Center Garden, established in 2017, the Barker Gardens, established in 2017 in partnership with the Indigenous and Native Student Coalition, and following in their legacy is the soon to be La Loma Rooftop garden stewarded by the Hispanic Engineers and Scientists. These spaces created a new standard for engaging the political significance of land stewardship and offered new visions for the possibilities to use agroecology as a tool of resistance within colonial institutions, by creating food forests, building partnerships with basic needs centers, and co-learning agroecology in affinity groups across campus. However, given both the fast turnover of graduation cycles and their *off-grid* positionality—lacking documentation, long-term strategic planning, and attention to rearing younger generations of incoming students—these spaces struggled to maintain their land-based movements. My own position as one of the few Berkeley Student Farmers who was also a Guerilla Gardener, consistently reminds me of just how impactful graduation cycles are. How do you build a movement concerned with something as ancestral as land with a community that is in constant flux? Thus the legacy of the Guerrilla Gardening movement evolved the conversation of student-led UA into a place where it has begun to strategize within the structures of the University to scaffold long-term resilience.

This need for long-term resilience that expands, improves, and protects access to agricultural spaces, manifested in the development of Berkeley Student Farms, a coalition of the eight campus farms and gardens scattered across central campus.

Farm/ Garden	**Year Founded**	**Current Management Affiliation**

Oxford Tract (OT)	1922	College of Natural Resources (CNR)
Student Organic Garden Association (SOGA)	1971	Student Organic Garden Association RSO
Clark Kerr Garden (CKC)	2016	Housing and Dining Sustainability Advocates (HADSA), Cal Dining
Browns Cafe Herbal Garden	2017	Housing and Dining Sustainability Advocates (HADSA), Cal Dining
Fannie Lou Hamer Garden	2018	Black Resource Center (BRC)
Barker Garden	2018	Indigenous and Native Student Coalition (INC)
Multicultural Community Center Healing and Learning Garden (MCC)	2018	Multicultural Community Center
La Loma Rooftop Garden	2021	Hispanic Engineers and Scientists (HES)

Figure 1. Table of Berkeley Student Farms. Table lists each farm in order of year established, and includes the organization responsible for management.

Berkeley Student Farms (BSF) self-identifies as:

> *"a transparent and democratic student-led and community-based organization that prioritizes movement building, meaningful inclusion, and equitable distribution of food, land, and knowledge through collective action and resistance. The coalition utilizes ecological land management to create a network of sites dedicated to anti-oppression and student basic needs, in order to produce thriving safe spaces for experiential education and food justice in the Bay Area."*
> (Berkeley Student Farms 2020)

In recognition of the University's occupation of unceded Ohlone territory, the constant threat of development, as well as the staggering 41% of students experiencing food insecurity, BSF has grown to prioritize (1) food sovereignty initiatives, (2) land decolonization, (3) cross campus partnerships, (4) offering intercultural and place-based learning opportunities, and (5) healing and wellness (Global Health Initiative 2017, Berkeley Student Farms 2020). BSF in many ways represented a pipedream of the few of us whose memory traversed multiple generations of student farming. In a series of late night conversations, huddled around the abalone offering in SOGA, we

began to name our needs and visions for the future. Officially formed in the Summer of 2020, during the COVID-19 pandemic, the group laboriously laid the coalition's foundation: drafting community agreements, taking stock of resources, searching down funds, and co-learning agroecology over zoom, email, and eventually, safely on the land. But what started as a pipedream quickly evolved into a robust coalition of over 150 volunteers. Playing its role in tackling food insecurity, BSF donates around 4,000 pounds of produce semesterly to the UC Berkeley Food Pantry. But beyond food production, it welcomes space for healing, community, and education during its 30+ open hours per week, monthly workshops with community partners, as well as an accredited semester-long course (Berkeley Student Farms 2020). Their student-led initiatives have spotlighted a need as well as a growing movement to reimagine a robust agricultural educational program at UC Berkeley.

With the intention of expanding beyond a student group, Berkeley Student Farms has built partnerships across the University and City. These partnerships include networks of food sharing with the UC Berkeley Food Pantry, Alameda County Food Bank, Ohlone Cafe, and Brothers of International Faith. They also span academic partnerships with the Berkeley Unified School District, ESPM cooperative extension specialists, the College of Natural Resources, the College of Environmental Design, various research groups, and the food systems minor. And they have formed networks of solitary groups with organizations across the Bay Area including Sogorea Te' Land Trust, the Gill Tract, the DEEP Grocery Cooperative, the Berkeley Food Institute, Black Earth Farms, Acta non Verba, and Spiral Gardens, among others.

The work of Berkeley Student Farms finds itself in a lineage of both former students as well as food activists across the Bay Area. While the organization maintains the understanding that food justice must transpire from communities who themselves are system impacted, BSF is simultaneously forced to confront its association with UC Berkeley. The balancing of student autonomy and long term institutionalization calls in the issue of the double movement: if the abolitionary roots of urban agriculture historically are most successful when grown from local communities most vulnerable at what point, if ever, can it be met with institutional support? By gathering consensus from the community, this thesis aims to offer a model for what the future of

urban agricultural education could look like at UC Berkeley by honoring its nature as a student-led movement and recognizing strategic opportunities for support and transformation within the University.

FRAMING "A WAY OUT"

A. Radical Constructivism

In my four years at UC Berkeley, I was seldom asked in class to create or even envision a solution to the issues of worldwide ruination I studied. By contrast, my work building guerrilla gardens was a tangible taste of what it meant to create abundance within liminal spaces. The sum of the practical knowledge, of growing food and community organizing, was a critical understanding for the possibility of life in ruins. The tactical dimension and direct exposure to generating solutions to the issues I had been trained in the classroom only to lament, stands out as the most impactful part of my educational experience at UC Berkeley.

My own experience is affirmed by the teachings of scholar and abolitionary Ruthie Gilmore who asserted that education can only empower people if it offers the knowledge and opportunity to imagine what liberation looks like (Gilmore 2009). To Gilmore, education requires radical constructivism, that is, a focus on collaboratively designing and developing solutions to the issues we become conscious of (Gilmore 2009). Gilmore's ideas challenge academia's siloed paradigm of lamenting and deconstructing social issues. Her positivist approach legitimizes the visionary praxis of grassroots movements within academia, and blurs boundaries of subject and researcher by inviting academics, activists, and community members into the process of knowledge creation. Notably, the language of radical constructivism first appeared in agrarian studies with Monica White's chronology of southern Black cooperatives in her work *Freedom Farmers* (2016). White used radical constructivism to champion Black agrarian resistance that was specifically creating new realities and opportunities. White does so by elevating James Scott and Benedict Kervliet's notion of "everyday strategies of resistance," which had previously empowered small and often overshadowed modes of resistance, to claiming that

> *"even the study of everyday forms of resistance misses activities that are not disruptive but rather constructive, in the sense that the aggrieved actively build alternatives to existing political and economic relationships. The acts of building knowledge, skills, community, and economic independence have a radical potential that the term does not encompass," (White 2016).*

This thesis applies the constructivist ideology of Gilmore, White, and their constituents within the practice of community-based participatory research (CMPR), which pushes research beyond the abstract and repositions it in relationship to community as a mechanism to facilitate co-learning. Community based participatory research grounds the "design, implementation, analysis, and dissemination of research in community-led processes aimed at social transformation, community health, and ecosystem rehabilitation," (Méndez 2017, Sowerwine et al. 2019). Such an emphasis on direct community participation and explicit attention to power dynamics in knowledge production is particularly important when engaging BIPOC communities, like those within Berkeley Student Farms, as industrial food systems are implicated in structures of oppression that disproportionately harm marginalized communities (Sowerwine et al. 2019). By engaging community members across the food system, this thesis leans into the emergent possibilities and existing knowledge of community members to reimagine big-picture strategies of resistance. Notably, there already exists extensive literature documenting and critiquing perils in the food system, the role of the University, and barriers to food sovereignty (Jennings 1997, Patel 2007, Wittman 2009, Keesling 201, Siegner et al. 2018). However, research rarely facilitates community consensus or produces knowledge of what alternative food systems are needed and strategies for how to build them. Thus, in order to highlight both future and present steps towards abolition, this thesis relies on community based participatory research (CMPR) to gather the UC Berkeley's community ideas for what urban agriculture education could look like.

B. Lessons from the Campo

In the Summer of 2020, I sat in on a conference with the Dean of CNR who had gathered managers of the Student Organic Garden Association to relay the news that SOGA was no longer protected in the development plans of the Oxford Tract, as had previously been stated in the Chancellor's

2017 announcement (Oxford Tract Planning Committee 2018). When we argued on behalf of the importance of spaces for agricultural education we leaned on pre-existing models within the UC system–singing praises of the CASFS program at UCSC and the agroecology living cooperatives connected to the UC Davis Student Farm–to which the dean recycled the response that Berkeley's urban environment has made farming obsolete. While the Deans' claims were tainted by myth, after all the monarch always finds the mugwort, our approach sought to reproduce land grant logistics rather than radically construct new visions for the potential for urban agriculture education. As the histories above speak to the ways in which the institution of academia and enterprise of science have facilitated the expansion of colonial capitalism, in reimagining the role of a land-grant university today we must look elsewhere for strategies of resistance.

Academia has created a hierarchy of progressivity that delineate between the strands of organizing happening within the food system (Holt-Giménez and Shattuck 2011). The hierarchy starts with food security projects, like food aid, which operate to address nutritional needs and function largely under the guise of humanitarian relief but historically privilege neoliberal expansion. These projects are followed by food justice work which is largely organized within the non-profit complex and is primarily concerned with redistributing funds into community projects. And at the most progressive point on the hierarchy is food sovereignty. The term itself was coined in the 1990's by La Vía Campesina, an international peasant group based largely in the Global South, in effort to reframe the conversation around food security, by recognizing the ways on which food aid has been leveraged as a tool of imperialism (Wittman 2009). Notably, food sovereignty largely remains outside of academia's study of the food system, and is unlikely to appear in undergraduate syllabi. And where it does appear, it is learned in a disembodied, academic, impartial way; as an *object* of study, rather than a mode of practice or resistance. This is in part because the real concept of food sovereignty has made itself inherently unavailable for academic domestication. As a term, *food sovereignty* is not concerned with engaging or defining an enemy. Rather, as a concept rooted in action, it asks us to imagine a world of multispecies flourishing by calling us back to the land and returning agency to the oppressed. Thus it demands to be studied in messy, uncontrolled collaboration that rejects the false claims of objectivity made by academia.

I first became involved with food sovereignty, while studying in Southern Chile. I was working with a coalition of Indigenous Mapuche home-gardeners who raised what they ate, traded seeds that had been in their family for generations, and created and co-taught traditional ecological knowledge alongside their children's nationalized curriculum. As Mapuche, meaning people (che) of the land (mapu), the essence of their place-based ways of knowing were simultaneously inherent to their lifeways as well as a means of resistance against the histories of privatization, assimilation, and genocide that had impacted their peoples. The same community that had received quaker oats from US sponsored food aid was using cultivation as a way out. Through further studies, it became clear to me that the politics of agroecology as a means of resistance stretched internationally. Thus, it was there on the Campo, where food sovereignty and agroecology are rooted, where it is possible to assemble the pedagogies for an alternative agriculture education and ask ourselves: how do we prepare students to address the significant and multidimensional challenges of our food system?

While La Vía Campesina organized under the promise of food sovereignty in the nineties, oppressed peoples had cultivated its logics and praxis for decades before. In Chiapas México, the Ejército Zapatista de Liberación Nacional (Zapatista Army of National Liberation–EZLN) had been working to resist the invasion of capitalism into the countryside. Las Zapatistas center Indigenous knowledges and land rematriation in its creation of autonomous communities complete with comprehensive municipal projects (Guitérrez 2006, Baronnet 2008, Meek et al. 2019). These projects place agriculture at the base of their culture; such that even the school-year is scheduled around maize harvest. The Zapatistas tell us less about agricultural education, though for that we can look elsewhere, and more about the praxis of learning itself. Within their democratic model of "emancipatory education," the Zapastistas see education as an ongoing process of embedding oneself within the community (Guitérrez 2006). Their system of education depends on each member exercising "self-determination" as learning is seen as an active experience of inquiry rather than one of passive absorption (Baronnet 2008, Freire 2018). This is largely enabled by Zapatsita education being led by the youth, who themselves are counseled by community elders. The cross-over between generations provides internal mechanisms of accountability during the process of self-determined liberation because, as Freire suggests, in the process of awakening to the struggle there is almost always a tendency for individuals to find themselves striving to become

a part of the very system they are organized to resist (Meek et al. 2019). Drawing on eldership and providing a space to grow multi-generational memory helps to serve the long-term viability of their liberation work. And on the other hand, this non-hierarchical approach also means that much of the exploratory process of learning happens collaboratively, in dialogue, between equals. The sense of equality imbued in co-learning helps to facilitate on an individual level, a self-directed awakening to political crisis the Zapatsiats are fighting against, which translates into community-wide solidarity.

I want to emphasize the idea that this awakening to the purpose of liberation work of the Las Zapatistas is self-determined, meaning it's importance is derived through reflection and lived experience, rather than in traditional lecture-based instruction. If we turn to Paulo Freire, we can remember that the process of liberation is a pedagogical project by which oppressed people must first see the world of oppression, much like when Du Bois lifts the veil of double consciousness, and commit themselves in praxis to its transformation before engaging all peoples in a process of permanent liberation (Freire 1973, Freire et al. 1986, Freire 2018). It is this first stage that the Zapatistas provide mechanisms, both ontological and practical, for understanding the struggle that has dehumanized them, by first engaging the self (Freire 2018). Facilitating that personal awakening and the self-determination it inspires is the foundational purpose of education. From here, if we understand agroecology as political and the politics of liberation as first germinating within individual consciousness, then the Zapatists also teach us that an alternative agriculture education mustn't linger in the realm of generalizations but ground itself in the place and perspective of its students (Francis et al. 2011, Tuck et al. 2014). In order for awakening to occur, not only is it necessary to center students in the learning process, but to provide opportunities for their own self-exploration (Waldenström et al. 2008, Windchief and Ryan 2019). For example, learning about the importance of culturally significant crops in theory is far less impactful than providing space for students to reclaim the knowledge to grow their own ancestral foods.

Continuing with the earlier example, the art of growing one's own ancestral foods to learn what liberation through agroecology looks like, is not simply due to implications of democratic learning, intercultural opportunities or place-based experience. Central to learning agroecology, is the

practice of embodiment. If we turn to the work of Indigenous peoples, specifically to Pueblo scholar Cajete Gregory and their ecology of Indigenous education, embodiment appears at the heart of the learning process (Cajete 1997). This repetitive motion of shoveling compost onto a bed that lingers in the joints and the muscles throughout the season; the tactile experience of breaking apart soil aggregates; the smell of the Earth after a rain or from a busted irrigation head; the taste of the harvest… it all accumulates as embodiment derived from the bodily experience of being physically present on the land and embedded in the ecology. It is important to note that embodiment is not synonymous with experiential learning. For one, it evokes a reclamation of bodily autonomy, in acknowledgement of bodies as sites of violence and accumulation forwarded by agroindustry (Jabeen 2020). But moreover, it suggests a deeper relationality between humans and the more-than-human and restores agency within the ecology as teachers (Kimmerer 2013, Tuck et al. 2014, Tsing 2015). By stepping into this relationality, as embodiment calls, it becomes possible to deconstruct *agriculture* and its latent suggestions of human domination over the plant world, and open up the possibility to learn across species gradients.

In these ways agroecology on the Campo is just as much a social ontology as it is an environmental strategy. As a cultivation technique it seeks to position stewardship in accordance with the rhythms of the ecology (Altieri 1971). But if we think about the praxis of applying natural principles to human communities, agroecology also offers a social ontology—that is an understanding for a way of being inspired by the more-than-human (Holt-Giménez 2006, Rosset et al. 2011, Seminar et al. 2017; Meek et al. 2019). Like mycelium form networks that support plant development across landscapes, agroecology is learned *campesino a campesino* (Rosset et al. 2011, Holt-Giménez 2006). In this way the epistemology of agroecology is embedded in Gramsci's idea of an organic intellectual (Gramsci 1971). Adapted within microclimates, both ecological and cultural, agroecology requires an understanding that can only be derived from specific place-based and lived experiences, most often borne by peasants and people of the global majority. And in many ways the essence of the organic intellectual is best complemented within democratic pedagogies that affirm lived-experiences as valid to the learning process (Meek et al. 2019). However, while a sense of place is critical to agroecology, much of the organizing around it is led by *landless* peasant groups; revealing the potential for agroecology to facilitate a re-embedding process of

oneself into systems of multispecies flourishing. In this way agroecology can be seen as *a way out* of ruined landscapes, social or ecological. In Brazil, the Movimento De Trabalhadores Sem Terra (MST) has centered agroecology as their tactic of liberation in the fight for land reform (Movimento de trabalhadores sem terra 2021). Through guerrilla style occupations of *latifundios* (large landed estates), the MST has successfully reclaimed 7.5 million hectares of *Campo* placing it under collective ownership to serve the basic needs of rural workers (Friends of the MST 2011, Barbosa and Rosset 2017). Thus for the MST, agroecology offers both a futurist vision towards food sovereignty as well as a practical method through which to reclaim agency over their everyday lives.

While there are significant differences between the lived-experiences of landless peasant farmers from the Campo and Berkeley Student Farmers, it is important to consider the overlaps in experience and how colonization has robbed us all of our land-based cultures? Stepping into this place of solidarity, Berkeley Student Farms can, from its positionality as adjacent to a land-grab University, glean strategies for urban agricultural education. Reflecting on pedagogical considerations offered by the Global South, I now turn back to the sites of Berkeley Student Farms and overview my own study determining the needs and desires for an UA education.

COMMUNITY-BASED METHODS

C. Food System Interviews

Drawing from the framework of radical constructivism (Gilmore 2009, White 2018) and community-based participatory research (CBPR) (Méndez 2017, Sowerwine et al. 2019) this thesis engaged members from across UC Berkeley's "food system" to generate a consensus of priorities for the structure, form, and content of an urban agriculture education. To do this, I conducted formal interviews (see Appendix A for list of interview questions) with a range of stakeholders that can be broadly grouped as (1) administrators, (2) staff, (3) faculty, and (4) students. Within these groups a diversity of backgrounds, departments, and campus affiliations were represented, including: CNR administrators, CNR facilities managers, cooperative extension specialists, CNR and L&S faculty, ESPM postdoctoral researchers, graduate and undergraduate students from five different colleges and every campus garden, as well as representatives from relevant campus organizations, namely the Basic Needs Center, the Berkeley Food Institute, and Cal Dining. While the diversity of stakeholders meant their stories and ideas interrupted each other at times, it created the possibility to find meaningful and otherwise hidden patches of agreement, informing a community-scale consensus. Notably, the idea of coming to "consensus" does not imply total agreement, rather it considers histories and power dynamics and weights personal feelings against the broader named needs of the community to outline pathways for collective flourishing.

By providing context of Berkeley Student Farms' current work, and the idea of BSF embedding itself within the more institutional education of CNR, the interview facilitated an opportunity to generate goals, concerns, and strategies for the future of BSF.

In many ways these interviews are a synthesis of the community's priorities for the type of UA education they felt would prepare students best to engage with the many and diverse challenges of the food system. In order to identify concrete suggestions and priorities as well as draw a general consensus from the constituency the interviews were processed by coding for repeated themes and significant quotes in Atlas.Ti in. The ideas were then placed in conversation with emergent work

happening on the ground, namely through the experimental classroom, to collaboratively determine theories, practices, and visions for urban agriculture education at UC Berkeley.

D. An Experimental Classroom

The results from the food system interview were placed in conversation with an experimental classroom concurrently being developed by a small cohort of Berkeley Student Farmers, led by myself. The experimental classroom allowed us to evaluate and more deeply understand alternative pedagogies for agricultural education. Taking the shape of a *DeCal*, or democratic education at Cal, the classroom was offered through an accredited University-wide program that supports the creation of student taught and faculty sponsored classes. The course was co-created by members of Berkeley Student Farms, students in the course itself, as well as by the aforementioned interviews. Myself and two other Berkeley Student Farms assumed roles as course facilitators. The 2.0 units class, *Agroecology in Action,* catered to students' interest in learning about both the practical and political tools of food sovereignty and land liberation. In total the classroom engaged roughly 100 students a week, 65 of which were formally enrolled. The majority of the students were UC Berkeley undergraduates, evenly split across all years, with some participation from recent alumni, and grad students.

The content of the course filled the gaps in UC Berkeley's current course offerings by providing embodied learning opportunities to practice agricultural techniques alongside a solutions-oriented political education that traversed well beyond traditional strands of academic food system commentary (see Appendix B for the syllabus). Most significantly, the course centered BIPOC narratives of the global majority, often left out of CNR syllabi, in order to reclaim agriculture education within a University that formerly leveraged food and agriculture as a weapon of colonization. The design attended to the interdisciplinarity of agriculture, by offering both a political and historical education of land stewardship as well as practical experience engaging hands-on with the principles of agroecology on the student farms. It threaded political ecology with ethnic and gender studies, mixed art and aesthetic practice alongside oral tradition and narrative expression, and discussed histories as well as present conditions. Leveraging

interdisciplinarity and interculturality, the content aimed to be inclusive of student's diverse backgrounds.

The structure of the course drew from the aforementioned theories of radical constructivism, with content positioned to reimagine modes of resistance and repair to worldwide ruination. While the course introduced the foundational histories and contexts that frame the oppression latent in the food system, the learning process focused student engagement with course material through a constructivist lens. Rather than being asked to lament the issues introduced, students were expected to engage with solutions and ways out of ruination. As part of facilitating such an opportunity, specific intention went into student empowerment through the course's non-hierarchical classroom. While three facilitators co-wrote the syllabus and have borne the bureaucratic grunt of establishing the course and working out its logistics, class time sought to prioritize student voices and experiences in a number of ways. First, course facilitators worked with a cohort of students weekly to co-design lectures on the key themes and questions raised by each of the assigned readings. Folded into these presentations were student-facilitated discussions. Additional emphasis on discussion-based co-learning, in which we prioritized students to share who specifically identify or have lived experiences with the topics being discussed, was intended to deconstruct the all-knowing professorial complex, uplift BIPOC voices, and forward *campesino-a-campesino* styles of learning. Along these lines, community changemakers are regularly invited into the classroom to share as guest speakers, allowing students to be mentored by and grow relationships with local leaders. Finally, students were brought into discussion of course logistics by keeping a flexible syllabus open to student review, and hosting weekly planning meetings that students could join to offer feedback or otherwise become involved with lecture material development, class structure, and the like. By deconstructing the classroom hierarchy, this course sought to both model the importance of horizontalism in agroecology education as well as instill agency into students over their own learning process.

Finally the form of the course as a DeCal seeks to find balance between Berkeley Student Farms being an autonomous student-group and leaning on institutional support. Having registered facilitators helped to maintain accountability and ensure that administrative labor was completed.

However, having them be undergraduate and graduate students themselves supported co-learning by avoiding professorial power dynamics. Moreover, by allowing students to both formally enroll and receive credits as well as audit, we increased the accessibility of the material on both ends. Students can be compensated with their labor and time through units and can also engage with less commitment in cases of reduced student capacity.

In order to access the effectiveness of the experimental classroom at developing proficiency in agroecological fields students were surveyed at the start and end of the semester (Trexler et al. 2006, Parr 2007). The survey asked students to self-evaluate their proficiency on a likert-type scale in a variety of food systems concepts as well as practical agroecological skills (see Appendix C for survey questions). The 1-5 scale for the food systems concepts was delineated as such:

1. You have never heard of the concept
2. You have heard of this topic, and may be able to offer a vague definition
3. You can easily offer a textbook-style definition of this topic
4. You can define and analyze this topic but mainly in academic settings
5. You can easily define, apply, and analyze this topic in conversation with relevant case studies, and literature in any context, including your own lived experiences

Semantically adjusted, the 1-5 scale for the practical agroecological skills was delineated as such:

1. You have never heard of the practice
2. You could describe the practice and some techniques involved but have never done it yourself or seen it demonstrated
3. You understand what it is, and have done it a few times or watched someone demo it
4. You have done it a several times and understand what it is
5. You are an expert, have done it for many seasons, and understand the complexities and nuances of the task

The survey additionally inquired about student's interest in pursuing a food system career, and specific details as to what field that might entail. Finally background information on their academic year, and college were also gathered. By comparing the quantitative means and standard deviations of the pre and post survey, the effectiveness of the experimental classroom at meeting the learning objectives was assessed.

E. Dreamscaping as Participatory Mapping

Beyond understanding the strengths and growth areas of the experimental classroom tested in the DeCal, this thesis broke the "fourth wall" to bring students into the ongoing conversation about how to improve agricultural education. From their positionality within the learning process, DeCal students offered critical perspectives for understanding the evolving needs and desires from an UA education program. Given the land-based positionality of both the course and Berkeley Student Farms more broadly, students were specifically brought into the conversation of how BSF's land-use can be redesigned to best actualize the founding principles of the organization. Moreover, given the inherent politics surrounding land-use and access in Berkeley, we wanted to empower students to practice tactics of radical constructivism and solidarity.

Through a participatory mapping project, we asked each student to offer a blueprint design for the development of the SOGA and Oxford Tract plot, the two BSF spaces under proposed housing development (See Appendix D for assignment copy). Students were offered this hypothetical:

> *After many months of a student-led & community supported occupation of the Oxford Tract & Student Organic Garden Association, the University and its development firm Capital Strategies enlist a group of activists from the occupation to draft an alternative "development" plan for the site. Keeping in mind the many communities from across campus that use this space, design a map of what an ideal future for OT/ SOGA would look like. As a representative of a larger movement please keep in mind the five values of your community when rethinking how our land use in Berkeley can better serve our community.*

Students' "dreamscapes" communicated visions for how land use could actualize the needs of our community and in doing so revealed the needs and desires of the community itself (Literat 2012,

McKnight 2016, Rich et al. 2018). The maps were analyzed for recurring features, noting their frequency as well as proportional percentage of land use. Comparing the results, we looked for emergent trends in the ways land was being prioritized. To do this, frequency and proportion of features were averaged across the sixty-five dreamscapes. From this data, using a combination of ArcGIS and illustrator, the dreamscapes were then synthesized into a collaborative model for a future land-use plan Berkeley Student Farm's largest sites.

MODELING THE FUTURE OF BERKELEY STUDENT FARMS

The methods outlined above were used to create a model of urban agriculture education and generate community consensus. At the heart of this work, we were asking: what are the community's priorities for the content, structure, and form of urban agricultural education? How might Berkeley Student Farms, as a youth-led liberation movement, strategically work within the University as an institution? And how can Berkeley Student Farms land *develop* to reflect its core values of food sovereignty, decolonization, wellness, place-based and intercultural education, and cross-campus collaboration? What follows is an overview of the theoretical framework for UA education determined from interviews with stakeholders, peppered with stories from the experimental classroom that offer potential ways for engaging the pedagogy of agroecology in the UC Berkeley classroom. Next, I present a practical vision for how the pedagogical theories could be actualized on the land, by summarizing and discussing the dreamscapes. Then, I turn the conversation to where we are now, overviewing the outcomes and lessons gleaned from the DeCal, and I conclude by offering strategies, generated through stakeholder interviews, for how to bridge the gap between present realities and future visions.

A. In Theory: The Pedagogy of Agroecology

While the movement to design an alternative agricultural education was already organically growing within Berkeley Student Farms, this thesis facilitated a concerted effort to engage a broader cohort of stakeholders–namely administrators, staff, faculty, and students–in the development process. Through a series of formal interviews, stakeholders were asked to imagine what the future of Berkeley Student Farms might be as it evolves beyond a student group into an

embedded part of the educational experience within CNR. Synthesizing recommendations and repeated themes from these interviews, situated in conversation with emergent strategies of BSF, they offer a concrete five-part pedagogy of agroecology detailing suggestions for how we might reclaim land-based education at UC Berkeley.

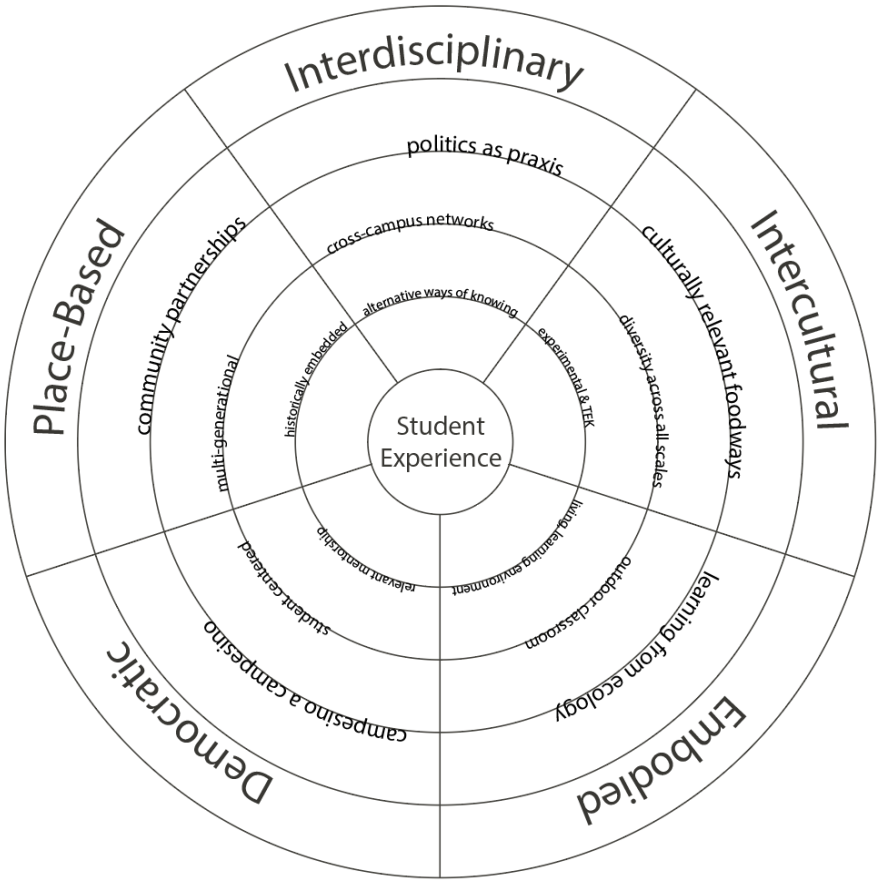

Figure 2. Pedagogy of Agroecology Chart. Centered around the student experience the pedagogy of agroecology comprises interdisciplinary, intercultural, embodied, democartic, and place-based learning.

(1) Interdisciplinarity

In discussing how to prepare students to tackle the breath of challenges facing food systems, there was a unanimous consensus from stakeholders that such education must in turn be interdisciplinary. This idea of an interdisciplinary education acknowledges the importance of a holistic and collaborative learning process implicated in approaching a subject from a diversity of disciplines (Francis et al. 2017). On the farm, interdisciplinarity appears to be inherent to agroecological systems. Mycorrhizal fungi forge highways underground creating entangled systems for nutrient sharing, water transport, and even structural support–in all senses, ecological methods of survival embody the essence of cross-disciplinary collaboration. But if agroecology is also a social ontology, we must consider how can we imbue such interdisciplinarity within the learning process?

Elaborations on interdisciplinarity content, revealed that UA was most commonly considered a praxis through which to learn about and problem-solve socio-ecological ruination. No response limited UA to the mechanics of food production, but rather UA was positioned as a new mode of learning that was both interdisciplinary and socially-engaged.

> *"I think the main challenge in our food system that I'm trying to combat through education is the disconnection of people from the land, from their cultural lifeways, and from their food and striving to make that reconnection. And so I guess to me at the heart of agricultural education in the 21st century it's really about reconnection as resistance to hegemonic paradigms of exploitation and ecological devastation"*

Acknowledging how today's food system has dispossessed us all from our land-based cultures and learning, there was a recognition that the UA education developed should be worked out in partnerships with a variety of other campus departments to extend course offerings beyond CNR students.

> *"Instead of thinking about what type of agricultural education should we teach, I want to ask: how might agricultural education or how might an education that is infused with cultural life ways that connects us to ecology, be inclusive of all disciplines? How might*

> *land and food, that is really a critical meeting point for all disciplines, bring about a new kind of collaborative education?"*

When asked to provide suggestions for interdisciplinary content, most administrators and staff deferred to faculty, and a small percentage of faculty deferred to students. Amongst more biologically inclined faculty, interdisciplinarity was celebrated as a way to co-teach experimental and traditional ecological knowledge (TEK) alongside western approaches. Their reasoning cited the ways in which agroecology and food sovereignty has organically developed from BIPOC communities and communities of the global south. As such there was consistent mention of a blending teachings from (1) traditional scholars, such as former UC Berkeley professor Miguel Altierei and UC Davis's Louis Jackson, (2) historical figures, such as George Washington Carver and the Black Panthers, (3) Indigenous scholars, including Robin Wall Kimmerer, and (4) social movements of the global south, with La Vía Campesina being the one most frequently cited. More socially inclined faculty forwarded interdisciplinarity by remarking the social ontology and politism inherent to agroecology. Herein, they described food production as a lens, rather than the subject of study itself, through which to explore the greater politics implicated in agriculture. One faculty member described culturally relevant foodways as a hypothetical cannon that would allow students the experience to explore on a personal level the significance of agroecology, while concurrently developing a systems-level fluency for the problems and solutions of the food system. Notably, students offered similar suggestions, citing interest in learning both about the practical mechanisms of agroecology alongside exploring how it might be applied to service socio-economic justice. In these discussions students frequently referenced social movements from the global south as critical schools of thought to draw from. Students were also unanimous in their recommendations to create a curriculum that intersected narratives of agroecology with food sovereignty. Their reasoning acknowledged the potential risk for agroecology alone to reproduce colonial ideas of "controlling" nature, and uplifted Indigenous approaches that extend land stewardship beyond the farm advocating for the study and practice of non-domesticated modes of food security. Notably, by weaving in such TEK into teachings of urban agriculture the practice itself begins to embody the politics advocated for by social studies faculty.

If we think from farm to table, and the number of interactions and entanglements that occur in the process, it becomes clear why interdisciplinary was unanimously recommended by administrators, faculty, staff, and students as a foundational pedagogy for UA education. In the DeCal this need for interdisciplinarity was made exceptionally clear during our class on the history of agriculture at UC Berkeley. To think about just the context of one food system we had to traverse neoliberal theory, political ecology, Native American studies, biotechnology, and even integrative pest management, soil biology, and plant genomics. Our experience building a syllabus that sampled foundational problems and solutions to the food system affirmed stakeholder's assertions that agricultural education must simultaneously consider the social sciences–engaging politics, policy, and culture–alongside the natural and biological sciences to provide comprehensive understanding.

It is worth considering that this idea of diversity in approach concurrently divided staff and administrators from faculty and students, in discussions specific to *urban* agriculture. Here both groups held conflicting ideas about the scale at which interdisciplinarity functions. To staff and administrators, interdisciplinarity was inherent to the UC system, which evolved to allow for campus specialization.

> *"UC Davis and UC Riverside were field stations for UC Berkeley from the beginning. Davis opened in 1908, and was the teaching field station, so Berkeley students who were getting agriculture degrees were really going there. And Riverside was similar, but was more of a research station. So when they both became independent schools, all of that coursework that had been Berkeley coursework became coursework at those schools instead. So when we talk about Berkeley as no longer a farm school, well we really do still have that farm school, it just has an independent name, but it's still part of the same system."*

Herein, they suggested agriculture in practice should be reserved for rural campuses, while sites like UC Berkeley, situated in politically engaged urban areas, offered complementary opportunities for socio-economic studies. Thus for staff and administrators, the focus of UA education was situated within policy, politics, the economy, and things at the *system* level.

> *"The fact that we are an urban campus, means I think does create an opportunity for us to have an open focus and cultural education. Again, not focusing just on ag but focusing on full food systems. We have such a strong School of Public Health, such a strong nutritional science legacy here, as well as policy, and so Berkeley is really well positioned to be doing this type of work."*

Amongst faculty and students, the question of how we might repair our food system meant entangling ecology, social studies, economics, and the like. Faculty and students saw the siloing of UC Berkeley's agricultural studies in legacy with historic trends of rural extraction and institutional privatization. Why should urban campuses claim the privilege to dictate the policy and regulation of non-urban communities? How might a diverse learning approach contribute to system-wide equity? To faculty and students, thus, it was not only realistic to expect that UA education offers both practical and societal experience but essential. Integrating interdisciplinarity at all scales, enabled the disruption of the urban-rural hierarchy as well as critical pathways for climate change mitigation and socio-economic repair.

> *"I don't see our position as an urban context as a hindrance, just that land is expensive and that our admin holds a very western view of land as a commodity and the best use of land is what generates the most money. Why grow corn in downtown Berkeley, when there is so much money to be made from real estate? But that mindset is a liability… There is really so much about urban agriculture that is valuable. Yes the food that is produced is one component but equally important is the community building, the sense of place, the relational connections between people and land especially people who have been displaced or have land-based traumas. And of course we have to acknowledge the context of climate change, and the role of urban agriculture to mitigate it."*

Notably, the remarks of faculty aligned with the needs and interests of students. In less than a year old, Berkeley Student Farms has organized over five-hundred volunteers, a one-hundred student DeCal, and partnerships with twenty-six campus organizations (Berkeley Student Farms 2021). Moreover, from surveys issued to the DeCal students, they are most interested in a food system career involving food production and farming. If we think about this UA program as a reconciliation with land grant roots, interdisciplinarity, that blends practice with politics, not only caters to student interest but disrupts the very logics that continue to impair our food system.

If we critically consider the power dynamics implicated in wanting to maintain academic divisions along rural-urban divides, and notice how faculty and students' perspectives align with larger debates in the literature surrounding the divide, we can tease out a consensus for interdisciplinary education, across all scales and modes, as central to the pedagogy of an UA program.

(2) Intercultural

During a DeCal workshop, when a group of students were practicing different soil preparation techniques, they were prompted to notice clues that might help them distinguish between which beds had been tilled the season before. I was noticing the compacted soil, the sticky, wet clay I could rub into a ball between my fingers, the root depths, and health of the crops. But between the weeds, another student was noticing all the garlic chives we were tossing aside. Recognizing garlic chives as a traditional chinese vegetable, the student called our attention to the implicit biases we carried with our western weeding techniques. A small but significant catch represented the ongoing need to imbue interculturality within agriculture education.

This idea of interculturality came up in interviews during discussion about what differences need to be addressed within *urban* specific agricultural curriculum, whereby interculturality was deemed essential to urbanism. Given the higher concentration of demographic diversity typical to urban areas, UA education was understood as having a more pressing responsibility to create space and opportunities that engage students of all backgrounds. Intercultural education helps to facilitate such space by forwarding the practice of incorporating a diversity of cultural perspectives into the classroom (Coulby 2006).

Unlike multiculturalism, which assumes discrete differences between backgrounds, interculturality invites a way of knowing that not only celebrates diversity but acknowledges the ongoing and diasporic interactions between cultures, activated within urban areas (Gaztambide-Fernández 2012). The same faculty who suggested a cultural food way canon as a way to teach agroecology, elaborated to say that such intercultural framing improves the accessibility of knowledge.

> *"A cultural foodways framework would do a lot to disrupt the land grant system. It forces us to address how white supremacy in all its forms appears in the food system, it creates possibilities for personal engagement with course materials, and uplifts experiences of BIPOC and marginalized communities … Really so many marginalized cultures end up isolating themselves and so to give space for intercultural engagement in addition to personal cultural exploration projects would be phenomenal."*

On a content level we can understand interculturality as creating space for student's cultures to be affirmed and heard within academia. Suggested ways of doing this included centering BIPOC narratives and writings, co-selecting such works with students who identify with the backgrounds being discussed, and even stepping beyond the traditional understandings of what constitutes content material to incorporate cross-cultural ways of knowing.

On a structural level we can also see how interculturality generates a number of pathways that disrupt and repair systemic cultural erasure upheld by both academia and industrial agriculture. Among these pathways is a dialectical learning process, brought up by stakeholders and practiced by aforementioned groups including Las Zapatistas (Guitérrez 2006), whereby cultural framing of studies can help students to explore academic material both personally and theoretically. This idea of grounding UA education in a personal approach, draws on a lineage described by Paulo Fiere's as critical pedagogy (Fiere 2018). It models what learning as a lifelong process could look like by encouraging students to see themselves and their own experiences in the theory they might otherwise only academically engage with. Thus it empowers a sense of agency over the learning process that supports stakeholder's desires to center the student experience. More than purely system level fluency, such an approach can empower students, especially those from historically marginalized backgrounds, to put language to their lived experiences.

We noticed the beginning of this dialectical process, and the empowerment it has the potential to facilitate, in many instances throughout the DeCal. One of these moments occurred during our class on Black Agrarianism, which had been led by a guest speaker, who was a Black farmer, educator and self-proclaimed organic intellectual. As the discussion came to a close, a Black student shared their gratitude for the speaker and the ways in which she had inspired them to rethink their own adversity to farming. The guest speaker, while grateful, was also adamant about

encouraging the student to share specifically and name the adversities they held, presumably to deepen their personal revelation. There was a potency to their exchange that revealed the well of emotions that can be bound in classroom material—it had opened up wounds and forced reconciliation for what it means to be Black in the US today and to to steward land their ancestors were enslaved to labor on. Staying after class, the student's remarks confirmed that this process can indeed be healing but it also revealed tensions around intercultural discussions in predominantly white classrooms. The labor do discuss culturally-specific traumas had been spotlighted on one of the few Black students in the course, reminding us that while intercultural education can be healing, it also requires intentional facilitation to maintain a culture of consent and respect when asking students to be vulnerable with course material.

In many ways the conversation around consensual and respectful facilitation, centers around *who* is teaching. As part of forwarding intercultural education, stakeholders also saw the value of uplifting nontraditional educators. Reasoning in part grew from wanting to mirror the ways in which agroecology is traditionally taught *campesino-a-campesino,* but more so came from acknowledging that the majority white demographic of CNR faculty meant they were ill-equipped for teaching on matters of say Black agrarianism or Indigenous land stewardship. As such, community leaders, including members of the Sogorea Te' Land Trust and Amah Mutsun Tribal Band, as well as food activists and local farmers, such as those from Acta Non Verba, Black Earth Farms, and Soul Flower Farm, were regularly recommended for facilitation roles. Including nontraditional teachers, guest speakers, as well as students for that matter whose identities reflect those in discussion offers critical pathways for empowerment. Uplifting organic intellectuals as facilitators avoids the voyeurs of multiculturalism, whereby professors otherwise risk their syllabi becoming cultural sampling sessions thereby reproducing the very logistics of white supremacy and of orientalism that interculturality seeks to disrupt.

Finally, interculturality, as a pathway to center the erased cultures, would specifically create room for empowering Indigenous leaders to share about Ohlone stewardship, foodways, and cultures. The significance of creating such space, within a University built upon Indigenous displacement, would represent a critical step towards decolonization.

(3) Place-Based

The inclusion of a place-based pedagogy grew out of the land-based and community centered positionality of Berkeley Student Farms. Given the Bay Area's role as a locus of the food justice movement, UC Berkeley is well positioned to offer place-based learning, which refers to the practice of learning through and with the local community (Moore et al. 2005). Similar to the ways in which mycelium move, linking plant communities through elaborate networks of mutual aid, a place-based pedagogy extends the possibilities of UA education beyond the fringes, the farms, and even the boundaries of the University itself into the broader happenings of the community.

In thinking about what neighboring strands of the Bay Area's food justice movement to weave into a place-based education, community members forsook the apolitical edible education of Alice Water and Michael Pollan, whose local food movements remain racially and economically inaccessible to most. Rather, they looked to the margins for alternative ways of knowing.

> *"I feel that agricultural education in western industrialized capitalist nations hasn't looked the way that it should for a very very long time. And so I look to the margins. I look to the edges, and I look to the oppressed and the people of the global majority for inspiration. And so, what aspects of agricultural education should remain? and how do we prepare people to engage food systems? I mean I think the answer lies in what, and how, oppressed peoples are working within and teaching their own local communities about the food system, and about how to engage with agriculture and food."*

When stakeholders were asked to look to the margins, they called in the importance of teaching rebel archives of the food movement, stories of Ohlone stewardship, and the political revolution of the Black Panthers, among others. In praxis, they supported community outreach projects, including: seed libraries, community dinners, and community-supported agriculture boxes. But in order to work *with* the margins, stakeholders advised that UA education programs should build partnerships on campus between system-impacted grounds–including: the Basic Needs Center, Indigenous and Native Student Coalition, the Black Resource Center, and the Multicultural Community Center. Notably, their acknowledgement of movement building on the margins in

many cases validated the work BSF is already engaged with, such that their suggestions offer next steps rather than new beginnings. For example, recommendations imagined what if UC Berkeley students who already work in BUSD school gardens then hosted K-12 students at BSF as a part of a multi-generational gateway program? Or what if the newly established seed library expanded to host city-wide, seed sharing events to support locally adapted crop varieties? These types of programs present new pathways for more community members to engage with place-based learning.

Such place-based pedagogies were woven into the DeCal; guest speakers from Cafe Ohlone came to lead the discussion on decolonization, farmers from the National Food Sovereignty Alliance spoke on landless peasant organizing, and on-farm workshops finished with harvests for the Basic Needs Center. However, beyond the pre-formed partnerships that the course facilitated, it also invited students into the process of forming community relationships themselves. In lieu of a final lecture, students joined the planning and participation of a direct action in which Corrina Gould, the spokesperson for the Sogorea Te' Land Trust, led a hoarded wealth and stolen resources tour of UC Berkeley's campus, culminating at People's Park. Students showed up with offerings for Corrina, a potluck for participants, supplies for a symbolic planting, and artwork to spread awareness. These strands of involvement reflected their own self-initiated engagement with the messy and organic process of community organizing, we had been discussing over the semester. These tangible patches of community building, that can be offered through a place-based classroom, reveal how pedagogy can build bridges beyond academia and extend possibilities for liberation beyond the institution.

In these ways place-based learning obscurs the traditional boundaries of the University and calls in forth community-wide and multi-generational learning. However in doing so, the hegemony of the University must be acknowledged, such that looking to the margins is not a metaphor but an act of reparations. By thinking strategically about who should teach what content, in what ways material is taught, as well as the literal compensation of land and capital, we can piece together a place-based UA education that functions, mutualistically with the community to reconfigure the town and gown relations that currently underpin UC Berkeley's relationship to the Bay Area.

(4) Embodied

Folded into the conversation around UA pedagogy, was space for stakeholders to reflect on their own interest in the food system and what professional and personal experiences grounded their work. Unanimously they described instances working on the land–mostly on community-based farms both urban and rural, some family farms and market-operations, and a few University farms (including the UC Gill Tract Community Farms and Berkeley Student Farms). Mostly, they only vaguely cited agricultural activities like "planting" or "growing food," in their reflections, pivoting focus towards much deeper processes that the language of hands-on or even experiential learning does not sufficiently capture. Rather, their reflections alluded to the process of embodiment, by which learning occurs not only by doing but by building relationships with human and nonhuman communities (Jabeen 2020). In some cases these relationships were social, whereby agricultural work connected them to the broader community.

> *"My family is two-hundred years disconnected from the land and I didn't get involved with urban agriculture or agriculture at all really until after I finished my undergrad when I began working at an urban farm. The whole experience was really transformative. It was a community farm and so there was naturally a big social justice connotation to the work we were doing. And I ended up meeting a ton of people who had committed their lives to what we may now call the food justice movement and through them I slowly began discovering what agroecology was. It really led me to think about my own sense of place and relationships to the community around me in a whole new way."*

Others were ecological, inspiring a sense of place and connection to the more than human world.

> *"Right at the end of my first year of school, I applied and got to work with what is now called HADSA. It was the sustainability team with Cal Dining, and I really loved that job because it was fairly hands-on, I worked in the gardens, and it was so different from school and school, to me, had become really stressful. I got to be outside and get my hands dirty and learn a lot of skills that I didn't necessarily have but it was more learning the skills through the experience of actually just doing it. And it's like kind of no pressure if something isn't working out like, that's okay. And it's very often out of your control, it's like you're just learning with the space about what it likes and what it doesn't."*

And the rest were cultural, translating food systems work into rekindling and exploration of familial identities.

> *"My family comes from México, and most of them still live there. Cooking has always been what's kept us close, especially when we moved to the States. And so what drew me to farming here was the possibility to grow and share all the foods I had grown up with."*

Their stories revealed the impact of embodied learning as not simply finding the most efficient way to apply compost but as avenues to forage relationships that deepen one's sense of purpose and place (Mazurkewicz 2012).

It is worth noticing that all the stories involve land as a medium for relationship building. Yet while the more-than-human world set the stage for stakeholders most formative food systems experiences, none of them recommended Strawberry Creek or the monarch butterfly as potential teachers for an UA education, though many recommend that Berkeley Student Farms sites be used as outdoor classrooms. The idea that ecological systems themselves have agency as teachers stems from an Indigenous worldview and is critical to the process of embodiment (Cajete 1997). During the DeCal we tried to lean into this idea that humans are not simply learning from the ecology through outdoor instruction but learning *with* it. Given the context of vast ecological ruination, many students entered the class believing humans had no place in environmental conservation. And in many ways it was a belief that stemmed from their own personal disconnect from land. However, most happenings on the farm–weeding, tree pruning, composting–require long time-scales to tangibilize that human stewardship can play an important role in tending ecological processes. So to teach the possibility that humans can be in relationships of reciprocity with the land, we turned to seed saving. From the start of the semester, students were asked to tune into the plant cycle, watching for when crops start flowering and noticing for mature seeds. When the time came, we overviewed harvesting and cleaning techniques, sorting seeds out of the biggest and best tasting crops. Reflecting on the class, students described a new understanding of humans' responsibility within ecological systems. They compared seed saving, as an art of gratitude and giving back, to earlier classes on weeding and pruning which had left them feeling destructive. And they mused over the idea that seeds are memory capsules, tossing around the language of

"magic." While there's no way for one workshop to undo decades of land disconnection, the DeCal helps us to think about how UA education can facilitate this process of embodiment, by cultivating the arts of noticing, and frameshifts needed to grow land-based relationships.

By cultivating similar experiences to those shared by stakeholders, the idea of embodiment within higher education stands in alignment with the greater political project of urban agriculture. By creating pathways to center Indigenous pedagogies and ways of knowing that resist the hegemonic tradition of academia, we can think of embodiment as linking the practice and politics of agroecology within the study of urban agriculture.

(5) Democratic

On the Campo, agroecology flows *campesino a campesino*. Here, wits and worldviews traverse social and ecological patches by way of personal relationships. At Berkeley Student Farms, agroecology is caught somewhere between this art of organic intellectualism and the methodology of academia. It would be misguided to assume this tension could ever dissipate entirely within the institution and thus disingenuous to theorize how it might. Rather, it invites us to consider the strands of democratic learning that can permeate academia and wedge open new possibilities for resistance and liberation.

Democratic learning, or co-learning, lays roots in a horizontal classroom (Baronnet 2008). By deconstructing the hierarchy of an all-knowing professor, it validates students' lived-experiences to empower their self-determined understanding of material and encourages learning in dialogue with peers (Freire 2018).

Democratic learning first came up in acknowledgement of the student-led nature of UA work at UC Berkeley. Wanting to honor and uplift the already existing educational happenings created for and by students, faculty advocated for the expansion of the DeCal program by way of financially compensating students for their facilitation labor, increasing course offerings, and expanding accreditation policies to count DeCals towards degree requirements. Additionally they offered

other institutional avenues for inclusion, including increasing student's say in the new faculty hiring process, hiring younger faculty of color, and creating an advisory board composed of all four stakeholder groups to increase transparency and communication around current happenings and future directions of CNR.

> *"Student voices are the most critical in designing the future of urban agriculture education. Our biggest priority should be defying what interests and motivates students about food systems. And then we can start to think about pushing faculty in more creative directions, thinking about accountability and governance to center students and then having deliberate processes among wide groups of people, but always with students at the center, to find ways for faculty, staff, and admin to be more responsive and adaptive and creative about how to meet the need and desires of students."*

Largely, these recommendations worked to reform the mechanics of the institution. This is not to suggest they are invalid, as even institutional reform can be abolitionary in nature—chipping away at oppressive systems rather than further arming them with illusions of progress. Nevertheless, it calls in a dynamic that students were particularly wary of.

> ***"****Administration, staff, faculty pay so much lip service to this idea that it's all about the students. But when push comes to shove they don't really want to deal with the dynamic magic, youthful vigor, and inspiration that is student life and imagination, they don't actually want to deal with it because it's messy."*

Students were adamant about their desires for an autonomous urban agriculture education. Rather than a new major or minor designed by the staff and faculty with student consultation, they advocated to design their own UA programming that could then be accredited by administrators and faculty.

> *"I'd love to see an UA program, maybe it's accredited through the food systems minor or Conservation and Resource Studies or something else, but it's a bunch of classes students can take for real credit from the University but that are designed by and for students. And I think in a lot of cases it would be important to have faculty or community members supporting the development and offering of these classes, to offset student labor and fill gaps in knowledge, but throughout all steps in the process students should be the ones in leadership roles."*

Their reasoning flagged concerns around UC co-optation, censorship of course materials, and the delegitimization of alternative ways knowing as effective teaching approaches. At the same time, students named needs for mentorship, particularly from faculty of color and other marginalized identities, as well as long-term support, like a campus garden coordinator or faculty board, that could help to smooth transitions between graduation cycles.

We attempted to balance these needs and desires of students when designing the DeCal. Facilitated by and for students, we gauged student interest in designing the course, sought feedback on the syllabus, and held space for reflection and accountability. But on the ground democratic learning was far messier. In preparing for our composting workshop at the Fannie Lou Hamer garden we had worked with the Black students in the course to facilitate the lesson, acknowledging that the space was built for and by Black students. But when we convened in the garden later that week, our facilitators ran late. For thirty minutes everyone waited patiently, sitting with an unspoken understanding that it would be disrespectful for anyone else to step forward, each student had to sit with what it meant to uplift marginalized voices? Clinching the foodscapes they brought from home they considered how the arts of compost, that cycle life from death, might harbor lessons of solidarity, and the symbolism that their own contributions to the garden, their gifts for the compost pile, might help nourish Black wellness on campus? While the workshop itself ran smoothly and offered a comprehensive overview of compost, the process of democratism itself, of uplifting space for BIPOC leadership, had been equally as generative.

In reflecting on the experiences from the DeCal and advice of the community we can begin to understand what forms of democratic education could work at UC Berkeley. On one hand, it is clear across the community that greater intention is needed in the co-creation of content, co-facilitation of courses, and a movement towards discussion based classroom models that uplift self-directed learning processes. On the other hand, to support this transition and acknowledge the variables of democratic learning in academia there are additional needs for accountability and compensation mechanisms to ensure student voices are being genuinely centered and valued. However, in any case, the process of democratic learning itself remains richly saturated with opportunities to practice the politics of solidarity emergent within UA.

B. In Practice: a Center for Land Based Learning

Configuring an UA program at UC Berkeley inherently must go beyond pedagogies, content and the structural form of a program, to consider how land use can play a role in getting us there. Leaning on the art of imagination as a form of radical constructivism and on aesthetic practices of futurism, this thesis proposes the development of a Center for Land Based Learning on the two largest sites of Berkeley Student Farms, to support the coalition's core values of: (1) food sovereignty, (2) decolonization, (3) intercultural and place-based learning, (4) cross-campus collaborations, and (5) wellness.

Drawing from the interviews with community members as well as the sixty participatory "dreamscape" maps produced by students enrolled in the *Agroecology in Action* DeCal, their collective ideas informed the proposal for a Center for Land Based Learning to be constructed on the current 2.5 acre site of the Oxford Tract Field and Student Organic Garden Association. Similar to McKnight's thesis on new futures for the Gill Tract as well as the Bay Area Coalition for Urban Agriculture's (BACUA) 1997 proposal advocating for a Center for Sustainable Urban Agriculture and Food Systems at the University of California Gill Tract in Albany, this center intends to ground the pedagogy of agroecology on the sites of BSF by delivering cross-disciplinary educational experiences centered in UA work to the UC Berkeley community and its neighbors. While these spaces would remain student-led, campus allied, and community-based the development of a Center for Land Based Learning would expand institutional alliship and enable the infrastructural support necessary to sustain the long-term work of BSF.

Given the tensions around the development proposals for this land, this thesis began by gathering the community's vision for how this space could best function to serve the community's basic needs. From the participatory maps, the most frequent visions for the space featured: (1) field crops, (2) gathering spaces, (3) kitchen space , (4) classrooms, and a food distribution site, as well as (6) student housing. By grouping commonly listed features (mean >0.25) we identified six overarching themes for the land to be: food production, community accessibility, agricultural

facilities, food processing and distribution, education and research, and housing (see Appendix E for further details).

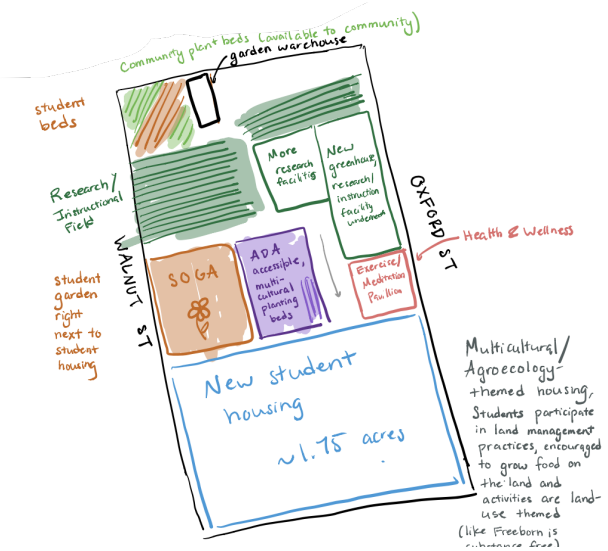

Figure 3. Sample dreamscape.

	Grouped Features	Mean	Percentage Land Use
1.	Food Production (crop rows, orchards, herbal/ medicinal spaces)	1.0	47.10%
2.	Community Accessibility (gathering space, bathrooms, cultural pavilion, altar)	0.98	10.05%
3.	Agricultural Facilities (greenhouses, compost, seed library, tool shed)	0.62	13.14%
4.	Food processing and distribution (kitchen, pantry, fridges, wash and pack)	0.62	13.60%
5.	Education and Research (outdoor classroom, ADA accessible teaching beds, agroecology research space)	0.62	9.01%
6.	Housing (student housing cooperative, supportive housing)	0.31	7.11%

Figure 4. List of land use priorities by mean and percentage acreage. Categories group features with a mean score greater than or equal to 0.25.

The participatory maps, or *dreamspaces*, revealed trends refocusing agricultural work away from research towards educational and community empowerment efforts. Notably, 92% of maps discounted the existing fence-line separating the OT and SOGA, and of those only a handful felt it necessary to explicitly mention that the fence would be removed. Moreover, the inclusion of educational space was far more common (mean: 0.62) than that of research space (mean: 0.25). This reflected students' perception that the two spaces should be connected as they share overlapping values of BSF. While earlier interviews with administrators and staff revealed their reluctance to envision student participation on the Oxford Tract beyond lab assistant roles, for the past two years students have already contributed significantly to stewardship and maintenance, demonstrating the possibility and effectiveness of student-led education on the Oxford Tract.

Figure 5. Site Plan for the Center for Land Based Learning. Centered around food production, the site plan details the agricultural, educational, and community amenities needed to support an UA program. Notably, the southern greenhouses are omitted from the plan to minimize interference with research, and costs associated with building on greenhouses, as well as the EDMUND facility to reduce bureaucratic negotiations with the City of Berkeley.

The educational opportunities discussed by community members through interviews and mapping were not exclusive to the study of agriculture. Even when traversing into non-agricultural partners and programming, there was a steadfast commitment to the importance for land-based learning. Evolving the pedagogy of interdisciplinarity, community members again flipped the question of

what an urban agriculture education might look like onto its head, asking: how might agriculture, and land stewardship more broadly, support education across and between all disciplines? Thus interdisciplinarity informed the format of the Center itself, as a way to grow BSF value of cross-campus and city-wide collaborations, and extend land based learning opportunities beyond the College of Natural Resources.

In cultivating those educational opportunities, accessibility was of critical concern. First, cultural accessibility was discussed given the University's occupation of unceded Ohlone land as well as the many and intersecting legacies of cultural erasure led by UC Berkeley. Many maps entrusted the land to the Sogorea Te' Land Trust and called for the inclusion of ceremonial spaces, arbors, and the inclusion of native crops under native stewardship. Similarly, affinity areas for BIPOC communities on campus were commonly mapped, sharing an intercultural vision for the future land use of BSF. Along these lines the community proposed the inclusion of a demonstration kitchen, both for nutritional and cultural education, as well as to support food security efforts. Herein, ideas for an on-site Basic Needs Center Food pantry satellite was offered as a strategy to reduce food insecurity. Moreover, given the ways in which agricultural education has relied on unpaid labor, and thus made exclusive to students of privileged socioeconomic classes, accessibility by way of finance investment towards paid student positions was suggested. Finally, accessibility was addressed in terms of ADA accessibility, with the inclusion of ADA accessible pathways, teaching beds, kitchens, and other agricultural facilities.

Figure 6. Snapshot of the Center for Land Based Learning.

Stemming from themes of accessibility was the inclusion and importance of student housing. While student housing was the sixth most commonly listed feature on the dreamscapes, no map envisioned the space to be solely for student housing. Moreover, the inclusion of student housing was always clarified with notes about affordability as well as ways to connect the housing to the farm itself. Echoing conversations with stakeholders, the Center for Land Based Learning includes an Agroecology in Residence program which offers affordable on-farm housing for students particularly interested in agricultural studies.

> *"I would love to see an agroecology in residence program where students who are specifically interested in agriculture can have an opportunity to live on land, because farming is a day to day art of noticing what changes and what is developing. And you can only really get that experience if you're living on the land."*

Similar to the GETH program at Clark Kerr, the residency would provide a living-learning environment focused on building students embodied knowledge of farm management through

daily exposure to the changing rhythms of the land. Moreover, in thinking about improving the accessibility of UA work and related inaccessibility tied to the housing crisis, the program draws from existing formats, like the Berkeley Student Cooperative, to compensate rent through paid workshifts at the Center. Residents would fulfill responsibilities as field managers, farmstand tenders, kitchen managers, and course instructors in addition to the behind-the-scenes work of finance and outreach coordination. The residency program most significantly draws from models of land-based education in the Global South adapting it to the constraints of the University by addressing barriers of accessibility in order to truly lean into a pedagogy of agroecology.

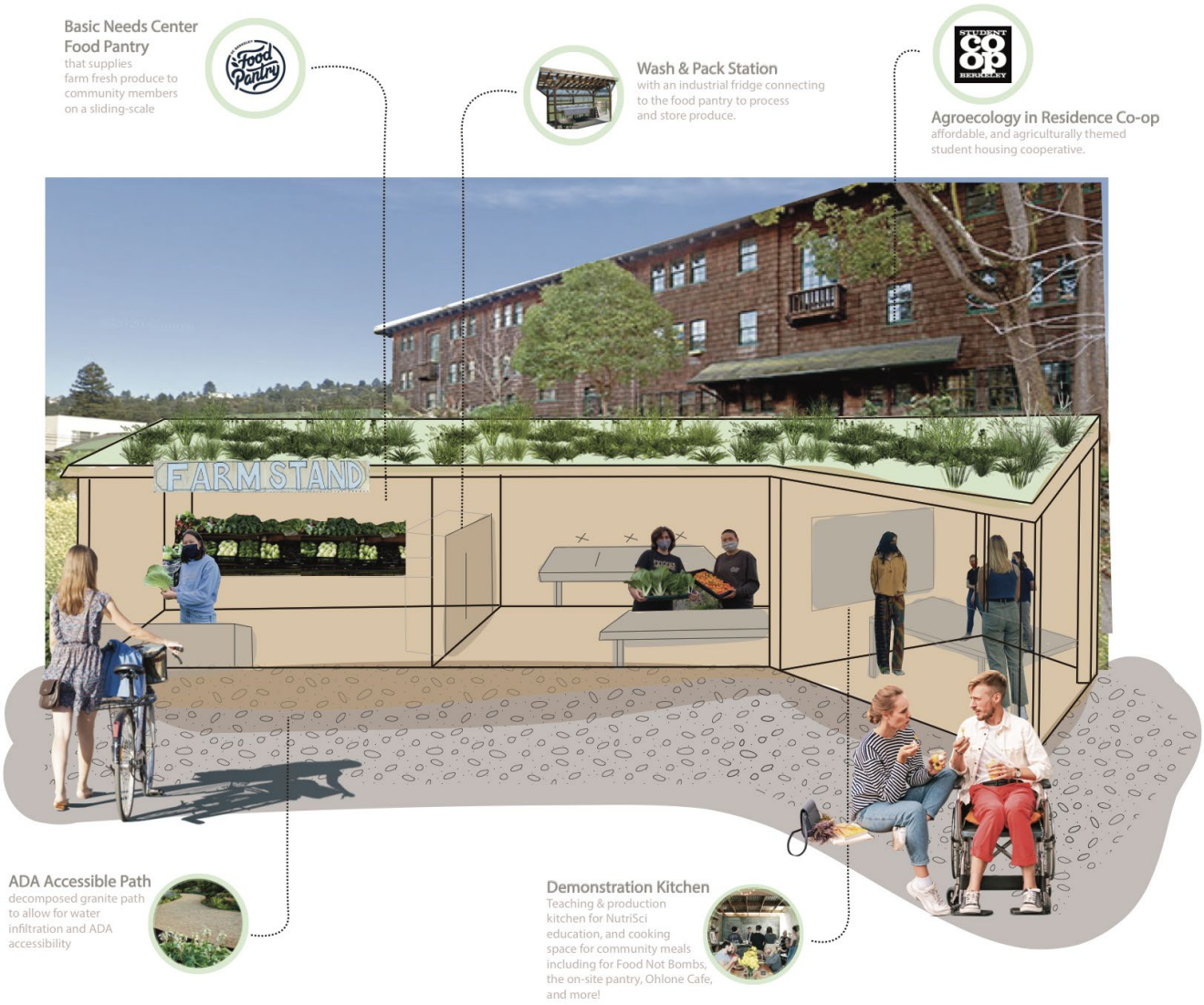

Figure 7. View of food processing and distribution site. Featuring a farmstand, wash & pack, demonstration Kitchen & agroecology in residence housing.

STRATEGIC CONSIDERATIONS

A. Where are we now

At the same time as the community was piecing together pedagogies and practices for urban agriculture education, this thesis was also evaluating their strengths and weaknesses through an experimental classroom. The experimental classroom engaged nearly 100 students, applying the

five aforementioned pedagogies of agroecology to the study of food sovereignty and land liberation.

Figure 8. Graphs showing change in proficiency in agricultural concepts and practices over the semester.

The outcome of the classroom, affirmed that the pedagogies effectively improved proficiency and contributed to student's larger interest in the field of food systems. However, it also revealed challenges of transitioning to nontraditional modes of learning.

Bookending the semester, students enrolled in the *Agroecology in Action* DeCal completed equivalent surveys that asked them to self-assess their proficiency in a variety of conceptual and

practical topics covered in the course (see Appendix F for further survey results). Across all topics, students showed significant improvement over the semester. While all mean scores initially reflected non-proficient levels of understanding, by the end of the semester they all rose to at least semi-proficiency meaning students could: easily offer a textbook-style definition of the concept/ have first-hand experience executing a specified farming practice several times and understand its purpose. And the courses two focal topics, agroecology and food sovereignty received means of high proficiency (4.25 and 4.41 respectively) with notably low standard deviations.

The survey also gauged students general interest in pursuing food systems careers, with follow-up questions specifying sub-field interest. The pre-generated career subfields were generated from a pilot survey issued in the fall, in which the most frequently listed career interests were grouped into eight umbrella options. By the end of the semester, 61% of students were interested in pursuing food systems careers, a 27.7% increase from the semester's start. Notably, this increase came proportionally from previously undecided and non-interested students.

Interest in Food Systems Careers	Initial	Final	Change
Interested	33.3%	61.0%	+ 27.7
Non-interested	13.0%	7.3%	- 5.7
Undecided	53.7%	31.7%	- 22.0

Figure 9. Percentage of Students interested in a career in food systems. The number of students interested in food systems by the end of the semester rose by 27.7%, while the number of non-interested and undecided students declined by 5.7% and 22.0% respectively.

When asked about specific sub-fields of interests, students demonstrated a steadfast interest in farming and food production, totaling 59.5% of food system career interested students at the start of the semester and 61.0% by the end of the semester. It is worth considering that at the start of

the semester there was a relatively even split in interest among students across the career fields listed. Trailing behind farming, was land-based activism at 59.5%, food systems non-profit tied with city planning, policy, and law at 56.8%, and food distribution and land-based education similarly at 51.4%. However, by the end of the semester, the survey results showed greater distinguishment in career interest. While farming increased in interest, there was a greater spread between the other career fields, revealing some level of delineation and preference evolving in students as they were more likely to select a smaller range of careers. While career interests are in constant evolution, the survey results in conversation with participatory observation and student feedback, this course appeared to impact students' long-term career interests.

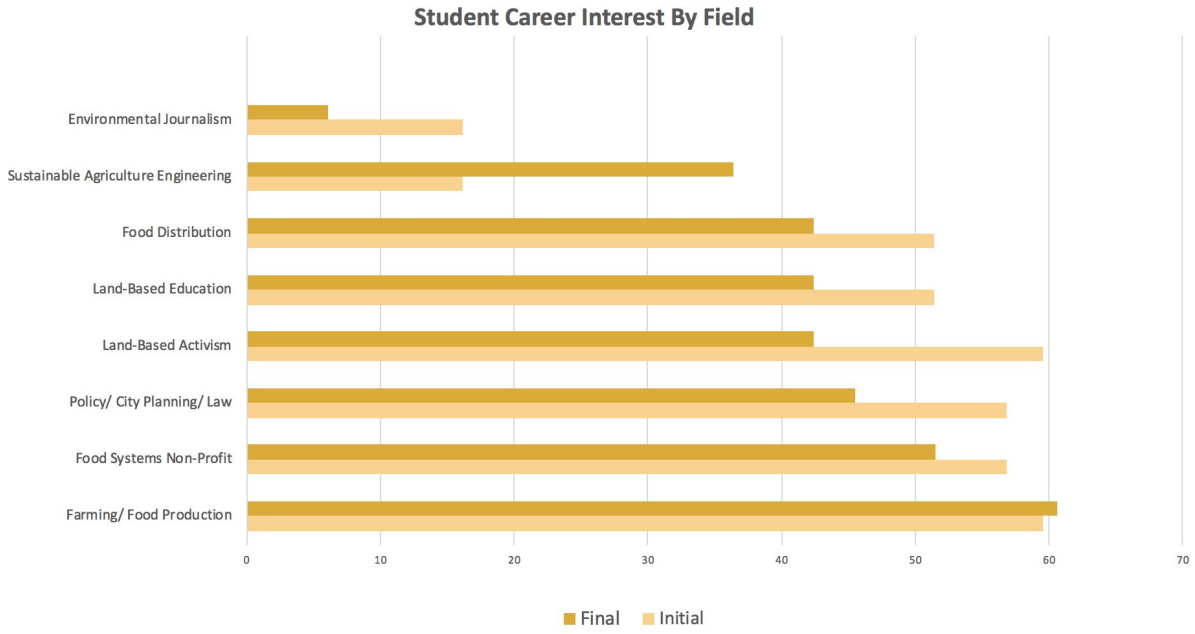

Figure 10. Percentage of Students interested in a career in food systems. Farming and food production was the highest ranking career field in both rounds of surveying.

At the end of the semester, a brief reflection question was added to identify moments and teaching mechanisms that had significant impacts on students' view of the food system. Their responses largely detailed experiences on the land in workshops as well as the fruitful takeaways of small discussion. By the numbers, these experiences most frequently nodded to experiences of embodied and democratic learning. As a facilitator, I was surprised, as our efforts to create embodied and democratic learning opportunities had felt the most messy.

It's quite possible to say that any effort to imbue *campesino-a-campesino* learning strategies that deconstruct professorial hierarchies and make space for organic intellectualism is incompatible with a Land Grab, Zoom University. And, at times, I would have to agree. In preparation for the weekly reading presentations, which intentionally opened room for students of appropriate positionality to take on leadership roles in class discussion, I realized that for many it was the first time they had been given autonomy over their learning. Their hesitancy to forward their own interpretations, confusion over how to weave in discussion, and compulsive tendency to summarize revealed the extent to which academia has ingrained its standardized way of knowing. In the new domain of democratic discussion, willingness to blur boundaries between teacher and student was tensioned and at times confusing. There was one instance during a discussion about what it means to be Indigenous in a globalized world when a white student made a comment that harmfully, although unintentionally, attempted to equate their personal disconnection from nature with histories of Indigenous dispossession. Stuck in the awkward gamble of, to unmute or not all three facilitators bit our lips. That following evening we received an email inviting us to take accountability, which we answered with a class-wide discussion—marking the first in a series of intentional steps to break the fourth wall between student and teacher. The process clarified democratic dynamics, by affirming the importance of having facilitators to take accountability and do the labor of guiding discussion and maintaining safe and inclusive learning environments. However, the messiness of it all also called in an important feature of agroecology education: that as a social ontology the process of learning itself is an avenue for growth and community development. These embedded experiences have seeded new questions as this semester comes to a close. How do students learn without the guidance of professorial hierarchies? How do students learn to internalize their own experiences as valid contributions to conversations happening in academia? And what mechanisms can be used within academia to support the inclusion of organic intellectualism? Thus the outcomes of the experimental classroom call our attention towards a further understanding of facilitation techniques and how they might be effectively employed within academia to strengthen delivery of the pedagogies of agroecology.

These questions also extend into conversations around embodiment, which similarly stood out for its difficulty to actualize. The experimental classroom forced us to ask how can we offer embodied learning experiences in the middle of a pandemic when communing with each other can be life-threatening? And pandemic aside, how can we expect students to show up on the land when they are not compensated, the space lacks ADA accessibility, and is surveilled by police? While riddled with shortcomings, the DeCal's weekly workshops offered embodied learning experiences for those able to join. Survey results of student's agricultural skills proficiency, supported embodied learning effectiveness of improving understanding. Notably, while surveys revealed initially lower proficiency scores for agricultural practices, compared to food system concepts, by the end of the semester the surveys showed a far greater proficiency jump amongst practical skills. However, if we think about scaling such educational programming for students across a range of backgrounds, accessibility–be it cultural, financial, or physical–must be centered. Herein, allyship to the University may provide strategic access to resources including funding for student positions, maintenance for ADA accessibility, and land security for affinity group gatherings. Such considerations represent critical components to the practical success of the pedagogy for agroecology.

B. How do we move forward?

There are significant steps between the ideals of the UC Berkeley community and their vision for a Center for Land Based Learning rooted in a pedagogy of agroecology, and today's version of Berkeley Student Farms. And while BSF finds itself in an ancestry of many iterations of food justice work here in Huichin, patched together in the summer of 2020, it represents only a seedling of possibility. In thinking about how Berkeley Student Farms might one day grow into a locus for land-based education, I want to end by stringing together some strategies for how to move forward, offered through interviews with the community.

(1) Allyship in Academia

Berkeley Student Farms has paid a lot of lip service to mycorrhizal fungi. They come up as subjects of study in experiments on the Oxford Tract, in conversation around tillage, but most often they are acknowledged for the webs of mutual aid they embody. The fungal inspired idea of creating channels of support and of resource sharing informed the initial design BSF itself. However, it also suggests shapes for its evolution, specifically in thinking about institutionalization. This thesis heard extensive concerns around the shedding of student autonomy over the campus gardens. As a training ground for preparing to tackle the many challenges of the food system, the student-led nature of BSF caters to the sort of experiential and student-centered learning experience named necessary by all groups of stakeholders. But in balancing such a design with needs for mechanisms of the institutional–namely land, labor, and capital–the community's emphasis on growing and strengthening partnerships revealed how mycorrhizal associations may continue to underpin the structure of BSF. But if partnerships and pathways for the redistribution of resources should happen not just between farms but across campus and the city, where might the mycelium grow?

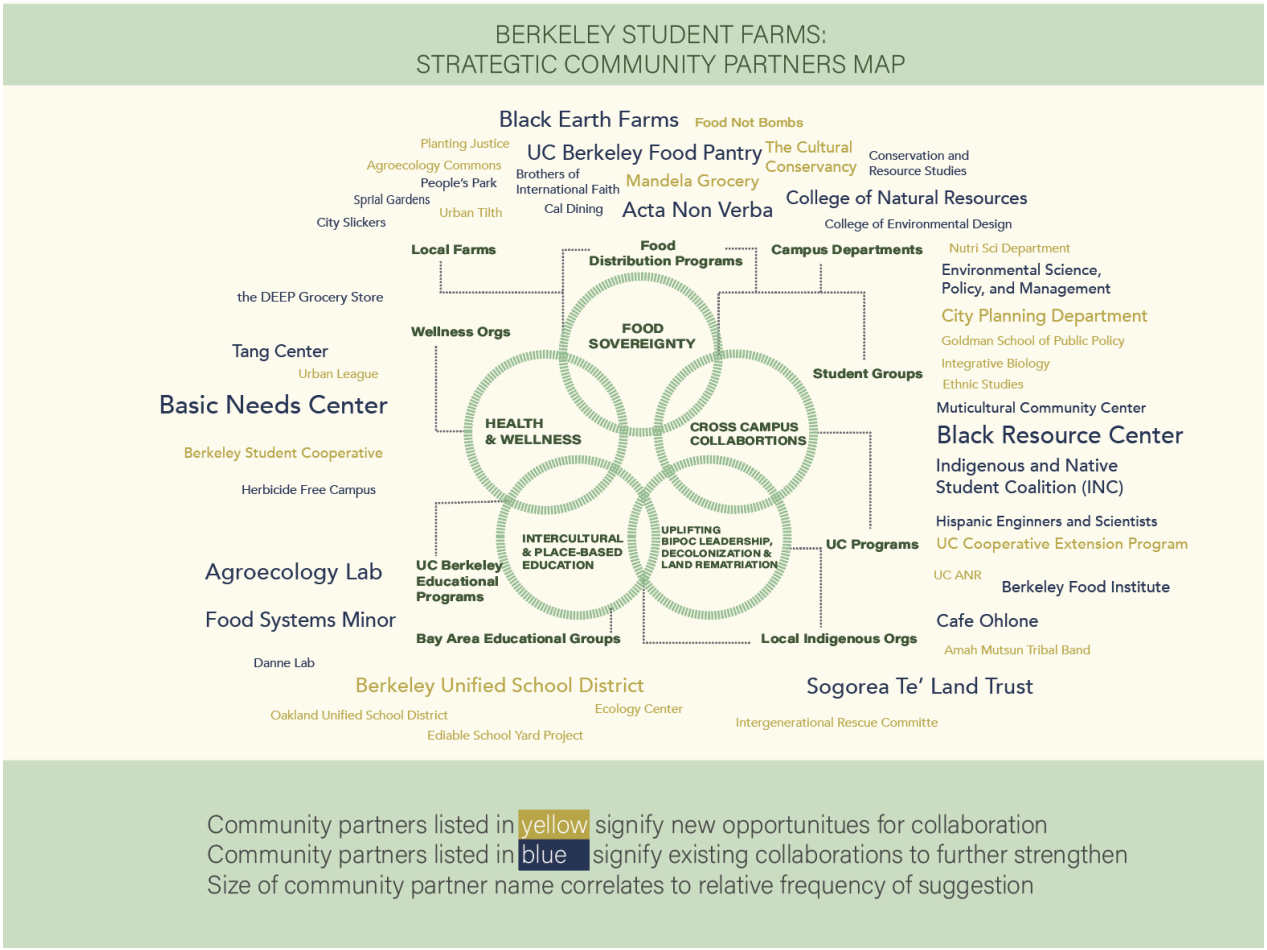

Figure 11. Map of strategic partnerships.

A number of recommendations stood out from the interviews that highlighted opportunities for allyship within the institution. Most commonly suggested were with the Basic Needs Center (BNC) and faculty. In light of the emerging trends of UC funding being allocated towards Basic Need programming alongside the already well-established personal relationships between Berkeley Student Farmers and the BNC, this mycorrhizal relationship could offer a way to increase the food security goals of both organizations, and provide a potential pathways for co-creating solutions to the entangle crisis of food and housing insecurity. A closer relationship with the BNC would increase access to high budget state and federal funding and enhance infrastructure around food processing and distribution. Relationships with faculty were similarly suggested for increasing opportunities to state and federal funding, but moreover for meeting the educational goals of BSF.

> *"The strength of student movements is that they are student-led. Institutionalization brings up risk of loss of autonomy however there is an added benefit of getting support for long term sustainability and security of the spaces. And so there's a need to think creatively. How might BSF be represented by faulty, for instance, could sway future course offerings and development, perhaps having greater integration between students and faculty in general, you know I think a lot about how mentorship or co-learning as it happens in DeCals might translate into other classroom spaces to maintain student at the center of these processes."*

Closer working relationships with faculty would allow opportunities for the co-generation of courses and research projects that more closely align with student interests. Moreover, faculty provide a bridge into discussion with administrators, whose future visions for BSF strayed farthest from students, yet ultimately concentrate the majority of the decision-making power. Partnerships with faculty also encompassed the selection and review of new faculty hires to ensure UC Berkeley is attracting academics whose values and interests align with the programmatic desires of BSF. Finally, the development of a faculty advisory board that would work with BSF to navigate bureaucracy, adjust CNR curriculum with student interests, and provide transparency around decision making and financial spending was repeatedly suggested as a strategy through which to maintain long-term relationships with faculty.

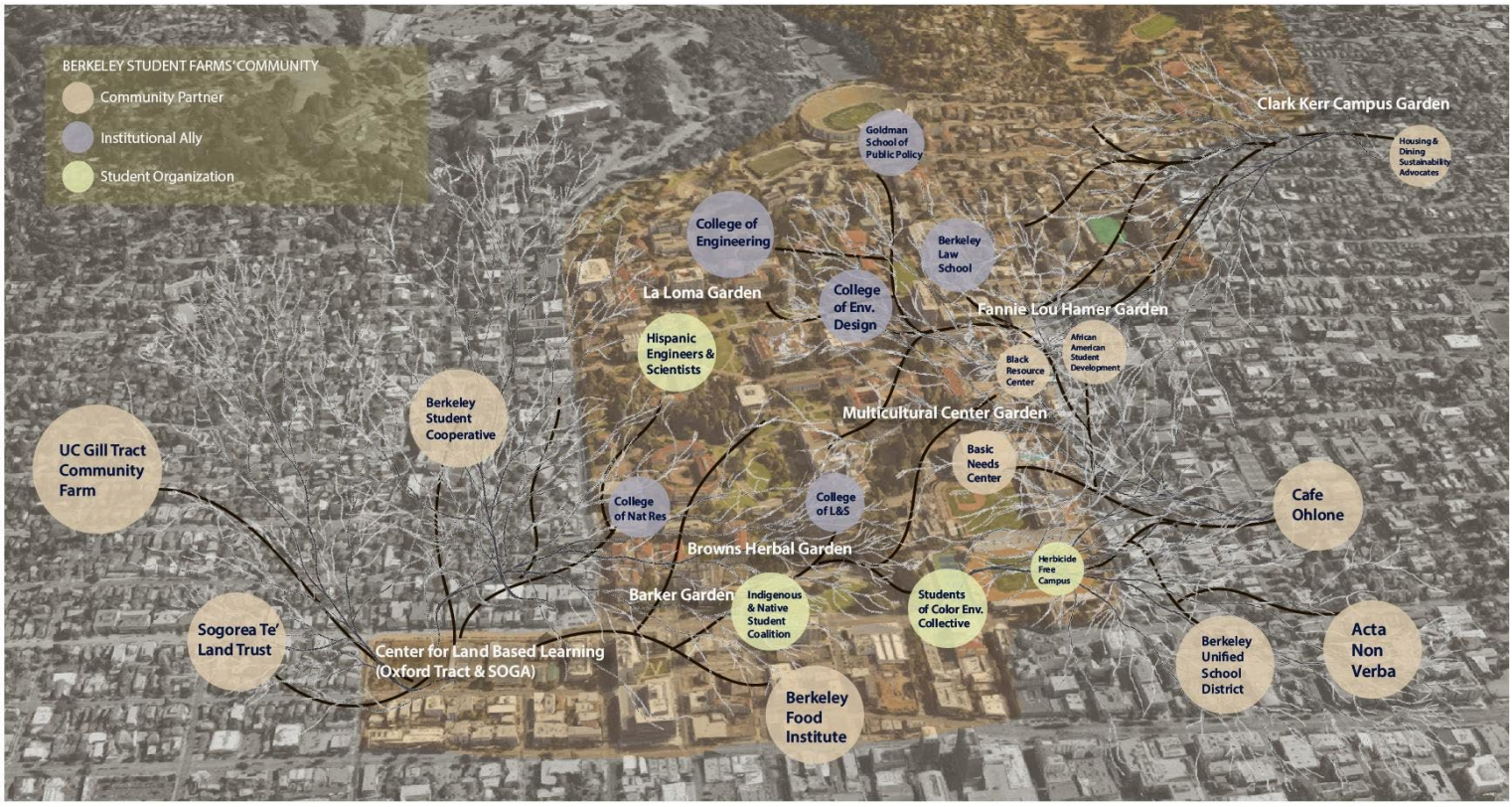

Figure 12. Mycorrhizal map of strategic community partners. This map outlines commonly suggested partnerships for Berkeley Student Farms to help support the transition towards the community's future visions.

(2) Diversity in Dollars

Embedded within the conversation of institutionalization, is the question of capital: how much is needed? where to find it? and how to use it? For a liberation movement, it's almost amusing to consider the length at which capital is discussed within Berkeley Student Farms. But on the other side of the irony is a critical strategy of monetary redistribution. In thinking about what possibilities for liberation emerge within academic institutions, the extent to which students can sequester funding into community projects is critical.

Across all interviews, stakeholders suggested BSF funding should come from some combination of grants, private donors, and independent income streams. Grants were celebrated for their relative accessibility while weighed against their short-term viability and influence of outsider

expectations. The later risks also applied to private donors but were weighed against the benefits of long-term support. The consensus around independent incomes, which would encompass for-profit distribution BSF goods and services, namely produce and educational programming, was opaque. On one hand, the prospect of financial independence offered a way out of the fundraising cyclone that has been well-documented for hampering the revolutionary potential of social service projects (Gilmore 2008). On the other hand, the commodification of food and knowledge were noted to be in moral conflict with the anti-capitalist ideals of Berkeley Student Farms. However balancing both perspectives, there were frequent mentions of alternative profit approaches including a sliding-scale system that would allow BSF's goods and services to remain accessible to system-impacted community members while creating opportunities for redistributing economic privilege. Thus the overarching consensus around financial sourcing, synthesised from stakeholders, was to maintain diverse income streams. All three aforementioned systems pose unique risks that can be minimized when used concurrently, while also offering ways to redirect institutional wealth towards the reimagining of the Land Grant System.

It is also critical to hold the question of finances alongside the recommendation to find allies with the University, as the labor to fund the long-term educational and community programming of Berkeley Student Farms must extend beyond students. As emphasized by students farmers, it is unsustainable for the organization to rely on uncompensated students to take on financial development projects just as it is dangerous for temporary grants to serve as the sole source of income for the organization. Thus to undergo such a project, faculty, staff, and administrative allies are needed to support capital redistribution.

As we move forward, it must also be critical to remember that *the revolution will not be funded*. Creating stability and relief from the violence of capitalism through financial redistribution into students positions and resources through the farms is critical. And in the process there must also be intentional efforts to co-create alternative mechanisms for abundance that push back on the University as a frontier of accumulation. If we turn to the work of Indigenous scholars, theories around the gift economy offer anti-capitalist methods for resource mobilization that align with BSF's politics of liberation. The gift economy describes systems whereby goods and services are

exchanged through personal or communal relationships of reciprocity, rather than capital (Kimmerer 2013). By rejecting logics of scarcity and privatization, gift economies offer one pathway through which to tangibilize the ethics of *campesino-a-campesino* agroecology, evolving mycorrhizal associations beyond metaphor.

(3) Through the Food System Minor's Backdoor

The more the community chewed on the idea of an alternative urban agriculture education that reconciled with the history of UC Berkeley as a land grant institution and forwarded abolitionary pedagogies, the more tension emerged around the idea of consolidating such learning into a degree, major or minor. If such education must be interdisciplinary and if the land should serve as a hub for all ways of knowing, the form in which it might be offered was suggested to require complementary flexibility. While such sentiments informed the structure of the Center for Land Based Learning and Agroecology in Residence Program, there remained a steadfast desire to accredit students who were specifically interested in studying UA. Balancing bureaucratic concerns flagged by faculty, staff, and administrators around difficulties creating new majors with students' cautioning around University co-optation of their food sovereignty work, the consensus trended towards working with the already established food systems minor. Established in 2016, in partnership with the Berkeley Food Institute, the minor includes courses in social, natural, and biological sciences that present a systems-based approach to food justice. With a community-partner capstone project already in place, the original ideas of the program are somewhat in alignment with the land-based pedagogies forwarded in this thesis. Realigning the minor's content with student's interests, reflected in the syllabus of the experimental classroom (see Appendix B), and the pedological considerations synthesized in this thesis as well as rooting it on the sites of Berkeley Student Farms would provide a critical pathways towards the proposed model for UA education.

(4) Embracing the Urban

In thinking about establishing an alternative agriculture education in downtown Berkeley it is critical that the programming directly confronts its *urban* context. In light of the University's proposal to develop the Oxford Tract and SOGA, there have been recent discussions about creating an alternative space for student farming at Smyth Fernwald, a currently vacant park adjacent to the Clark Kerr Campus. There are a myriad of feelings held by the community around this proposal, ranging from concerns about it being far away from central campus, to excitement about the potential infrastructure it will create, and fears for the loss of land-based memory. Though everyone saw Smyth Fernwald as a bargaining chip, few knew enough to have a definitive position on the matter. However, one faculty pointed out that,

> *"It's not really an urban agriculture space in the sense that it's on a hillside, it borders open space, and it's in one of the wealthiest neighborhoods in Berkeley."*

If we turn back to the framing for this project, I offer many ideas around the differences and uniqueness of *urban* agriculture, and what they mean for education. Most glaringly, is urban agriculture's inherent politicism. In their statement above, the faculty pointedly named risks for cultural, financial, and physical inaccessibility associated with building a student farm in the Berkeley hills. Risks that echo in scholarship which has shown how the revolutionary potential of UA to serve system-impacted communities can be undermined by patterns of gentrification and pervasive whiteness (Bitten 2018, Maantay and Maroko 2018, Siegner et al. 2018, Black and Richards 2020). However, critical to also acknowledge is Smyth-Fernwald's position on the Hayward fault line. While administrators marketed the fault as guaranteed land security, as the site is unusable for development, its implications undermine the political praxis of urban agriculture. Plantation theories and the politics of the urban-rural divide, remind us that urban farms represent a locus of resistance to the ever expanding logics of capitalism (Guthman 2008, Davis et al 2019). However, such resistance comes from disrupting the University's frontier of accumulation. To offer an urban agriculture education on disposable and thus depoliticized land that bears no legacy of liberation, can not offer the political education critical to urban agriculture.

If the creation of an UA program at UC Berkeley seeks to integrate both the practice and politics of land stewardship, as outlined the pedagogy of agroecology, it must work within the messy political, cultural, and ecological entanglements of the UC Berkeley food system. Within these contested spaces their histories of resistance and resilience maintain pathways through which to learn today's arts of survival.

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Appendix A. Interview Questions

Background	1. Name 2. Position 3. Can you describe your role within the UC Berkeley "food system"? 4. What are the main "issues" within the food system that you see your position and role working to address?
Context	1. What aspects of "agricultural" education are important to teach today? a. In other words, How do you think we should be preparing people to engage with the significant challenges our food system faces? 2. The surrounding Bay Area and City of Berkeley offer a pretty unique context to the University in many ways. In thinking about agriculture, perhaps the most glaring influence is the rapidly expanding metropolitan environment. In the past urbanization has motivated satellite developments such as the"UC Farm." Today, many say that agricultural education is at odds with the urban context and that models like UCSC or UCD are incompatible. However, we know that farming is still very much so possible in an urban context and student movements in particular have shown us that ag education is also still very possible. So my question is, how do we have to adapt our agricultural education to meet the unique context of being an urban university?
Content	1. What are some examples from your own personal and professional experiences that have guided or inspired your interest in the food system, agriculture, and / or environmental science? 2. Are there any pre-existing agricultural education, either formalized at University or otherwise informal, that you see as useful models? (UCSC, UCD, MST etc) a. What stands out about these models? 3. What type of cannon could this agricultural program teach? Who or what do you see as the foundational schools of thought to draw from? 4. Who have been some influential mentors and teachers in your life that have guided your interest in food systems? 5. Who do you believe are the ideal teachers for this type of program?
Structure	1. If BSF were to grow into a major or a certificate or become embedded in the food systems minor etc, where do you see student voices fitting in? 2. What strategic community partnerships do you recommend BSF form or further strengthen to make this transition? 3. Urban agriculture has been a much-celebrated solution to community development. As BSF continues to grow and strengthen its internal infrastructure, how do you see BSF programming extending to serve the city of Berkeley at large? What strategic partnerships would you recommend for BSF to form?
Form	1. In what form do you see BSF as fitting into educational programming within CNR? Do you see BSF as a center for classes, a certificate, a minor, a major, an agroecology in residence program etc? 2. A huge part of institutionalization is the finances.

	a. Do you think UC Berkeley can or will reverse the trend of declining investment and infrastructure for agricultural education that has occured in the last 50 years? If so, how? b. What would you recommend as the financial future of BSF?
Land Use	1. Where do you weigh in on the conversation of development? How do you feel about the construction of market-rate student housing on these agricultural spaces? How would the construction of market-rate student housing on the farms affect the work you do within Berkeley's food system? 2. If we are thinking about how to grow towards an alternative education, I am curious about how land use can get us there. In the past, place-based programming such as an agroecology in residence program or giving the Native Bee Garden to the Inigenous and Native Student Coalition (INC) have been offered as suggestions. How else might we "develop" the remaining agricultural land at UC Berkeley, such as the OT and SOGA, to be able to support the kinds of agricultural education we discussed previously? 3. Along these lines of development, CNR has shared its proposal to develop Smyth-Fernwald into a student farm. Their plans even mentioned trucking the soil from SOGA to this new site. What are your thoughts on this proposal? Do you think it is feasible? What would you add or change?

Appendix B. Experimental Classroom Syllabus

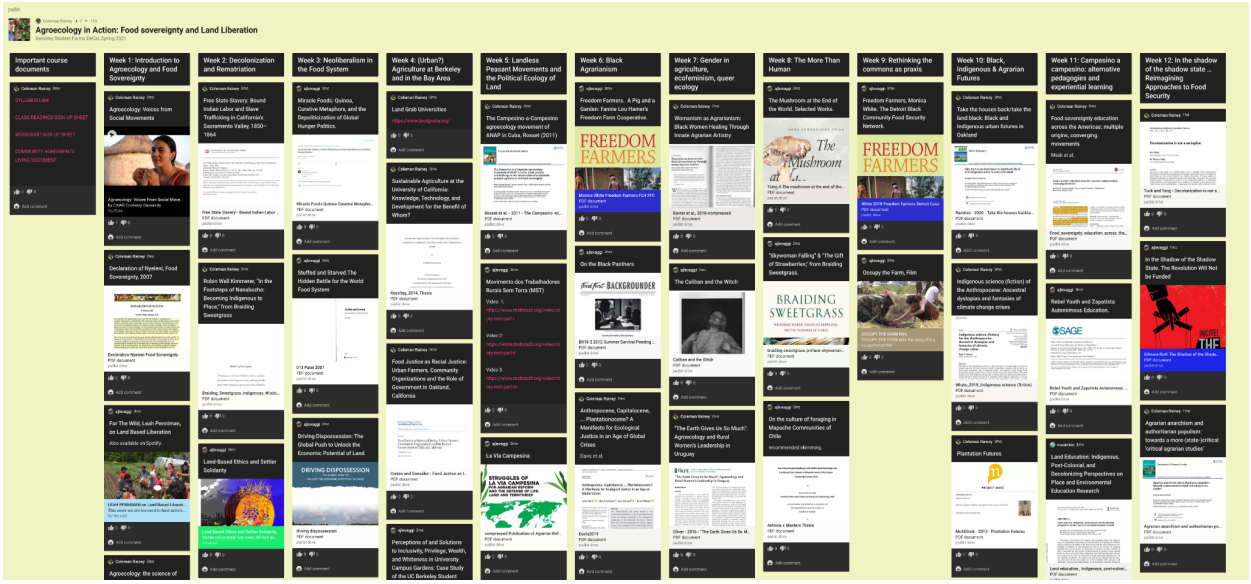
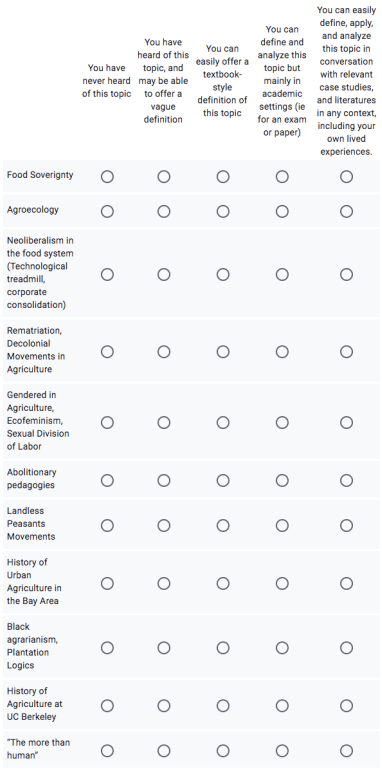


Figure B1. Agroecology in Action Syllabus. Image of the weekly topics and readings for lecture. For further details about workshop topics and materials, as well as other course policies please email: ajlevaggi@berkeley.edu.

Appendix C. Survey Questions

Question	Purpose of question
1. Name, Year, College	To collect background information on the students.
2. Please rank your proficiency in the	To access the initial proficiency of students in the course. The baseline mean will be compared to the end of the semester to evaluate improvement as well as used by facilitators to determine how much foundational material will be needed.

following food systems concepts.  **Figure C1. Sample proficiency question from survey.**	
3. Please rank your proficiency in the following farming practices.	To access the initial proficiency of students in the course. The baseline mean will be compared to the end of the semester to evaluate improvement as well as used by facilitators to determine how much foundational material will be needed.

	You have never heard of this practice	You could describe the practice and some techniques involved but have never done it yourself or seen it demonstrated.	You understand what it is, and have done it a few times or watched someone demo it	You have done it a several times and understand what it is
Harvesting, cleaning, and handling of donations	○	○	○	○
Compost making (including piles, teas, vermicomposting)	○	○	○	○
Bed prep	○	○	○	○
Site selection and Crop Planning	○	○	○	○
Seed Saving	○	○	○	○
Soil care (including cover cropping, soil testing, and soil amendments)	○	○	○	○
Integrative pest management	○	○	○	○
Plant propagation, direct seeding, transplanting, and germination	○	○	○	○
Irrigation Set up & maintenance	○	○	○	○

Figure C2. Sample proficiency question from survey.

4. Are you interested in pursuing a career in Food Systems? ❑ Yes ❑ No ❑ Still Deciding/ What is food systems?	To access students initial interest in food system careers.
5. If answered yes above, please indicate which field(s) you are most interested in. ❑ Farming/ Food Production ❑ Research/ Academia ❑ Food Distribution ❑ Food systems non-profit ❑ Policy, City Planning, and/ or Environmental	To access specific sub-fields students are interested in within food systems work.

Law (land, labor, water rights) ❑ Farm/ land-based Education ❑ Land based activism ❑ Sustainable Agricultural Engineering ❑ Environmental Journalism	
6. What was *one* thing that happened during class, workshop, or in preparing for/ in digesting class that impacted how you view the food system? Please offer a brief explanation for why.	This question was only included in the post survey. To gain a more qualitative understanding of what parts of the learning experience/ pedagogy impacted students.

Appendix D. Dreamscaping (Participatory Mapping) Project: Assignment Details

After many months of a student-led & community supported Occupation of the Oxford Tract & Student Organic Garden Association, the University and its development firm Capital Strategies enlist a group of activists from the occupation to draft an alternative "development" plan for the site. Keeping in mind the many communities from across campus that use this space, design a map of what an ideal future for OT/ SOGA would look like. As a representative of a larger movement please keep in mind the five values of your community when rethinking how our land use in Berkeley can better serve our community:

(1) Supporting & uplifting food sovereignty initiatives
(2) Land decolonization & empowerment of BIPOC leadership
(3) Offering place-based & intercultural learning
(4) Expanding & strengthening cross-campus collaborations
(5) Healing & Wellness

Appendix E. Dreamscaping Results

Land Use Feature	Mean
Crop space	1.0
Gathering space	0.98
Kitchen	0.69
Educational space	0.62
Food distribution site	0.62
Greenhouses	0.62
Compost Facility	0.49
Tool Storage	0.36
Food Processing Center	0.33
Student Housing	0.31

Figure E1. Table of Land Use Features. The ten highest averaging land use features included in the dreamscapes.

	Grouped Features	Mean	Percentage Land Use
1.	Food Production (crop rows, orchards, herbal/ medicinal spaces),	1.0	47.10%
2.	Community Accessibility (gathering space, bathrooms, cultural pavilion, altar)	0.98	10.05%
3.	Agricultural Facilities (greenhouses, compost, seed library, tool shed)	0.62	13.14%
4.	Food processing and distribution (kitchen, pantry, fridges, wash and pack)	0.62	13.60%
5.	Education and Research (Outdoor classroom, ADA accessible teaching beds, agroecology research space)	0.62	9.01%
6.	Housing (student housing cooperative, supportive housing)	0.31	7.11%

Figure E2. Table of Grouped Land Use Features. List of land use priorities by percentage acreage. Categories group features with a mean score greater than or equal to 0.25.

Appendix F. Survey Results

Concept	Initial Mean	Final Mean	Transformation	Final Proficiency Rating
Agroecology	2.65	4.24	+1.59	Proficient
Food Sovereignty	2.62	4.41	+1.80	Proficient
Neoliberalism in the food system (Technological treadmill, corporate consolidation)	2.41	3.71	+1.3	Semi-proficient
Rematriation, Decolonial Movements in Agriculture	2.37	3.68	+1.31	Semi-proficient
Gendered in Agriculture, Ecofeminism, Sexual Division of Labor	2.00	3.66	+1.66	Semi-proficient
Abolitionary pedagogies	1.91	3.02	+1.11	Semi-proficient
Landless Peasants Movements	1.85	3.46	+1.40	Semi-proficient
History of Agriculture in the Bay Area	1.69	3.56	+1.87	Semi-proficient
Black agrarianism, Plantation Logics	1.67	3.59	+1.92	Semi-proficient
History of Agriculture at UC Berkeley	1.56	3.83	+2.27	Semi-proficient
"The more than human"	1.20	3.51	+2.31	Semi-proficient

Figure F1. Table of conceptual proficiency means from survey. Organized by theoretical concept, student's means from the pre and post survey show semi/proficiency in all the concepts introduced in the course.

Practice	Initial Mean	Final Mean	Transformation	Final Proficiency Rating
Compost making (including piles, teas, vermicomposting)	2.15	3.87	+1.36	Semi-proficient
Plant propagation, direct seeding, transplanting, and germination	1.88	3.61	+1.73	Semi-proficient
Harvesting, cleaning, and handling of donations	1.83	3.9	+2.07	Semi-proficient
Bed prep	1.74	3.68	+1.94	Semi-proficient
Irrigation Set up & maintenance	1.63	3.35	+1.72	Semi-proficient
Site selection and Crop Planning	1.59	3.27	+1.68	Semi-proficient
Integrative pest management	1.56	3.41	+1.85	Semi-proficient
Seed Saving	1.51	3.45	+1.94	Semi-proficient

Figure F2. Table of practical proficiency means from survey. Organized by agricultural practice, student's means from the pre and post survey show semi/proficiency in all the concepts introduced in the course.