

SUSTAINABLE AGRICULTURE AT THE UNIVERSITY OF CALIFORNIA:
KNOWLEDGE, TECHNOLOGY, AND DEVELOPMENT FOR THE BENEFIT OF
WHOM?

By

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ABSTRACT

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As the limitations of ‘organics’ manifest and sustainability continues to elude California, the subsidies that demarcate the scope of sustainable agriculture need to be examined. This case study looks at research and development in sustainable agriculture at the University of California, (UC), focusing on how research and development decisions are made, who is included in making them, and who benefits from them. Using grounded theory, data was gathered through internet research, document analysis, and interviews with key informants at UC’s most important sustainable agriculture research centers: the Sustainable Agriculture Research and Education Program, (SAREP), in Davis; the Center for Agroecology and Sustainable Food Systems, (CASFS), in Santa Cruz; and the Agroecology Research and Training, (ART), Laboratory, in Berkeley. There are significant differences between these centers in terms of decision-making processes, research orientations, and development outcomes. SAREP is structured around meeting the needs of a select set of clients, (i.e., industrial farm operators, corporate processors, and transnational distributors), and decision-making is closed to the public. CASFS and ART, in contrast, are structured around meeting the needs of California's diverse

communities and unique ecosystems: they engage with communities in need of agri-food development through open forums and partnership models. This study finds that UC undermines the work of agroecology, while its support for sustainable agriculture is nominal.

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THE AGRI-FOOD LANDSCAPE OF CALIFORNIA

This thesis examines sustainable agricultural science and technology production and its role in shaping California's alternative agri-food landscape. The alternative agri-food landscape is something of a parallel reality that exists in this state otherwise entrenched in the global, capitalist agri-food trade system. Though industrial agriculture continues to dominate mainstream economic and political spheres, local and organic markets have, nonetheless, enjoyed a remarkable degree of success here. Despite these successes, the social and ecological problems engendered by the state's ongoing political commitment to industrial agriculture are reaching epic proportions. Issues of hunger and environmental degradation keep accelerating as the state outstrips its own agricultural production levels annually, exporting the bulk of these goods to national and foreign markets where higher prices are garnered than can be paid by ordinary working people here. Increasing production has involved the expansion of poverty for farm workers, as well as increasing threats to biodiversity as progressively more toxic levels of pollutants enter water systems and the atmosphere. These problems are the predictable outcomes of the green revolution, plantation-style of agricultural development to which this state has long been beholden.

Recognition is mounting that the organics market alone cannot solve these problems. The organics market is, in many ways, replicating the injustices of industrial agriculture and, in some ways, worsening these injustices, (for example, by demanding even more extended periods of stoop labor from workers for certain types of specialty

crops, which tend not to be mechanized and are therefore more highly labor-intensive).¹ Within the market, profits have accrued to industrial producers, large-scale processors, and exporters of organic foods and food products.² The contradictions between the organics market and the goals and values of sustainable agriculture have left critics dismayed as people within the movement search for explanations and solutions.

While a great deal of attention has been paid to issues of market regulations, and some have pointed to the legal processes that codified it,³ the market cannot be explained simply in terms of the laws that formalized it. Markets, (e.g., commodity markets), are shaped by subsidies, provided by the government for the development of specific types of economic activities and enterprises. Subsidies are distributed through various governmental agencies and tend to form subsidy-complexes that incentivize certain forms of development over others, mainly by setting the terms and conditions under which assistance for development is provided. The scope, limitations, and successes of markets are largely determined by how subsidy-complexes are constructed - i.e., what enterprises are incentivized.⁴ This thesis examines how research and development subsidies for

¹ Getz, C., S. Brown, and A. Shreck. 2008. "Class politics and agricultural exceptionalism in California's organic agriculture movement." *Politics & Society* 36 (4): 478-507.

² *ibid.*; See also Kamenskaya, A., and H. Wilson. 2010. *How the Corporate Takeover of Organics Betrays our Values*. Society for Agriculture and Food Ecology. <http://ecohearth.com>, accessed February 10, 2010.

³ Guthman, J. 2004. *Agrarian Dreams: the Paradox of Organic Farming in California*. Berkeley: University of California Press.

⁴ For a detailed discussion on how subsidies work, see Shaffer, R., S. Deller, and D. Marcouiller. 2004. *Community Economics: Linking Theory and Practice*, second edition. Ames: Blackwell Publishing.; For a full account of agricultural subsidies in California, see Hamerschlag, K. 2012. *Farm Subsidies in California: Skewed Priorities and Gross*

sustainable agriculture may contribute to the current configuration of the alternative agri-food landscape.

The alternative agri-food landscape is comprised of far more than fields and markets, of course. It is comprised of people. California's alternative agri-food movement is diverse and nonaligned, as it is co-created by many people in multiple sectors of society working on many different kinds of ideas and projects. They include producers, small- and large-scale, who employ alternative models or methods of production; workers and employers who choose innovative working relationships; and people who enjoy the amenities of localized food system activities, whether in rural or urban settings. The movement includes people who yearn for - and need - greater accessibility and diversity with respect to food. The movement also includes engineers and scientists, who craft appropriate technologies; and theoreticians, thinkers, and visionaries, who imagine ways to move forward. Many of these people are situated within various types of organizations that enable - but that also sometimes, or in certain ways, constrain - their efforts. This thesis examines how those who produce alternative agricultural science and technology must negotiate with and within the spaces and organizations of a public science given to industrial agriculture. Specifically, this thesis examines how researchers who are engaged with advancing sustainable agricultural science are enabled and constrained by the

Inequities. Washington, DC: Environmental Working Group. <http://farm.ewg.org>, accessed November 19, 2013.; For an in-depth analysis of the socio-economic and environmental consequences of agricultural subsidies in California, see Mamen, K., S. Gorelick, H. Norberg-Hodge, and D. Deumling. 2004. *Ripe for Change: Rethinking California's Food Economy*. Berkeley: The International Society for Ecology and Culture.

University of California, with respect to decision-making about research and development priorities. How is the field of sustainable agriculture interfacing and faring within an institution so entrenched in state agricultural science? How do the policies and protocols of decision-making affect research and development outcomes? How do research and development outcomes, in turn, shape social and ecological dimensions of the alternative agri-food landscape of this state?

PUBLIC RESEARCH AND DEVELOPMENT IN CALIFORNIA: INITIATIVES IN AGRICULTURE, SUSTAINABLE AGRICULTURE, AND AGROECOLOGY

The Role and Scope of Subsidies: Developing Certain Sectors of the Economy

Creating change in the global food system will require going beyond market based solutions,⁵ and looking more broadly at how markets are created and sustained. Markets are not autonomous. They are constructed, designed, and manipulated by the government through policy levers that include legislation, regulations of various types, tax codes, interest rates, and subsidies.

Subsidies for the global food system are manifold and include federal direct payments to farmers through commodity programs, conservation programs, disaster relief programs, and crop insurance programs. In California, cotton, rice, and dairy producers receive payments through commodity programs, while orchardists benefit from disaster relief programs.⁶ Disaster relief programs compensate growers for damages that result from crop diseases as well as from “unfair trade practices,” including “competition from

⁵ Roff, R. 2007. “Shopping for change?: neoliberalizing activism and the limits of eating non-GMO.” *Agriculture and Human Values* 24: 511-522.

⁶ Mamen, K., et al. 2004. *Ripe for Change: Rethinking California's Food Economy*. Berkeley: The International Society for Ecology and Culture.

China.”⁷ Between 1995 and 2012, California growers received \$10.3 billion in federal direct payments.⁸

Subsidies include indirect payments to farmers through price supports, export assistance, import barriers, tax breaks, marketing campaigns, and input assistance.⁹ California growers are the beneficiaries of approximately \$75 million spent annually through federal market access programs that promote California produce and food products overseas.¹⁰ Input assistance includes contracts for “below-cost“ water, farm credit, crop insurance, and pest and disease control.¹¹ \$236 million is paid annually to California growers for input assistance.¹² The state spends an additional \$44 million annually on plant pest programs.¹³

Subsidies include systemic payments made through social services for poorly paid farm laborers and food service workers.¹⁴ They also include tax exemptions for propane, diesel fuel, and farm equipment; transport infrastructure investments such as highways, airports, and seaports; and funding for research and development.¹⁵

⁷ *ibid.* p. 89

⁸ Hamerschlag, K. 2012. *Farm Subsidies in California: Skewed Priorities and Gross Inequities*. Washington, DC: Environmental Working Group. <http://farm.ewg.org>, accessed November 19, 2013.

⁹ Mamen, K., et al. 2004. *Ripe for Change: Rethinking California's Food Economy*. Berkeley: The International Society for Ecology and Culture.

¹⁰ *ibid.*

¹¹ *ibid.* p. 89

¹² *ibid.*

¹³ *ibid.*

¹⁴ *ibid.*

¹⁵ *ibid.*

Frederick Buttel makes the point that there are yet other subsidies provided to the global food system for which values cannot be calculated, such as those that pertain to ecosystem services and social capital.¹⁶ Ecosystem services are benefits to society that are provided by ecosystems, such as fresh water, arable soil, and biodiversity.¹⁷ Ecosystem services also include spiritual and aesthetic benefits as they provide livelihoods and bases for expressions of culture, identity, and well-being.¹⁸ The costs of industrial agriculture, (such as water pollution, soil erosion, and rural poverty), are not accounted for in the pricing systems of our markets; they are, instead, borne by ecosystems and society.¹⁹ They are paid for with reductions in ecosystem services, social welfare, and human health.²⁰

The sheer scope of these subsidies reveals how the government plays a central and active role promoting certain kinds of industries and markets. The authors of *Ripe for Change* argue that the global food system thrives because, instead of supporting small-scale, local and regional enterprises, these subsidies support “the largest, wealthiest farms

¹⁶ Buttel, F. 2003. “Internalizing the societal costs of agricultural production.” *Plant Physiology* 133: 1656-1665. American Society of Plant Biologists.

¹⁷ Chapin, F. 2009. “Managing ecosystems sustainably: the key role of resilience.” In *Principles of Ecosystem Stewardship: Resilience-based Natural Resource Management in a Changing World*, eds. F. Chapin, G. Kofinas, and C. Folke. New York: Springer.

¹⁸ *ibid.*

¹⁹ Buttel, F. 2003. “Internalizing the societal costs of agricultural production.” *Plant Physiology* 133: 1656-1665. American Society of Plant Biologists.; See also Kimbrell, A., ed. 2002. *The Fatal Harvest Reader: the Tragedy of Industrial Agriculture*. Washington, DC: Island Press.

²⁰ *ibid.*; See also Kimbrell, A., ed. 2002. *The Fatal Harvest Reader: the Tragedy of Industrial Agriculture*. Washington, DC: Island Press.

and the global food economy's dominant agribusinesses.”²¹ Subsidies effectively undermine industries which are unsubsidized. Therefore, this organization of subsidies creates a system where globalized corporate interests are privileged over local economic and community development interests.

Agricultural research is one of the “best-hidden” subsidies to the global food system,²² because of the significant role that it plays in constructing and legitimizing this system. Because innovation is the driving force of industry,²³ decisions about how research and development subsidies are allocated have far-reaching consequences. Choices about how to frame problems and what to research come to constitute paradigms as well as development programs.

The manufacturing of agricultural knowledge and technologies is considered an ‘upstream’ industry to agriculture. It includes purveyors of farm inputs; machinery, chemical applications, and biological technologies, (such as traditionally bred varieties or genetically modified organisms); the extension and advisory services that guide the decisions of individual farmers; and the research and development teams that design technology products and packages.²⁴ While some large private firms carry out research internally, most agricultural research has been - and continues to be - carried out through

²¹ Mamen, K., et al. 2004. *Ripe for Change: Rethinking California's Food Economy*. Berkeley: The International Society for Ecology and Culture. p. 87

²² *ibid.* p. 91

²³ Storper, M., and R. Walker. 1989. *The Capitalist Imperative: Territory, Technology, and Industrial Growth*. Oxford: Basil Blackwell.

²⁴ Whatmore, S. 1995. “From farming to agro-business.” In *Geographies of Global Change: Remapping the World in the Late Twentieth Century*, eds. R. Johnston, P. Taylor, and M. Watts. London: Blackwell.

the public sector, primarily through land-grant universities and state agricultural experiment stations.

Land-grant universities, for their part, have been instrumental in developing the green revolution paradigm and its associated mechanical, chemical, and biological technologies²⁵ - in addition to the industrial, large-scale, capital-intensive, export-oriented business models that support this paradigm. The fields of agronomy and entomology have been focused on supporting high-volume, monocultural production.²⁶ Research has been applied, by and large, to remedying the problems intrinsic to this type of production.²⁷ Katy Mamen, (et al.), found that the lion's share of public money for research and development in agriculture goes to industrial agriculturalists.²⁸ She reports that sustainable agriculture, in stark contrast, "receives only a pittance, and research into technologies appropriate for regional scale producers and local processors receives even less."²⁹ This investment pattern ensures that sustainable agriculture remains subordinate to industrial agriculture, in terms of economic viability as much as social legitimacy. As a whole, the field of sustainable agriculture has remained in a relatively marginal and un-

²⁵ Mamen, K., et al. 2004. *Ripe for Change: Rethinking California's Food Economy*. Berkeley: The International Society for Ecology and Culture.

²⁶ Shiva, V. 2009. *Healthy Food, Organic Food, Abundant Food*. Krista Keenan interviews Dr. Shiva at the Delhi offices of Navdanya. Posted on Pierre Terre website at <http://pierreterre.com/video/organic-food-diverse-food-abundant-food-dr-vandana-shiva>, accessed on April 11, 2010.

²⁷ *ibid.*

²⁸ Mamen, K., et al. 2004. *Ripe for Change: Rethinking California's Food Economy*. Berkeley: The International Society for Ecology and Culture.

²⁹ *ibid.* p. 96

developed state compared with industrial agriculture. Proponents of sustainable agriculture understand the need to reverse this pattern.³⁰

Land grant universities must be examined to ensure that research and development resources are being applied to sustainable agriculture. These centers of knowledge and technology production, responsible for delivering on the public's investment in research and development for agriculture, prefigure the landscapes of tomorrow. This necessitates, here in the 'Golden State,' looking at the University of California.

A Short History of the University of California

Multiple venues comprise the arena of state agricultural science. They include federal agencies such as the USDA and Cooperative Extension; state agencies such as the Resources Agency and the Department of Food and Agriculture; and certain state colleges such as California State Universities, Chico and Fresno, and California Polytechnic State Universities, Pomona and San Luis Obispo.³¹ California's Master Plan for Higher Education³² officially designates the University of California to be "the primary state-supported academic agency" for research and development in agriculture.³³

³⁰ *ibid.*

³¹ Sammet, L. 1983. "Education and research in agriculture." In *A Guidebook to California Agriculture*, ed. A. Scheuring. Berkeley: University of California Press.

³² California's Master Plan for Higher Education came to pass as the Donohoe Act of 1960.; *ibid.*

³³ *ibid.* p. 338

The land-grant university system was established under the Morrill Act of 1862, which granted federal land and funds to states to found universities “to teach such branches of learning as are related to agriculture and the mechanic arts... in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.”³⁴ To receive the provisions of this act, the state of California, in 1866, created an Agricultural, Mining, and Mechanical Arts College.³⁵ The Trustees of a private college in Oakland, the College of California, petitioned to merge with this new state college and, to this end, they offered real estate. Arrangements were made with the Trustees of the College of California to locate the new school on a parcel of land that the College had recently acquired in what would soon become the town of Berkeley.³⁶ The University of California was created through an act of the legislature that was signed by Governor Haight in 1868.³⁷ UC opened its doors in 1869 and operated out of Oakland until the new campus was built in 1873.³⁸

Alan Marcus points out that “disagreements about the direction, form, and agenda of agricultural research are not products of the turbulent 1960s. From at least the [1860s], broad segments of the American population have debated questions surrounding

³⁴ Iowa State University. <http://www.ans.iastate.edu/history/link/morrill1862.html>, accessed August 20, 2011.

³⁵ Stadtman, V., ed. and the Centennial Publications Staff. 1967. *The Centennial Record of the University of California, 1868-1968*. Oakland: Office of the Regents of the University of California. Copyright 1967 by the Regents of the University of California. <http://content.cdlib.org>, accessed September 3, 2013.

³⁶ Sammet, L. 1983. “Education and research in agriculture.” In *A Guidebook to California Agriculture*, ed. A. Scheuring. Berkeley: University of California Press.

³⁷ *ibid.*

³⁸ *ibid.*

agricultural research.³⁹ For example, the first professor appointed to form the new College of Agriculture was Ezra Carr.⁴⁰ Carr sympathized with the Grange, a grassroots movement grounded in populist politics, and the most powerful agrarian organization in the state at that time.⁴¹ The Grange supported family farming and warned against overproduction in the absence of viable markets.⁴² It opposed the government's subsidization of corporate interests to the detriment of labor and the working classes and, to this end, it "battled" railroad magnates, robber barons, and monopolists.⁴³ The Grange promoted instead community-based and cooperative enterprises to keep prices for goods and services affordable for working people.⁴⁴ Carr "worked very closely with the Grange,"⁴⁵ because he understood its members to be 'the public' to whom he was beholden as a servant at his post. His approach was practical and applied. He focused on "helping family farmers," rather than elite capital owners, who wanted theoretical science

³⁹ Marcus points to the 1870s, but my research indicates that these debates were in full swing by the 1860s. See Marcus, A. 1988. "The wisdom of the body politic: the changing nature of publicly sponsored American agricultural research since the 1830s." *Agricultural History* 62 (2): 4-26. Agricultural History Society. p. 7

⁴⁰ Appointed in 1869, Carr's full title was Professor Agriculture, Agricultural Chemistry, and Horticulture. See Sammet, L. 1983. "Education and research in agriculture." In *A Guidebook to California Agriculture*, ed. A. Scheuring. Berkeley: University of California Press.

⁴¹ For a key account of the Grange movement, see Goodwyn, L. 1976. *Democratic Promise: the Populist Moment in America*. Oxford: Oxford University Press.; This volume was edited and reissued as Goodwyn, L. 1978. *The Populist Moment: a Short History of the Agrarian Revolt in America*. Oxford: Oxford University Press.

⁴² Gilliam, C. 1999. *A Short History of the Order of Patrons of Husbandry: the National Grange*. http://www.reocities.com/cannongrange/Cannon_Nationalhistory.html, accessed May 23, 2010.

⁴³ *ibid.*

⁴⁴ *ibid.*

⁴⁵ Sammet, L. 1983. "Education and research in agriculture." In *A Guidebook to California Agriculture*, ed. A. Scheuring. Berkeley: University of California Press. p. 331

and technical applications for their industrial problems.⁴⁶ Carr's efforts, however, became divisive when they began to "threaten relations" between the state legislature and the university.⁴⁷ When Carr, aligned with the Grange, called for "the substitution of an elective board for the appointed Regents," the university declared him "incompetent and unfit" and expeditiously dismissed him.⁴⁸

Eugene Hilgard replaced Carr in 1875.⁴⁹ While Hilgard is formally remembered as a soil scientist, which he was, wine aficionados all over Sonoma and Napa Counties remember him as a "founding father" of California's high-end wine industry.⁵⁰ His work on soil reflected his fascination for wine-making. Using European methods of scientific

⁴⁶ Mountain View Cemetery Docent Program. 2010. "Jeanne Smith Carr (1825-1903) and Ezra Slocum Carr (1819-1894): Scientists; friends of John Muir." *Lives of the Dead: Mountain View Cemetery in Oakland*. <http://mountainviewpeople.blogspot.com/2010/05/jeanne-smit-carr-1825-1903-ezra-slocum.html>, accessed March 12, 2012.

⁴⁷ Scheuring, A. 1993. "Growing a world class institution." *California Agriculture* 47 (4): 27-32. p. 27

⁴⁸ Franklin, F. 1910. *The Life of Daniel Coit Gilman*. New York: Dodd, Mead, and Company. p. 143 and p. 166

⁴⁹ The year that Hilgard began his tenure at Berkeley, by some accounts, is 1874 and, by others, is 1875. It seems that he was formally hired at the tail's end of 1874, but did not begin his duties until Spring of 1875. See True, A. 1937. *A History of Agricultural Experimentation and Research in the United States, 1607-1925*. Miscellaneous Publication no. 251. Washington, DC: United States Department of Agriculture, Government Printing Office.

⁵⁰ Dunn, Michael. 2008. "Zinfandel has deep roots, but what about good old 'vitis'?" *The Sacramento Bee*, March 12. Sacramento: McClatchy Company. <http://www.sacbee.com/2008/03/11/v-print/780128/zinfandel-has-deep-roots-but-what.html>, accessed September 7, 2013.; See also Vintner's Hall of Fame. "Top Wine Experts of our Time." Sonoma and Napa Counties, CA: The Culinary Institute of America. http://www.ciaprochef.com/winestudies/events/vhf_inductees.html#hilgard, accessed September 3, 2013.

agriculture by emphasizing “controlled experimentation [and] systematic analysis,”⁵¹ he focused on “grape growing, cultivar trials, and wine chemistry.”⁵² He zealously supported the development of European wine varieties, to compete against a market glut of Mission grape wines, which may have kept wine cheaper than water in many parts of the state, but which also kept the industry relatively unprofitable.⁵³ Hilgard worked tirelessly to turn wine-making into a lucrative enterprise.⁵⁴ To this end, he was committed to serving the interests of the state’s elite capitalists.

The Act which created UC stipulated that a farm be established “upon the grounds” of the new college to offer “practical education in agriculture.”⁵⁵ UC complied

⁵¹ Lukacs, P. 2000. *American Vintage: the Rise of American Wine*. New York: Houghton Mifflin Company. p. 57

⁵² Vintner's Hall of Fame. “Top Wine Experts of our Time.” Sonoma and Napa Counties, CA: The Culinary Institute of America. http://www.ciaprochef.com/winestudies/events/vhf_inductees.html#hilgard, accessed September 3, 2013.

⁵³ Requiring no irrigation, the Mission grape produced in abundance. This made market entry costs low and, therefore, kept the market open to small-scale, family farmers. In other words, many people made a living, but no one became *rich*, per se. See Adams, F. 1946. "The historical background of California agriculture." In *California Agriculture*, ed. C. Hutchison. Berkeley and Los Angeles: University of California Press. London: Cambridge University Press. Copyright 1946 by the Regents of the University of California.; Sullivan, C. 1998. *A Companion to California Wine: an Encyclopedia of Wine and Winemaking from the Mission Period to the Present*. Berkeley and Los Angeles: University of California Press. Copyright 1998 by the Regents of the University of California.; Lukacs, P. 2000. *American Vintage: the Rise of American Wine*. New York: Houghton Mifflin Company.

⁵⁴ *ibid.* (Adams 1946; Sullivan 1998; Lukacs 2000)

⁵⁵ Adams, F. 1946. "The historical background of California agriculture." In *California Agriculture*, ed. C. Hutchison. Berkeley and Los Angeles: University of California Press. London: Cambridge University Press. Copyright 1946 by the Regents of the University of California. p. 48

nominally in that it established a field which was planted to fruit trees and grape vines,⁵⁶ but this field was kept under strict lock and key.⁵⁷ No practical education in agriculture was offered and there was no farm.⁵⁸ The aforementioned field was, nonetheless, named the College Farm,⁵⁹ apparently to quell the public who had supported the Act for the intended purpose of an educational farm.⁶⁰ In 1877, the legislature designated this field and its associated laboratories the California State Agricultural Experiment Station, and began providing funding for its operations.⁶¹

Directorship of the station was assigned to Hilgard, who proceeded with an agenda to develop the wine industry. Technical bulletins and reports from the early years

⁵⁶ *ibid.*

⁵⁷ True, A. 1937. *A History of Agricultural Experimentation and Research in the United States, 1607-1925*. Miscellaneous Publication no. 251. Washington, DC: United States Department of Agriculture, Government Printing Office.

⁵⁸ (no author cited). 2013. *Davis: Historical Overview: the Need for a University Farm*. Berkeley: University of California History Digital Archives. http://sunsite.berkeley.edu/uchistory/general_history/campuses/ucd/overview.html, accessed August 31, 2013.

⁵⁹ Kerr, N. 1987. *The Legacy: a Centennial History of the State Agricultural Experiment Stations, 1887-1987*. Missouri Agricultural Experiment Station, University of Missouri, Columbia. Washington, DC: USDA Cooperative State Research Service.

⁶⁰ The California State Agricultural Society had been advocating for a practical college of agriculture since 1857. They were joined in this effort by the Mechanics Deliberative Assembly and the Grange.; See Adams, F. 1946. "The historical background of California agriculture." In *California Agriculture*, ed. C. Hutchison. Berkeley and Los Angeles: University of California Press. London: Cambridge University Press. Copyright 1946 by the Regents of the University of California.; and Franklin, F. 1910. *The Life of Daniel Coit Gilman*. New York: Dodd, Mead, and Company.

⁶¹ Ezra Carr "laid the foundation" for UC's experiment station, though his plans would not come to pass under his own tenure. See True, A. 1937. *A History of Agricultural Experimentation and Research in the United States, 1607-1925*. Miscellaneous Publication no. 251. Washington, DC: United States Department of Agriculture, Government Printing Office.

of the station reflect a concentrated occupation with viticulture and enology.⁶² More than half of the papers it published, (antedating the middle 1890s), were devoted to these topics.⁶³ Hilgard, furthermore, turned the field, (that had been named the farm), over to phylloxera,⁶⁴ aphid-like insects which had laid to waste the vineyards of Europe. His intent, to study these creatures in situ, incurred the ire of growers, who thought it reckless to release them for any reason whatsoever.⁶⁵ Hilgard prevailed with his agenda while dispute persisted.

Having been promised an educational farm for practical research, but having received only a field which was inaccessible, if not quarantinable, the public was entirely frustrated. Those interests who once supported UC now declaimed it. The firing of Carr did nothing to stop the momentum of the Grange, whose members were determined to receive the farm they had been promised. Allied with the State Agricultural Society, the California Dairy Association, and other farmers' organizations, they agitated the

⁶² California Agricultural Experiment Station. 1917. *Publications of the Agricultural Experiment Station, University of California, from 1877-1916*. Berkeley: University of California. <http://babel.hathitrust.org>, accessed September 6, 2013.

⁶³ Vintner's Hall of Fame. "Top Wine Experts of our Time." Sonoma and Napa Counties, CA: The Culinary Institute of America. http://www.ciaprochef.com/winestudies/events/vhf_inductees.html#hilgard, accessed September 3, 2013.

⁶⁴ Lukacs, P. 2000. *American Vintage: the Rise of American Wine*. New York: Houghton Mifflin Company.

⁶⁵ Particularly incensed were wine grape producers, since their crops, (and livelihoods), were directly endangered. Charles Wetmore, a grower in the nearby Livermore Valley, and a member of the State Viticultural Society, is remembered for his "pugnacious" feud with Hilgard over the matter. Wetmore waged a public campaign, (mostly through the newspapers), that lasted some fifteen years.; See *ibid.* and Sullivan, C. 1998. *A Companion to California Wine: an Encyclopedia of Wine and Winemaking from the Mission Period to the Present*. Berkeley and Los Angeles: University of California Press. Copyright 1998 by the Regents of the University of California. p. 394.

legislature to bind UC to its mandate.⁶⁶ After creamery and livestock interests became involved, the legislature conceded and, in 1905, passed a bill that, once again, ordered UC to establish a farm.⁶⁷ In 1908, UC finally opened a Farm School for non-degree students.⁶⁸ Located in Davisville, the Farm School was for students fifteen years of age who had completed grammar school, and it offered a three-year course of practical instruction in farming.⁶⁹

By this time, the federal Hatch Act had passed. The Hatch Act of 1887 provided federal funds to land-grant colleges and universities for construction and operations of agricultural research stations to study agriculture under various conditions according to the needs of the states.⁷⁰ The experiment station in Berkeley was the beneficiary of this legislation until 1905, when the state legislature ratified the construction of a station in Riverside.⁷¹ The Southern California Fruit Growers Exchange, (later known as Sunkist), had executed an intense lobbying effort to procure this station⁷² and to ensure that it

⁶⁶ (no author cited). 2013. *Davis: Historical Overview: the Need for a University Farm*. Berkeley: University of California History Digital Archives. http://sunsite.berkeley.edu/uchistory/general_history/campuses/ucd/overview.html, accessed August 31, 2013.

⁶⁷ *ibid.*

⁶⁸ *ibid.*

⁶⁹ *ibid.*

⁷⁰ Sammet, L. 1983. "Education and research in agriculture." In *A Guidebook to California Agriculture*, ed. A. Scheuring. Berkeley: University of California Press.

⁷¹ Scheuring, A. 1993. "Growing a world class institution." *California Agriculture*, 47 (4): 27-32. <http://californiaagriculture.ucanr.org>, accessed September 4, 2013.

⁷² Citrus was a \$20 million industry in California by the turn of the century. Barton, K. 2006. "UC Riverside marks a century of agricultural innovation." *California Agriculture*, 60 (4): 176-179. <http://ucanr.org>, accessed September 4, 2013.

would “pursue the research needs of the citrus industry.”⁷³ The UC Citrus Experiment Station was opened in Riverside in 1907.⁷⁴

The Smith-Lever Act of 1914 provided federal funds for the establishment of state cooperative extension services, and created partnerships between the USDA, the land-grant colleges and universities, and county governing boards.⁷⁵ California was primed for this, since UC already received directives, (and funds), from the state to extend the results of its research to farmers.⁷⁶ Cooperative extension would educate and advise farmers in their fields, as well as economic development planners in city halls and Sacramento, with respect to new production and marketing technologies.⁷⁷ UC established cooperative extension field offices throughout the state to work with county farm advisors and industry representatives to “enhance agricultural productivity and competitiveness.”⁷⁸

The University Farm in Davis, (as it became known), and the Citrus Experiment Station in Riverside were adjuncts of the College of Agriculture in Berkeley until 1959, when the Regents designated them general campuses of the university.⁷⁹ UC Davis and UC Riverside, for this reason, were assigned land-grant status, alongside UC Berkeley.

⁷³ Moses, H. 1995. “The orange-grower is not a farmer: G. Harold Powell, Riverside orchardists, and the coming of industrial agriculture, 1893-1930.” *California History* 74 (1): 22-37. California Historical Society. p. 37

⁷⁴ Barton, K. 2006. “UC Riverside marks a century of agricultural innovation.” *California Agriculture*, 60 (4): 176-179. <http://ucanr.org>, accessed September 4, 2013.

⁷⁵ Sammet, L. 1983. “Education and research in agriculture.” In *A Guidebook to California Agriculture*, ed. A. Scheuring. Berkeley: University of California Press.

⁷⁶ *ibid.*

⁷⁷ UC ANR website. Agriculture and Natural Resources. <http://ucanr.org>, accessed October 2, 2009.

⁷⁸ UC CE website. Cooperative Extension. <http://ucanr.org>, accessed October 3, 2009.

⁷⁹ UC OP website. Office of the President. <http://www.ucop.edu>, accessed September 10, 2013.

As fortunate beneficiaries of Hatch Act funds, these campuses each developed impressive research infrastructures for agriculture.

The agricultural colleges of these three campuses, today, comprise the bulwark of the Agricultural Experiment Station. The deans of these three colleges are, ipso facto, the associate directors of the Agricultural Experiment Station, which is administered by a single director, who works from the Office of the President, in Oakland.⁸⁰ This individual is also the Director of Cooperative Extension, in addition to being the Vice President of the division of Agriculture and Natural Resources, (ANR).⁸¹ Also administered from Oakland, (by the Office of the President), ANR keeps the bulk of its offices on the Davis campus, as Davis has become the heart of UC's agro-industrial technology development complex.⁸²

ANR coordinates research and development in agriculture for the entire UC system, which today is a vast infrastructure for research, with libraries and high-quality laboratories on ten campuses. In addition to administering the Experiment Station and Cooperative Extension, ANR manages a system of nine Research and Extension

⁸⁰ *ibid.*; See also College of Natural and Agricultural Sciences. 2013. "The California Agricultural Experiment Station." Riverside: University of California. <http://cnas.ucr.edu/anr/aes.html>, accessed September 5, 2013.

⁸¹ *ibid.*; See also College of Natural and Agricultural Sciences. 2013. "The California Agricultural Experiment Station." Riverside: University of California. <http://cnas.ucr.edu/anr/aes.html>, accessed September 5, 2013.

⁸² (no author cited). 2013. *Davis: Historical Overview: the Need for a University Farm*. Berkeley: University of California History Digital Archives. http://sunsite.berkeley.edu/uchistory/general_history/campuses/ucd/overview.html, accessed August 31, 2013.

Centers,⁸³ and a natural reserve system that is “the largest and most diverse... in the world,” comprised of thirty-six reserves and wild-land sites, (roughly 135,000 acres), located throughout the state to include the full array of California’s diverse ecosystems.⁸⁴ ANR also administers the Giannini Foundation of Agricultural Economics, which was established in 1930 with an endowment from the Giannini family,⁸⁵ who thereafter became famous for establishing Bank of America, and becoming wealthy beyond precedent making loans to farmers in California.⁸⁶

Buttressing California’s most powerful agribusinesses,⁸⁷ UC has underwritten the state’s rise as an export powerhouse. The university exerts a massive influence over agricultural knowledge, technology, and notions of expertise in California and throughout the world. It has been key in crafting the industrial praxes that are now standard in this

⁸³ UC’s Research and Extension Centers are located in the state’s most industrialized farming areas: Parlier and Five Points, (Fresno County); Exeter and Shafter, (Kern County); El Centro, (Imperial County); Browns Valley, (Yuba County); Santa Paula, (Ventura County); Irvine, (Orange County); Hopland, (Mendocino County); and Tule Lake, (Modoc County).

⁸⁴ UC NRS website. Natural Reserve System. <http://nrs.ucop.edu>, accessed November 12, 2009.

⁸⁵ Johnston, W. and A. McCalla. 2009. "A. P. Giannini: his legacy to California Agriculture." In *A. P. Giannini and the Giannini Foundation of Agricultural Economics*, Johnston, W. and A. McCalla, eds. Davis, CA: Giannini Foundation of Agricultural Economics, University of California. <http://www.randomfierce.com/ArchiveSampling.pdf>, accessed September 10, 2013.; See also <http://giannini.ucop.edu>.

⁸⁶ Nash, G. 1992. *A. P. Giannini and the Bank of America*. Norman: University of Oklahoma Press.; See also Walker, R. 2001. "California's Golden Road to Riches: Natural Resources and Regional Capitalism, 1848-1940." *Annals of the Association of American Geographers* 91 (1): 167-199. <http://oldweb.geog.berkeley.edu>, accessed September 10, 2013.

⁸⁷ Mamen, K., et al. 2004. *Ripe for Change: Rethinking California’s Food Economy*. Berkeley: The International Society for Ecology and Culture.

state and throughout the global food system - oil-based pesticides⁸⁸ and GMOs⁸⁹ are two noteworthy examples. UC has functioned as a wellspring for the generation of intellectual property⁹⁰ and the production of high-end agricultural technology 'packages,' which are exported as products in themselves to buyers in nations throughout the world. UC vends the same technologies that shape California's landscape: resource-consumptive technologies such as chemical agents, computerized farming machines, and capitalist management models developed by its own agricultural economists.

UC has produced a corpus of science in agriculture - 'modern,' mechanical, chemical, and geared toward mass production for export markets⁹¹ - skillfully tailored to suit the state's corporatized land and capital owners, mass producers, and volume exporters. Research has largely been devoted to developing machinery such as harvesters, tractors, and processing equipment; chemical inputs such as fertilizers and pesticides; and biotechnology,⁹² which has subsumed the traditional fields of plant and animal breeding. Agricultural knowledge and technology development have essentially focused on designing plants and animals to fit machines and to withstand the stress of

⁸⁸ For this history, see Stoll, S. 1995. "Insects and institutions: university science and the fruit business in California." *Agricultural History* 69 (2): 216-240. Agricultural History Society. Incidentally, California remains the "largest user of insecticides among the states" (ibid.).

⁸⁹ For this history, see Martineau, B. 2001. *First Fruit: the Creation of the Flavr Savr Tomato and the Birth of Biotech Food*. New York: McGraw-Hill.

⁹⁰ Especially since the Bayh-Dole Act of 1980, which has allowed universities to patent and sell their own products.

⁹¹ Scheuring, A., C. McCorkle, and J. Lyons. 1995. *Science and Service: a History of the Land-grant University and Agriculture in California*. Oakland: University of California Division of Agriculture and Natural Resources.

⁹² Mamen, K., et al. 2004. *Ripe for Change: Rethinking California's Food Economy*. Berkeley: The International Society for Ecology and Culture.

monocultures.⁹³ The field of entomology has focused almost exclusively on eradicating insects.⁹⁴ New fields in genetic engineering, along with fields in medicine and pharmaceuticals, have focused on eradicating various forms of pathogens and pests that are part and parcel to mass production operations. Along with the federal Army Corps of Engineers, UC has also devoted a great deal of research and development effort to designing irrigation systems⁹⁵ - yet another form of subsidy to producers growing water-demanding crops throughout the state. Perhaps even more importantly, UC's research efforts have nursed paradigms in agricultural economics - models for business and trade - that have provided legitimacy to the green revolution and its forms of corporatized export production, and that have been used to incite and justify political maneuvers from the formulations of trade blocs to more recent pushes for market liberalization. The technologies that result from these types of research programs are expensive, and exclusively compatible with industrial, export farming. This fact renders the bulk of UC's research useless for the vast majority of the public - consumers of food, food workers, farm workers, limited-resource and diversified farmers, and rural and urban communities in need of meaningful, scale-appropriate, and culturally-appropriate economic development. What is worse, as these technologies enrich capital owners, they exacerbate

⁹³ Shiva, V. 2009. *Healthy Food, Organic Food, Abundant Food*. Krista Keenan interviews Dr. Shiva at the Delhi offices of Navdanya. Posted on Pierre Terre website at <http://pierreterre.com/video/organic-food-diverse-food-abundant-food-dr-vandana-shiva>, accessed on April 11, 2010.

⁹⁴ *ibid.*; and Sorensen, C. 1988. "The rise of government sponsored applied entomology, 1840-1870." *Agricultural History* 62 (2): 98-115. Agricultural History Society.

⁹⁵ Scheuring, A., C. McCorkle, and J. Lyons. 1995. *Science and Service: a History of the Land-grant University and Agriculture in California*. Oakland: University of California Division of Agriculture and Natural Resources.

poverty and devastate ecosystems.⁹⁶ Abroad, these technologies produce the same landscape features found here in California: uneven development opportunities; a marginalized and oppressed labor force; rural poverty and limited employment opportunities in rural areas; high consumption rates of natural resources, (especially freshwater for irrigation schemes); and inequitable conditions for capital accumulation that concentrate wealth socially and geographically.⁹⁷ Hunger and environmental degradation become institutionalized through these technologies that are designed to concentrate power - and which themselves, result from concentrated power. The disciplines that compose industrial agriculture continue to dominate agricultural research and teaching at UC today.

Agricultural science has taken the specific forms that it has, because trade and commodity group representatives have been at the helms of dictating the scope and direction of research. Decisions about how to allocate subsidies are made through meetings and consultations with industry representatives, commodity group representatives, pesticide suppliers, machine dealers, food processors and manufacturers,

⁹⁶ On the enrichment of capital owners, see Yoon, B. 2006. "Who is threatening our dinner table?: the power of transnational agribusiness." *Monthly Review*, November. New York: Monthly Review Press.; On the exacerbation of poverty, see Friedmann, H. 1993. "The political economy of food: a global crisis." In *Food*, ed. B. Harriss-White. Oxford: Basil Blackwell.; On the devastation of the ecology, see Foley, J., R. DeFries, G. Asner, C. Barford, G. Bonan, S. Carpenter, F. Chapin, M. Coe, G. Daily, H. Gibbs, J. Helkowski, T. Holloway, E. Howard, C. Kucharik, C. Monfreda, J. Patz, I. Prentice, N. Ramankutty, and P. Snyder. 2005. "Global consequences of land use." *Science* 309: 570-574.; Also see Kimbrell, A., ed. 2002. *The Fatal Harvest Reader: the Tragedy of Industrial Agriculture*. Washington, DC: Island Press.

⁹⁷ Harvey, D. 2006. *Spaces of Global Capitalism: Towards a Theory of Uneven Geographical Development*. London: Verso.

and corporate marketers.⁹⁸ In many cases, virtual interlocking directorates are formed.

For example, the historical development of citriculture in southern California is attributed to one such interlocking directorate between the California Fruit Growers Exchange, (now Sunkist), and UC's Citrus Experiment Station in Riverside.

“The symbiosis benefited both organizations. On the one hand [the Fruit Growers Exchange] pushed appropriations and other bills for [UC] through the legislature by bringing the heavy weight of the entire industry to bear on state government, [i.e., lobbying], while [UC] saw to it that the industry's many pest and other technical problems were solved in a timely fashion by the best scientific minds that [UC] could apply to the work.”⁹⁹

Through brokering its research agenda, UC makes substantial financial gains. Contractual ‘research agreements’ are where donations and deliveries of public funds through the legislature are negotiated in exchange for stipulations that typically include the right of industry representatives to choose which research projects are funded, access to high quality research and laboratories, and exclusive licensing rights to the products of research efforts in the forms of patents and intellectual property rights.¹⁰⁰ These agreements can last for several years, displacing basic research efforts and creating ‘bottleneck’ effects in what might otherwise be an unhindered flow of knowledge production. University-industry collaborations are entrenched at UC. Moreover, they have become increasingly preponderant as overall trends in public funding for science

⁹⁸ Sammet, L. 1983. “Education and research in agriculture.” In *A Guidebook to California Agriculture*, ed. A. Scheuring. Berkeley: University of California Press.

⁹⁹ Moses, H. 1995. “The orange-grower is not a farmer: G. Harold Powell, Riverside orchardists, and the coming of industrial agriculture, 1893-1930.” *California History* 74 (1): 22-37. California Historical Society. p. 37

¹⁰⁰ Soley, L. 1995. *Leasing the Ivory Tower: the Corporate Takeover of Academia*. Boston: South End Press.; Washburn, J. 2007. “Science's worst enemy: corporate funding.” *Discover Magazine*, October. Waukesha: Kalmbach Publishing Company.

have declined in the last few decades.¹⁰¹ Concurrently, corporate funding for public research and development is at an all time high.¹⁰² Critics have warned of the dangers that this poses to the public good.¹⁰³

This issue of how the agenda for agriculture should be set was contentious early in UC's history - if only briefly. Populist politics gained momentum again during the late 1960s.

The Origin of Subsidies for Research and Development in Sustainable Agriculture

By the late 1960s, movements for sustainable agriculture were underway. Carson's publication of *Silent Spring*,¹⁰⁴ and the rise of environmentalism among the middle-class, accelerated the popularity of notions about sustainable agriculture - as did the activities of the United Farm Workers union. The UFW had made great strides in

¹⁰¹ Food and Water Watch. 2012. *Public Research, Private Gain: Corporate Influence Over University Agricultural Research*. San Francisco and Washington, DC: Food and Water Watch. <http://www.foodandwaterwatch.org/reports/public-research-private-gain/>, accessed August 31, 2013.

¹⁰² *ibid.*

¹⁰³ *ibid.*; Soley, L. 1995. *Leasing the Ivory Tower: the Corporate Takeover of Academia*. Boston: South End Press.; Washburn, J. 2007. "Science's worst enemy: corporate funding." *Discover Magazine*, October. Waukesha: Kalmbach Publishing Company.; Gutierrez, A., and M. Altieri. 2004. "Commercial pressures and the public good." *Chronicle of Higher Education* 51 (6): A55-A63.; Washburn, J. 2005. *University, Inc.: the Corporate Corruption of Higher Education*. New York: Basic Books.; Patel, R. 2007. *Stuffed and Starved: the Hidden Battle for the World Food System*. New York: Melville House Publishing.

¹⁰⁴ Carson, R. 1962. *Silent Spring*. New York: Houghton Mifflin Company.

generating wide public awareness of farm laborers' issues.¹⁰⁵ Their international grape boycott captivated attention on the issue of workers' systematic exposure to pesticides, and churned sentiment for a more just agriculture. University students agitated for change. Demanding experimental farms and seminars on alternatives, and determined to win concessions from campus administrators, they began laying foundation stones to formally engage with sustainability studies. For example, students in Santa Cruz had, by 1967, established an organic farm on campus, and officiated a certificate program to provide practical training in methods of organic farming. Then, in 1972, Jim Hightower published *Hard Tomatoes, Hard Times*,¹⁰⁶ which critiqued public universities on several counts; namely, privileging corporate producers, marginalizing small-scale producers and farm workers, and flatly ignoring issues of rural community development.¹⁰⁷ This confluence of events generated a political climate favorable for the sanction of new public venues for research and development in sustainable agriculture.

In 1979, a group of disenfranchised tomato pickers, organized as the California Agrarian Action Project, (CAAP),¹⁰⁸ filed a lawsuit¹⁰⁹ against UC for "using taxpayer

¹⁰⁵ For a full account of the organizing activities of the UFW, see Pulido, L. 1996. *Environmentalism and Economic Justice: Two Chicano Struggles in the Southwest*. Tucson: University of Arizona Press.

¹⁰⁶ Hightower, J. 1972. *Hard Tomatoes, Hard Times: the Failure of the Land Grant College Complex*. Washington, DC: Agribusiness Accountability Project.

¹⁰⁷ Buttell, F. 2005. "Ever since Hightower: the politics of agricultural research activism in the Molecular Age." *Agriculture and Human Values* 22 (3): 275-283.

¹⁰⁸ CAPP was a coalition that included laborers, students, and graduates of UC Davis.

¹⁰⁹ CAPP was represented in court by California Rural Legal Assistance (CRLA), "one of the first and most durable legal programs supported by the War on Poverty." CRLA helped to outlaw the short-handled hoe in California, and won rights to drinking water and restrooms for agricultural workers. See Fairfax, S., L. Dyble, G. Guthey, L. Gwin, M.

dollars in the creation of technologies that benefit large farms, and hurt small farms and farm workers.”¹¹⁰ They had been put out of work by UC’s newly designed mechanical tomato harvester. Known as the Research Priorities Lawsuit, the case was settled in 1986, when the court ruled against UC, in favor of CAAP. UC was ordered “to ensure that small farmers benefited from campus research.”¹¹¹ UC established a Small Farm Center, but this Center was cut and closed its doors, in 2009.¹¹²

In a separate case settled the same year, brought against UC by CAAP in conjunction with the Community Alliance with Family Farmers, (CAFF), the court, again, ruled against UC. With this verdict, the court ordered UC to establish a statewide program for the study and development of sustainable agriculture.¹¹³ In nominal compliance, UC established the Sustainable Agriculture Research and Education Program, (SAREP), at its Davis campus in 1986. However, UC provided neither steady nor adequate funding for the operation of this program until the year 2000 when, once again, it was ordered to do so - this time, by the state assembly via Assembly Bill

Moore, and J. Sokolove. 2012. *California Cuisine and Just Foods*. Cambridge: MIT Press. p. 82

¹¹⁰ CAFF website. <http://caff.org/wp-content/uploads/2010/07/CAFFhistory.pdf>, accessed June 7, 2008.

¹¹¹ Fairfax, S., L. Dyble, G. Guthey, L. Gwin, M. Moore, and J. Sokolove. 2012. *California Cuisine and Just Foods*. Cambridge: MIT Press. p. 82

¹¹² Dooley, D. 2009. *Budget and Restructuring Announcement*. Office of the President, UC Division of Agriculture and Natural Resources. Oakland: UC ANR. <http://ucanr.org/pdfs/10-2-09.pdf>, accessed February 28, 2011.

¹¹³ CAFF website. <http://caff.org/wp-content/uploads/2010/07/CAFFhistory.pdf>, accessed June 7, 2008.

2663.¹¹⁴ Nevertheless, SAREP retains the distinction of being the first of its kind in the nation. The federal government waited until 1988 to establish a corollary program, the USDA Sustainable Agriculture Research and Education, (SARE), program, which was intentionally patterned after UC SAREP.¹¹⁵ Today there are ten other programs in the nation similarly devoted to sustainable agriculture.¹¹⁶ This history contributes much to California's national and international reputation as a trendsetter in sustainable agriculture, though the irony remains that SAREP was borne from a court order to address the severe lack of sustainable agriculture in this state.

The Failure of Organics to Deliver Sustainability

Public investments for research and development in sustainable agriculture have culminated with the organics market - i.e., networks of producers, vendors, and buyers of all manners of agricultural products and processed foods labeled 'organic.'¹¹⁷ Construed

¹¹⁴ *ibid.*; See also California Legislature. 2000. *Assembly Bill 2663*. Sacramento: Legislative Counsel of California. <http://www.leginfo.ca.gov>, accessed January 26, 2014.

¹¹⁵ Madden, J. 1998. *The Early Years of the LISA, SARE, and ACE Programs: Reflections of the Founding Director*. Logan: USDA SARE, Western Region. <http://wsare.usu.edu>, accessed November 12, 2010.

¹¹⁶ Warner, K. 2007. *Agroecology in Action: Extending Alternative Agriculture Through Social Networks*. Cambridge: MIT Press.

¹¹⁷ Whether certified by California Certified Organic Farmers, (CCOF), or the USDA, (which has laxer standards than CCOF), organic products are sold at farmers' markets, health food stores, and gourmet food stores, (i.e., niche markets within the grocery industry), and at conventional grocery stores, (lining niche shelving).

as the alternative to industrial agriculture, organics flourishes in California and the state as a whole spearheads the market in terms of production and sales.¹¹⁸

What has become the organics market began as a movement in California during the 1970s.¹¹⁹ The organics movement arose as a response to industrialized agriculture: its original philosophy entailed ecologically-based, ‘whole earth’ approaches to cultivation. Early advocates pinned hopes for social and economic improvement onto organics, but since the market has materialized,¹²⁰ these hopes have dissipated. The market is increasingly being decried by proponents of sustainable agriculture and supporters of the movement who, (despite the market), remain committed to the organic philosophy.

The organics market is found essentially replicating the injustices of industrial agriculture.¹²¹ In terms of production, the organics market relies on the exploitation of

¹¹⁸ Klonsky, K. 2004. “Organic agricultural production in California.” In *California Agriculture: Dimensions and Issues*, ed. J. Siebert. Berkeley: UC Gianinni Foundation.

¹¹⁹ California Certified Organic Farmers, (CCOF), was formed in Santa Cruz in 1973. California Certified Organic Farmers. 2014. *History*. Santa Cruz: California Certified Organic Farmers. <http://www.ccof.org/ccof/history>, accessed May 5, 2014.

¹²⁰ Organic agriculture is defined by the USDA through its National Organic Program. Standards for qualifying as organic are, for processed foods, that products contain 95% organic ingredients; for livestock, that antibiotics and growth hormones are not used, and that the animals are provided with 100% organic feed and access to the outdoors; and for crops, that sewage sludge, synthetic fertilizers, irradiation methods, and GMOs are not used. See National Organic Program. 2013. *Organic Standards*. Washington, DC: USDA Agricultural Marketing Service. <http://www.ams.usda.gov>, accessed April 19, 2014.

¹²¹ Allen, P., and M. Kovach. 2000. “The capitalist composition of organic: the potential of markets in fulfilling the promise of organic agriculture.” *Agriculture and Human Values* 17 (3): 221-32.; Clark, L. 2007. “Business as usual? Corporatization and the changing role of social reproduction in the organic agrofood sector.” *Studies in Political Economy* 80: 55-74.; Clark, L. 2007. “Globalization, corporatization, and the organic philosophy: social sustainability in question.” *Progressive Economics Forum*. Burnaby: Simon Fraser University.; Guthman, J. 2004. “The trouble with ‘organic lite’ in California: a rejoinder to the conventionalization debate.” *Sociologia Ruralis* 44 (3): 301-

workers through forced stoop labor, grievous working conditions, and poverty wages.¹²²

Further, it exploits land by means of monocrops, machines, and the profligate use of fertilizers and pesticides.¹²³ In terms of distribution, the organics market relies on fossil fuels for the packaging, processing, and long-distance transport of goods,¹²⁴ as exports account for the bulk of the sector's growth.¹²⁵ In terms of consumption, the organics

316. Oxford: Blackwell Publishing.; Imhoff, D. 1998. "Organic incorporated." *Whole Earth* 92: 4-9.; Johnston, J., A. Biro, and N. MacKendrick. 2009. "Lost in the supermarket: the corporate-organic foodscape and the struggle for food democracy." *Antipode* 41 (3): 509-532.; Pollan, M. 2001. "Behind the organic-industrial complex." *New York Times*, May 13.; Severson, K. 2002. "Agribusiness goes organic: new law and growing appetite for wholesome foods bring mega-growers to the table." *San Francisco Chronicle*, October 13.; O'Neill, M. 1995. "Organic industry faces an ethics question." *New York Times*, May 17.

¹²² Getz, C., S. Brown, and A. Shreck. 2008. "Class politics and agricultural exceptionalism in California's organic agriculture movement." *Politics & Society* 36 (4): 478-507.

¹²³ Concentrations of organic fertilizers and pesticides function as pollutants in ecological systems. They putrefy water resources with runoff and cause pest resistance. Moreover, the National Organic Program permits the use of certain chemical agents for organic production. Examples of substances allowed include: calcium hypochlorite, chlorine dioxide, and sodium hypochlorite; copper hydroxide, copper oxide, copper oxychloride, and copper sulfate; lignin sulfonate; streptomycin and tetracycline, (for apples and pears); sulfurous acid, peracetic acid, and hydrogen chloride; sodium hydroxide; potassium hydroxide; and synthetic inert ingredients permitted by the Environmental Protection Agency, (EPA List 4—Inerts of Minimal Concern, and EPA List 3—Inerts of Unknown Toxicity). See National Organic Program. 2013. *Organic Standards*. Washington, DC: USDA Agricultural Marketing Service. <http://www.ams.usda.gov>, accessed April 19, 2014. Hyperlink to *National List of Allowed and Prohibited Substances.*; For an analysis of how monocrops and machines effect ecosystems, see Kamenskaya, A., and H. Wilson. 2010. *How the Corporate Takeover of Organics Betrays our Values*. Berkeley: Society for Agriculture and Food Ecology. <http://ecohearth.com>, accessed February 10, 2010.

¹²⁴ *ibid.*

¹²⁵ Getz, C., S. Brown, and A. Shreck. 2008. "Class politics and agricultural exceptionalism in California's organic agriculture movement." *Politics & Society* 36 (4): 478-507.

market is criticized as “bourgeois piggery”¹²⁶ as it embodies ‘white,’ elitist, and modernist conceptions of food¹²⁷ and remains inaccessible to the poor.¹²⁸ Buying organic, largely, reproduces the capitalist social relations that are the true nexus of socially and environmentally exploitative relationships.¹²⁹ At the industry level, profits from organic sales accrue to mid-sized and large transnational corporations, rather than to limited-resource producers who are disadvantaged by economies of scale or who are unable to compete when certification standards function as market barriers.¹³⁰ Limited-resource and small-scale producers are also disadvantaged by the treadmill effect, set into motion by rising land values, which spurs the need to ‘improve’ land and capital so that owners may stay apace of perennially increasing rents.¹³¹ Finally, organics remains subordinate to the market power of conventional agricultural conglomerates and the dictates of global trade.

¹²⁶ Johnston, J. 2007. “Counter-hegemony or bourgeois piggery?: food politics and the case of Food-share.” In *The Fight Over Food: Producers, Consumers, and Activists Challenge the Global Food System*, eds. W. Wright and G. Middendorf. Rural Sociological Society’s Rural Studies Series. University Park: Pennsylvania State University Press.

¹²⁷ Slocum, R. 2007. “Whiteness, space, and alternative food practice.” *Geoforum* 38 (3): 520-533.; Guthman, J. 2008. “If only they knew: colorblindness and universalism in California alternative food institutions.” *The Professional Geographer* 60 (3): 387-397.

¹²⁸ Wright, W., and G. Middendorf, eds. 2008. *The Fight Over Food: Producers, Consumers, and Activists Challenge the Global Food System*. Rural Sociological Society’s Rural Studies Series. University Park: Pennsylvania State University Press.

¹²⁹ Reynolds, L. 2000. “Re-embedding global agriculture: the international organic and fair trade movements.” *Agriculture and Human Values* 17 (3): 297-309.

¹³⁰ *ibid.*; and Guthman, J. 2004. *Agrarian Dreams: the Paradox of Organic Farming in California*. Berkeley: University of California Press.

¹³¹ *ibid.*

To explain these limitations, Patricia Allen, (et al.), point to the fact that definitions for sustainability, which are foundational to organic, are overly-narrow and myopic.¹³² Definitions for sustainability have largely been reduced to elements of purity versus pollution with respect to pesticides. By excluding from these definitions notions having to do with social justice - such as labor rights, food sovereignty, or the idea of food as a basic human right - we have ensured the existence of a market that is incapable of providing these.

Julie Guthman has offered a comprehensive analysis of the regulatory structures that govern the market in her book, *Agrarian Dreams* (2004).¹³³ She writes that the organics market functions in the ways that it does because it has been codified so that it can function in these ways - in other words, so that it *would* be profitable for corporate interests. The title of her book plays on the idea that the industry has greenwashed what is simply another capitalist endeavor. Guthman argues that the agrarian ideal in California is fabricated, and the possibilities for agrarianism are slim to non-existent given the monoliths of corporate capitals that compose the economy of this state.

¹³² Sustainability encompasses social, economic, and ecological dimensions. Yet, sustainable and organic agriculture are often construed as purely ecological. For the first point, see Berkes, F. and C. Folke. 1998. "Linking social and ecological systems for resilience and sustainability." In *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*, eds. Berkes, F. and C. Folke. Cambridge: Cambridge University Press.; For the latter, see Allen, P., D. van Dusen, J. Lundy, and S. Gleissman. 1991. "Integrating social, environmental, and economic issues in sustainable agriculture." *American Journal of Alternative Agriculture* 6 (1): 34-39.; and Allen, P., D. Van Dusen, J. Lundy, and S. Gliessman. 1991. "Expanding the definition of sustainable agriculture." *Issue Paper no. 3*. Santa Cruz: UC CASFS.

¹³³ Guthman, J. 2004. *Agrarian Dreams: the Paradox of Organic Farming in California*. Berkeley: University of California Press.

Seeing the full picture, however, depends on understanding how subsidy systems generate markets in the first place. This requires moving beyond market-level analyses to a bird's-eye-view of how subsidies at once incentivize and delimit economic development. The limitations of the organics market may be explained by the ways in which subsidies for sustainable agriculture are arranged. For example, the bare fact that organics exists in the form of a niche market can be explained by the fact that it must compete against conventional agriculture, which is heavily subsidized by every level of the government through multiple agencies, and by the federal Farm Bill. As long as conventional agriculture receives the lion's share of public support, organics will be pressed even to compete in the marketplace. To compete at all, it takes the form of niche and caters to wealthier, if fewer, consumers. This happens to be why the organics niche tends to be located at the high-end of the range of consumers' willingness and ability to pay and, further, why organic foods remain generally out of reach for most poor and working poor people.

Subsidies shape phenomena within the market as well. Therefore, it is important to look carefully at how subsidies for sustainable agriculture are allocated. As hard-won as they were, and as minuscule as they may be, they, nonetheless, bear important discursive implications and practical consequences for the landscape of sustainable agriculture at all levels - production, distribution, and consumption. As Allen and Carolyn Sachs are fond of asking, "who and what is to be sustained?"¹³⁴ Decisions about

¹³⁴ Allen, P. 1990. "Sustainability in the balance: raising fundamental issues." *Issue Paper no. 1*. Santa Cruz: UC CASFS. p. 2; See also Allen, P. and C. Sachs. 1991. "What

how to allocate these subsidies - along with norms and rules, (or constitutional decisions), about how to make such decisions - prioritize certain problems and sets of concerns over others; privilege certain pursuits over others; and drive the development and dissemination of certain kinds of technologies over others. Certain sectors of the agri-food system benefit, while other sectors do not. These decisions shape the character of sustainable agriculture as much as they prefigure its limitations. For example, relatively generous subsidies have been allocated to developing organic wines, but not to redesigning the state's ailing food-bank system.

Public Science Under Neoliberalism

The rise of neoliberalism has dramatically altered the design of public research and development, in terms of both its structures and functions. In 1980, Congress passed the Bayh-Dole Act “to encourage US universities to patent their innovations, and to license [these patents] to private-sector companies,” for their commercialization.¹³⁵ That same year, the Supreme Court’s ruling on *Diamond vs. Chakrabarty* legalized patents on

do we want to sustain?: developing a comprehensive vision of sustainable agriculture.” *Issue Paper no. 2*. Santa Cruz: UC CASFS.; Allen, P. and C. Sachs. 1992. “The poverty of sustainability: an analysis of current positions.” *Agriculture and Human Values* 9 (4): 29-35.; Allen, P. and C. Sachs. 1993. “Sustainable agriculture in the United States: engagements, silences, and possibilities for transformation.” In *Food for the Future: Conditions and Contradictions of Sustainability*, ed. P. Allen. New York: John Wiley and Sons, Inc.; Allen, P. 2005. “Serving the public in a public university.” *The Cultivar* 23 (1): 1-4. Santa Cruz: CASFS.

¹³⁵ Atkinson, R., et al. 2003. “Public sector collaboration for agricultural IP management.” *Science* 301 (5630): 174-175. p. 174

genetically modified organisms.¹³⁶ Molecular biology research then exploded, including enquiries into recombinant DNA technologies, cloning, gene therapies, and other forms of genetic engineering.¹³⁷ “As the importance of [molecular biology research] increased, the possibilities for patenting and licensing biotechnologies [and newly defined intellectual properties] expanded through changes in legal and policy frameworks.”¹³⁸ Since then, “formal mechanisms for transferring public research results to the private sector for further development have accelerated and there has been a marked increase in the number of public-sector patents and licenses of technology [that have gone] to the private sector.”¹³⁹ The land-grant university has, consequently, become “an institution more aligned with private for-profit sector interests and orientations.”¹⁴⁰

At the same time, funding for research and development in agriculture has shifted from the public sector to the private.¹⁴¹ While traditional, (i.e., public), sources of

¹³⁶ Patents on life began with the Plant Patent Act of 1930, and were expanded by the Plant Variety Protection Act of 1970. *Diamond vs. Chakrabarty* made legal patents on animate organisms. See Kevles, D. 1998. "Diamond v. Chakrabarty and beyond: the political economy of patenting life." In *Private Science: Biotechnology and the Rise of the Molecular Sciences*, ed. A. Thakray. The Chemical Sciences in Society Series. Philadelphia: University of Pennsylvania Press.

¹³⁷ Perry, G. 2001. “Research expenditures by science area in agriculture and natural resources.” *Choices: the Magazine of Food, Farm, and Resource Issues* 16 (2): 24-26. Agricultural and Applied Economics Association.

¹³⁸ Atkinson, R., et al. 2003. “Public sector collaboration for agricultural IP management.” *Science* 301 (5630): 174-175. p. 174

¹³⁹ *ibid.* p. 174

¹⁴⁰ Welsh, R., and L. Glenna. 2006. “Considering the role of the university in conducting research on agri-biotechnologies.” *Social Studies of Science* 36 (6): 929-942. Thousand Oaks: Sage Publications. p. 929

¹⁴¹ The effects of privatization in this realm of ‘high’ technology have been discussed by authors including Rudy, Coppin, Konefal, Shaw, Ten Eyck, Harris, and Busch in their book *Universities in the Age of Corporate Science* (2007, Philadelphia: Temple

funding, such as Hatch Act formula funds, have declined,¹⁴² university-industry relationships have taken the foreground. Though the university continues to receive block financial supports from both the federal and state governments, albeit in declining amounts, it supplements these sums every year with ever greater amounts from corporate donors. “The increasing role of the private sector in the management of public agricultural research and development has potential costs, of course. Industry-dominated research boards may redirect public funds to projects that benefit only sectoral interests or a part of an industry.”¹⁴³ Yet, “commodity groups are becoming the principal source of applied research funding. The growing role of commodity group funding, and the growing influence of groups that are known for their single-mindedness and pursuit of very narrow self-interests, is not very welcome - arguably even to many land-grant

University Press); Glenna, Lacy, Welsh, and Biscotti in their article “University administrators, agricultural biotechnology, and academic capitalism: defining the public good to promote university-industry relationships” (2007, *Sociological Quarterly* 48 (1): 141-163); Washburn in her book *University, Inc.: the Corporate Corruption of Higher Education* (2005, New York: Basic Books), and in her article “Science’s worst enemy: corporate funding” (2007, *Discover*, October); Krinsky in her book *Science in the Private Interest* (2003, Oxford: Rowman and Littlefield); Bowie in his book *University-business Partnerships: an Assessment* (1994, Oxford: Rowman and Littlefield); and Soley in his book *Leasing the Ivory Tower: the Corporate Takeover of Academia* (1995, Boston: South End Press).

¹⁴² Marcus, A. 1988. “The wisdom of the body politic: the changing nature of publicly sponsored American agricultural research since the 1830s.” *Agricultural History* 62 (2): 4-26. Agricultural History Society. See also Hoffert, D., Jackman, R., and Ang, S. 2012. *Public Higher Education in California: Examining the Financial Landscape of the 21st Century*. Stanford: Stanford Institute for Economic Policy Research. <http://publicpolicy.stanford.edu>, accessed April 30, 2014.

¹⁴³ Alston, J., P. Pardey, and V. Smith. 1999. “Institutional innovation in public agricultural R&D.” *Choices: the Magazine of Food, Farm, and Resource Issues* 14 (2): 34-37. Agricultural and Applied Economics Association. p. 37

administrators.”¹⁴⁴ Buttel says that the rise of neoliberalism has hardly resolved the conflicts of interest inherent in university-industry relationships; it has, rather, ensconced them.¹⁴⁵ These relationships will continue to exert a “major influence on the structure of higher education, knowledge production, and technological change” as public funding for education continues to dwindle.¹⁴⁶ One might imagine that these operations of corporate capital are, and will be, no less relevant in the realm of sustainable agriculture.

Agroecological Development and the Need for Inclusive Institutions

We are entering a new phase of the world food crisis as commodity prices and the cost of food are set to rise.¹⁴⁷ It is imperative that sustainable agriculture advocates not lose sight of the need to address public agricultural research priorities - especially those for sustainable agriculture - as the future of our agri-food system will depend on them. The looming worsening of hunger, poverty, and inequity, here and abroad, demands the deliberation of alternative modes of agricultural development.

¹⁴⁴ Buttel, F. 2005. “Ever since Hightower: the politics of agricultural research activism in the Molecular Age.” *Agriculture and Human Values* 22 (3): 275-283. p. 281

¹⁴⁵ Buttel, F. 1997. “University-business partnerships: an assessment.” *Administrative Science Quarterly* 42: 190-191.

¹⁴⁶ *ibid.* p. 191

¹⁴⁷ Buntrock, G. 2007. “Cheap no more: rising incomes in Asia and ethanol subsidies in America have put an end to a long era of falling food prices.” *The Economist*, December 6.; Allan, K. 2010. “Food prices to rise by up to 40% over next decade, UN report warns: growing demand from emerging markets and for biofuel production will send prices soaring, according to the OECD and the UN FAO.” *The Guardian UK*, June 15.; Huffstutter, P. 2011. “Cheap food may be a thing of the past in US.” *Los Angeles Times*, March 16.

A major project launched by the United Nations, the International Assessment of Agricultural Knowledge, Science, and Technology for Development, (IAASTD), sought to answer the question; “how can we reduce hunger and poverty, improve rural livelihoods, and facilitate socially equitable sustainable development?”¹⁴⁸ Authored by 900 scientists from 110 nations,¹⁴⁹ the assessment concludes that there is an “urgent need to increase and strengthen further research” into the field of agroecology, as agroecological development is identified as the way to proceed into what will be an unpredictable future, given peak oil and global climate change.¹⁵⁰ Agroecology involves growing crops and rearing animals in ways that are appropriate to the social-ecological conditions of a given milieu. It involves producing foods of sufficient quantity, quality, and variety, to fulfill the social and cultural needs of the people who live in that milieu.¹⁵¹

¹⁴⁸ This project was co-sponsored by the United Nations Food and Agriculture Organization, the United Nations Development Program, the United Nations Environment Programme, the United Nations Educational, Scientific, and Cultural Organization, The Global Environment Facility, the World Bank, and the World Health Organization. See Bureau of the International Assessment of Agricultural Knowledge, Science, and Technology for Development. 2008. *International Assessment of Agricultural Knowledge, Science, and Technology for Development*. Nairobi, Paris, Rome, Washington, DC: United Nations Environment Programme, Division of Early Warning and Assessment. <http://www.unep.org/dewa/Assessments/Ecosystems/IAASTD>, accessed September 25, 2013. For a useful synopsis of this report, see Bureau of the International Assessment of Agricultural Knowledge, Science, and Technology for Development. 2009. *Agriculture at a Crossroads: Synthesis Report: a Synthesis of the Global and Sub-global IAASTD Reports*, eds. B. McIntyre, H. Herren, J. Wakhungu, and R. Watson. Washington, DC: Island Press. p. 17

¹⁴⁹ *ibid.*

¹⁵⁰ *ibid.*; Holt-Gimenez, E. 2009. “From food crisis to food sovereignty: the challenge of social movements.” *Monthly Review* 61 (3): 142-156. p. 148

¹⁵¹ Agroecology was conceived from the perspectives of plant ecologists, entomologists, and soil scientists studying traditional agricultural systems. Originally a progression of ecology, the field has evolved. Charles Francis, (et al.), define agroecology as “the study

To create social-ecological sustainability, agroecology uses strategies that promote community development, social equity, and cultural diversity.¹⁵² The UN's assessment calls for the development of local varieties and local seed systems to replenish agrobiodiversity.¹⁵³ It calls for the "adoption of locally appropriate and democratically-controlled agroecological methods of production," and the promotion of local expertise in these capacities and their details.¹⁵⁴

of the whole food system, embracing both natural and social sciences, and emphasizing systems thinking." Yet, agroecology is more than a science. It is more than a practice. "[It] is also a social movement with a strong ecological grounding that fosters justice, relationship, access, resilience, resistance, and sustainability." Agroecology aims "to decentralize and equitably distribute power and wealth in our food systems," and, therefore, "proposes farmer partnerships for participatory research based on community-driven research agendas." See Francis, C., G. Lieblein, S. Gliessman, T. Breland, N. Creamer, R. Harwood, L. Salomonsson, J. Helenius, D. Rickerl, R. Salvador, M. Wiendehoeft, S. Simmons, P. Allen, M. Altieri, J. Porter, C. Flora, and R. Poincelot. 2003. "Agroecology: the ecology of food systems." *Journal of Sustainable Agriculture* 22 (3): 99-118. p. 116; The second quote is taken from Gliessman, S. 2013. "Agroecology: growing the roots of resistance." *Agroecology and Sustainable Food Systems* 37 (1): 19-31. p. 19; The last two quotes are taken from Food First. 2014. *Agroecology*. Oakland: Institute for Food and Development Policy. <http://foodfirst.org>, accessed April 20, 2014. p. 1 and p. 2; See also Méndez, V., Bacon, C., and R. Cohen. 2013. "Agroecology as a transdisciplinary, participatory, and action-oriented approach." *Agroecology and Sustainable Food Systems* 37 (1): 3-18.; For a descriptive summary, see DeSchutter, O. 2011. "Agroecology: a path to realizing the right to food." *Food First Backgrounder* 17 (2): 1-5. Oakland: Institute for Food and Development Policy. <http://foodfirst.org>, accessed April 20, 2014.

¹⁵² *ibid.*

¹⁵³ Bureau of the International Assessment of Agricultural Knowledge, Science, and Technology for Development. 2008. *International Assessment of Agricultural Knowledge, Science, and Technology for Development*. Nairobi, Paris, Rome, Washington, DC: United Nations Environment Programme, Division of Early Warning and Assessment. <http://www.unep.org/dewa/Assessments/Ecosystems/IAASTD>, accessed September 25, 2013.

¹⁵⁴ *ibid.*; Holt-Gimenez, E. 2009. "From food crisis to food sovereignty: the challenge of social movements." *Monthly Review* 61 (3): 142-156. p. 148

The concept of agroecology arose in Mexico during the late 1970s, in response to Green Revolution policies impoverishing rural communities and threatening indigenous food systems.¹⁵⁵ Efraim Hernandez-Xolocotzi broke new ground with his 1977 publication, *Agroecosistemas de Mexico*, which called for the use of traditional knowledge systems to restore local ecologies.¹⁵⁶ Stephen Gliessman followed suit with his 1978 publication, *Agroecosistemas con Enfasis en el Estudio de Tecnologia Agricola Traditional*, or “Agroecosystems with Emphasis on the Study of Traditional Agricultural Technology.”¹⁵⁷ After working with Hernandez-Xolocotzi in Mexico, Gliessman began professorship at UC Santa Cruz, where, in 1981, he instituted the nation’s first academic program in agroecology, now known as the Center for Agroecology and Sustainable

¹⁵⁵ While elements of agroecology, such as working with nature instead of against it, are as ancient and widespread as farming itself, agroecology, as both a science and a movement, emerged in Mexico, because it was Mexico which was first targeted and affected by the Green Revolution. Green Revolution policies were instituted there in 1941, and later in India in 1956, as countermeasures intended to subvert rural communism. See Perkins, J. 1990. “The Rockefeller Foundation and the Green Revolution, 1941-1956.” *Agriculture and Human Values* 7 (3-4): 6-18.; For an account of the Green Revolution in Mexico, see Jennings, B. 1988. *Foundations of International Agricultural Research: Science and Politics in Mexican Agriculture*. Boulder: Westview Press.; For an account of the Green Revolution in India, see Shiva, V. 1991. *The Violence of the Green Revolution: Third World Agriculture, Ecology, and Politics*. London: Zed Books.; See also Gliessman, S. 2013. “Agroecology: growing the roots of resistance.” *Agroecology and Sustainable Food Systems* 37 (1): 19-31.

¹⁵⁶ Hernandez-Xolocotzi, E., ed. 1977. *Agroecosistemas de Mexico: Contribuciones a la Ensenanza, Investigacion, y Divulgacion Agricola*. Chapingo: Colegio de Postgraduados.; See Francis, C., et al. 2003. “Agroecology: the ecology of food systems.” *Journal of Sustainable Agriculture* 22 (3): 99-118.

¹⁵⁷ Gliessman, S., ed. 1978. *Agroecosistemas con enfasis en el estudio de tecnologia agricola tradicional*. Cardenas: Colegio Superior de Agricultural Tropical.; See Francis, C., et al. 2003. “Agroecology: the ecology of food systems.” *Journal of Sustainable Agriculture* 22 (3):99-118.

Food Systems.¹⁵⁸ Miguel Altieri began professorship at UC Berkeley, also, in 1981, where he instituted the Agroecology Research and Training Laboratory.¹⁵⁹ Reiterating issues of social equity in agriculture, Altieri has become the most prolific author on the subject of agroecology.¹⁶⁰ With these roots, the field retains an emphasis on indigenous and traditional knowledge systems and food sovereignty.¹⁶¹

Agroecology can be described as adaptive co-management of agri-food commons.¹⁶² It employs participatory approaches and ‘partnership models,’ to craft development agendas that are attuned to grassroots scales, capacities, and interests; and that account for human beings and the communities in which they live.¹⁶³ Determining what is appropriate, and setting priorities accordingly, requires collaborative, consensus-

¹⁵⁸ *ibid.*

¹⁵⁹ <http://asi.ucdavis.edu/resources/related-web-sites-college-degree-programs-and-courses>, accessed October 2, 2013.; <http://nature.berkeley.edu/~miguel-alt>, accessed October 2, 2013.

¹⁶⁰ Wezel, A. and V. Soldat. 2009. "A quantitative and qualitative historical analysis of the scientific discipline of agroecology." *International Journal of Agricultural Sustainability* 7 (1): 3-18.

¹⁶¹ Altieri, M. 2009. "Agroecology, small farms, and food sovereignty." *Monthly Review* 61 (3): 102-113.; Wezel, A., S. Bellon, T. Dore, C. Francis, D. Vallod, and C. David. 2009. "Agroecology as a science, a movement, and a practice: a review." *Agronomy for Sustainable Development* 29 (4): 503-515.

¹⁶² As it aims to foster social-ecological resilience, agroecology uses strategies of adaptive co-management. See Kofinas, G. 2009. "Adaptive co-management in social-ecological governance." In *Principles of Ecosystem Stewardship: Resilience-based Natural Resource Management in a Changing World*, eds. F. Chapin, G. Kofinas, and C. Folke. New York: Springer.

¹⁶³ Food First. 2014. *Agroecology*. Oakland: Institute for Food and Development Policy. <http://foodfirst.org>, accessed April 20, 2014.; Méndez, V., et al. 2013. "Agroecology as a transdisciplinary, participatory, and action-oriented approach." *Agroecology and Sustainable Food Systems* 37 (1): 3-18.; See also, Warner, K. 2007. *Agroecology in Action: Extending Alternative Agriculture Through Social Networks*. Cambridge: MIT Press.

based decision-making processes. Agroecology requires inclusivity with respect to people and their ideas and desires about food and agriculture.¹⁶⁴ Workers and eaters must be regarded as much as farmers and producers.¹⁶⁵

While, in the realm of conventional agriculture, social concerns are excluded from research and development, sustainability requires that they are, not only included, but placed at center stage. While, in the realm of conventional agriculture, the public is excluded from making decisions about research and development, sustainability requires that the public is included in the decision-making processes that will unfold as shared social and economic realities. Creating sustainable agricultural development in California means involving the public in these decision-making processes - soliciting participation from civil society groups in need of agri-food development, (e.g., farm laborers, fast food workers, urban agriculturists and other limited-resource producers, and Native American constituencies). “By encouraging the participation of the fullest range possible of constituents as an integral part of the process of setting research priorities,” write Gerard Middendorf and Lawrence Busch, “the public good can be achieved” and the goals of communities and society can be realized.¹⁶⁶

¹⁶⁴ Kofinas and Chapin argue that, to be sustainable, social-ecological systems must be managed to provide for human needs and well-being. Kofinas, G. and F. Chapin. 2009. “Sustaining livelihoods and human well-being during social-ecological change.” In *Principles of Ecosystem Stewardship: Resilience-based Natural Resource Management in a Changing World*, eds. F. Chapin, G. Kofinas, and C. Folke. New York: Springer.; See also Lacy, W. 1994. "Biodiversity, cultural diversity, and food equity." *Agriculture and Human Values* 11 (1): 3-9.

¹⁶⁵ *ibid.*

¹⁶⁶ Middendorf, G., and L. Busch. 1997. “Inquiry for the public good: democratic participation in agricultural research.” *Agriculture and Human Values* 14 (1): 45-57. p.

Allen, (et al.), explain that the definitions for sustainability employed by most land-grant colleges, (along with federal and state agencies), exclude notions of social justice, such as labor rights, food sovereignty, or the idea of food being a basic human right.¹⁶⁷ Research and development in sustainable agriculture, therefore, focuses simply on farm-level production, input-substitution, and profitability; i.e., materializing the organics market, (which cannot be considered sustainable as it does not provide for social development).¹⁶⁸ They point to the need for research and development - and decision-making processes - that can “resolve [social] equity issues” and “address social goals.”¹⁶⁹

Land-grant colleges and universities, however, as large, centralized organizations, are prone to inertia, bureaucratization, and other weaknesses. “Large organizations with systems of centralized authority,” Gary Kofinas writes, “function with predetermined procedures for decision-making, and are less responsive to change than smaller, more decentralized organizations.”¹⁷⁰ They are characterized by hierarchical - as opposed to

45; For the same point, see also Anderson, M. 1995. “The life cycle of alternative agricultural research.” *Forum on Alternative Agriculture Research Policy. American Journal of Alternative Agriculture* 10: 3-9. Cambridge University Press.; and Lacy, W. 1993. “Can agricultural colleges meet the needs of sustainable agriculture?” *American Journal of Alternative Agriculture* 8: 40-45. Cambridge University Press.

¹⁶⁷ Allen, P., D. van Dusen, J. Lundy, and S. Gliessman. 1991. “Integrating social, environmental, and economic issues in sustainable agriculture.” *American Journal of Alternative Agriculture* 6 (1): 34-39.; Allen, P., D. Van Dusen, J. Lundy, and S. Gliessman. 1991. “Expanding the definition of sustainable agriculture.” *Issue Paper no. 3*. Santa Cruz: UC CASFS.

¹⁶⁸ *ibid.*

¹⁶⁹ *ibid.* p. 7 and p. 6

¹⁷⁰ Kofinas, G. 2009. “Adaptive co-management in social-ecological governance.” In *Principles of Ecosystem Stewardship: Resilience-based Natural Resource Management in a Changing World*, eds. F. Chapin, G. Kofinas, and C. Folke. New York: Springer. p. 81

collective - decision making.¹⁷¹ Prone to rigidity, they tend to produce predictable outcomes. Where they are heavily bureaucratized, they are prone to information silos, functional silos, agency capture, and goal displacement.¹⁷² These weaknesses are apparent at many land-grant colleges and universities, perhaps especially at UC, given both the magnitude of its size and the extreme centralization of its authority system - a governing board of only twenty-six regents.¹⁷³

¹⁷¹ *ibid.*

¹⁷² Kofinas defines agency capture as “a condition in which a special interest group establishes a controlling relationship, and the agency works almost exclusively on the interest group’s behalf.” Goal displacement is “a condition in which the survival of the organization assumes greater priority than efforts to meet its stated mission.” Kofinas, G. 2009. “Adaptive co-management in social-ecological governance.” In *Principles of Ecosystem Stewardship: Resilience-based Natural Resource Management in a Changing World*, eds. F. Chapin, G. Kofinas, and C. Folke. New York: Springer. p. 81

¹⁷³ Eighteen of the Regents are appointed by the Governor to serve twelve-year terms. Another seven are ex officio members; the Governor; the Lieutenant Governor; the Speaker of the Assembly; the Superintendent of Public Instruction; the President and Vice President of the Alumni Association; and the President of UC, who is appointed by the Regents. The last Regent is a student, also appointed by the Regents, who serves a 1-year term. (See <http://regents.universityofcalifornia.edu/about/index.html>, accessed October 2, 2013.) “The appointment of [the] Regents is overwhelmingly influenced by political favoritism, and the resulting [board] is grossly skewed in favor of the very rich... [making it] unavoidable that the elements of political payoff and the weight of private monies will dominate. That is to say, [UC] cannot achieve or maintain political independence... nor can it faithfully fulfill the public trust.” (See Schwartz, C. 1991. *A Look at the Regents of the University of California*. <http://socrates.berkeley.edu/~schwartz/regents.html>, accessed October 2, 2013. See also Byrne, P. 2010. *The Regents Club*. <http://www.newsreview.com/sacramento/regents-club>, accessed October 2, 2013.) The Regents possess a level of power and autonomy that is highly unusual compared with other public institutions in the nation. (See <http://www.berkeley.edu/about/hist/foundations.shtml>, accessed October 2, 2013.) They are “virtually a fourth branch of state government... explained the state attorney general, Pat Brown in 1957, ‘equal and coordinate with the legislature, the judiciary, and the executive.’” (See <http://senate.universityofcalifornia.edu/reports/sp1rev.html>, accessed October 2, 2013.)

William Lacy posed the question, “can agricultural colleges meet the needs of sustainable agriculture?”¹⁷⁴ His study found a number of institutional barriers within agricultural colleges that encumber the progress of sustainable agriculture research, education, and development.¹⁷⁵ Among these were “assumptions and biases regarding the relationship between humans and nature, and the concept of progress”; emphases on economics, farm-level technologies, and the development of proprietary products; the “compartmentalization of education by discipline”; and a “limited capability for comprehensive public policy analysis.”¹⁷⁶ Lacy expressed considerable concern over the prevailing neglect of social science research and development for rural communities.¹⁷⁷ He argued that, unless meaningful changes are set into motion, agricultural colleges will be unlikely to provide much in the way of sustainable agriculture.¹⁷⁸ More recently, Keith Warner, (et al.), found that the prospects for public interest agricultural science at UC have comprehensively declined over the past several decades.¹⁷⁹

At the same time, the need for change continues to grow.

¹⁷⁴ Lacy, W. 1993. “Can agricultural colleges meet the needs of sustainable agriculture?” *American Journal of Alternative Agriculture* 8: 40-45. Cambridge University Press. p. 40

¹⁷⁵ *ibid.*

¹⁷⁶ *ibid.* p. 40

¹⁷⁷ *ibid.*; See also Friedland, W. 2010. “Who killed rural sociology? A case study in the political economy of knowledge production.” *International Journal of Sociology of Agriculture and Food* 17 (1): 72-88.

¹⁷⁸ Lacy, W. 1993. “Can agricultural colleges meet the needs of sustainable agriculture?” *American Journal of Alternative Agriculture* 8: 40-45. Cambridge University Press.

¹⁷⁹ Warner, K., K. Daane, C. Getz, S. Maurano, S. Calderon, and K. Powers. 2011. “The decline of public interest agricultural science and the dubious future of crop biological control in California.” *Agriculture and Human Values* 28 (4): 483-496.

The purpose of this thesis is to examine the institutions for research and development in sustainable agriculture at UC. Are they being supported by the administration of the university? Are they supporting agroecological, (i.e., partnership), models for development?¹⁸⁰ Since producing knowledge and technology for local, agroecological development requires public participation, are the decision-making processes that set research agendas open to the public? Are these institutions engaging social equity issues - food sovereignty, a universal right to food, and labor rights - or are they focused simply on farm-level production, input-substitution, and profitability, as Allen, (and others),¹⁸¹ have suggested? In other words, are they supporting the production of knowledge and technology for local development, or for the globalized agri-food system, i.e., the state's most capitalized commodity producers - monocroppers and volume exporters? Lacy and Warner, (et al.), predict that UC is *not* working in the public's interest - calling into question: in whose interests are they working? This thesis will uncover how research and development decisions are made, who is included in making them, and who benefits from them.

¹⁸⁰ Food First. 2014. *Agroecology*. Oakland: Institute for Food and Development Policy. <http://foodfirst.org>, accessed April 20, 2014.; Méndez, et al. 2013. "Agroecology as a transdisciplinary, participatory, and action-oriented approach." *Agroecology and Sustainable Food Systems* 37 (1): 3-18.; Warner, K. 2007. *Agroecology in Action: Extending Alternative Agriculture Through Social Networks*. Cambridge: MIT Press.

¹⁸¹ Allen, P., D. van Dusen, J. Lundy, and S. Gleissman. 1991. "Integrating social, environmental, and economic issues in sustainable agriculture." *American Journal of Alternative Agriculture* 6 (1): 34-39.

THROUGH A CONSTRUCTIVIST LENS: CRAFTING A CASE STUDY

Epistemology: Constructivist

Proponents of constructivism argue that knowledge is socially constructed through meanings ingrained in the inter-subjectivities of social conventions, mental constructs, and personal experiences. Knowledge and truth are not objective.¹⁸² Rather, they are agreed upon - except that they are not agreed upon, also. They are vied for by various points of views and interests. Knowledge(s) and truth(s) subscribed to are contingent - though not dependent - upon one's standpoint.¹⁸³

I chose to study California for the reason that I was born here, and so consider it my home. I chose to study food and research activism for reasons relating to my life experiences and the ways that I came to understand them. When I was young, my grandmother taught me to grow and eat vegetables from our kitchen garden, as they were naturally and nutritionally superior to anything you could buy canned or frozen. I spent my time with a magnifying glass, toasting any slugs that dared get near our precious vegetables, while my grandmother would apply the DDT, little white crystals, all around

¹⁸² Davis, H. 1969. "Objectivity in science - a dangerous illusion?" *Scientific Research*, April 28.; Lakoff, G. "Truth." 1980. In *Metaphors We Live By*. Chicago: University of Chicago Press.; Kirschenmann, F. 2003. "The current state of agriculture: does it have a future?" In *The Essential Agrarian Reader: the Future of Culture, Community, and the Land*, ed. N. Wirzba. Lexington: University of Kentucky Press.; Loepky, R. 2005. "Understanding science and technology: a political economy framework." In *Encoding Capital: the Political Economy of the Human Genome Project*. New York: Routledge.

¹⁸³ Fernandes, L. 2003. "Knowledge." In *Transforming Feminist Practice: Non-violence, Social Justice, and the Possibilities of a Spiritualized Feminism*. San Francisco: Aunt Lute Books.

the garden. When she died, relatively young, from cancer, I overheard my aunts discussing the possibility that it was the DDT that caused her illness.

I spent the rest of my youth wandering around my hometown, wondering where the river was, in Riverside. I found the old riverbed, but no river. I also wondered why the orange groves seemed so eerily haunted. After going away to college, I learned that the river had been lost to the groves, and that the groves, in fact, were not hallowed as they had been saturated with untold amounts of lead arsenates under the guiding science of the nearby university. At this point, the idea that science has a responsibility to steward public welfare began to stew. Then, I learned that hunger and deprivation are the outcomes of social and political choices - decisions about how markets should operate, for example - and that they are, in no way, 'natural' conditions. Pondering the landscapes of this state, things began to 'click,' and the importance of agricultural research and development became clear.

Proponents of constructivist epistemology argue that science is a social construct; that "scientists make the world as much as they discover it."¹⁸⁴ The field of science and technology studies, (STS), attempts to analyze these constructions.¹⁸⁵ Rejecting notions of technological determinism, this field elaborates on how science and technology are

¹⁸⁴ Busch, L. 1994. "The state of agricultural science and the agricultural science of the state." In *From Columbus to ConAgra: the Globalization of Agriculture*, eds. A. Bonanno, L. Busch, W. Friedland, L. Gouveia, and E. Mingione. Lawrence: University Press of Kansas. p. 70

¹⁸⁵ See the work of Bruno Latour, especially Latour, B. and S. Woolgar. 1986. *Laboratory Life: the Construction of Scientific Facts*. Princeton: Princeton University Press.

socially embedded endeavors. The knowledges and technologies produced by these endeavors, in turn, shape society.

“As knowledge is power,” Busch writes, “the apparent power over nature that science and technology provide is at the same time power over other people.”¹⁸⁶

Moreover, that “power is hardly distributed randomly or equally... [and] since it is scientists who are the creators of this power, in whose service they work is an issue of more than trivial importance.”¹⁸⁷ Thus, STS provides a useful lens for critiquing science - particularly, hegemonic science.

Methodology: a Grounded and Qualitative Case Study

The key strategy of my methodology has been to use grounded theory, which works in reverse of the routine scientific process. It begins with data collection. Data are grouped into meaningful categories, and then a theory is formed.

I began this project without a hypothesis. I just wanted to understand the food crisis. I began by collecting an array of materials on food and agriculture; papers, books, press releases, and snippets of interviews and radio shows. I chose each piece according to my own interest and intuition, though I was guided by my curriculum of environment and community studies. I gravitated toward material on hunger, food banks, social justice, agroecology, constructivism, and alternative knowledges. I sorted my papers and

¹⁸⁶ Busch, L. 1994. “The state of agricultural science and the agricultural science of the state.” In *From Columbus to ConAgra: the Globalization of Agriculture*, eds. A. Bonanno, L. Busch, W. Friedland, L. Gouveia, and E. Mingione. Lawrence: University Press of Kansas. p. 72

¹⁸⁷ *ibid.* p. 72

books by themes¹⁸⁸ into stacks, which I would resort and restack until, after quite some time, a broad picture began to emerge: the food crisis is due to widespread credence in faulty, (and hegemonic), science. At the same time, the way forward depends on producing knowledge and technology for sustainable agriculture. This led me to focus on the University of California.

A rough examination reveals that, in spite of its reputation for being beholden to corporate interests, some of the most innovative and progressive work in sustainable agriculture is being carried out by researchers at UC. The Center for Agroecology and Sustainable Food Systems, (CASFS), at UC Santa Cruz, and the Agroecology Research and Training, (ART), Laboratory at UC Berkeley, have been the vanguard for sustainable and agroecological research and development since the 1980s. These institutions are campus-based, and they are governed by campus-based administrators - their directors report to the deans of their respective colleges. UC supports a single state-wide program for sustainable agriculture, the Sustainable Agriculture and Research Education Program, (SAREP), at UC Davis. This institution is governed by administrators based in Oakland - its director reports to the university-wide division of Agriculture and Natural Resources, (ANR), and the Office of the President of UC. SAREP is the fore of sustainable agriculture at UC. Mandated in 1986, the state legislature ordered that this program serve

¹⁸⁸ I settled on thirteen themes: social justice in agriculture; agricultural science; industrial organic; international dimensions, agroecology; sustainable agriculture; biological control; small holders' and limited resource farmers' issues; labor and farm workers' issues; hunger issues; native, rural, and disinvested communities' environmental justice issues; and community economic development. Sub-themes included the history of science, science and technology studies, public financing of science, and privatization.

the entire state of California.¹⁸⁹ At the same time, very little research seems to come out of this program, and the field of agroecology, thirty years old now, appears to be missing from its repertoire. I wondered about the dynamics that might explain why the program with the greatest potential benefit for the people of California, SAREP, would be lagging behind the university's cutting-edge programs in agroecology, CASFS and the ART Laboratory - particularly when the United Nations and the consensus of scientists around the world is that the need to develop the field of agroecology is urgent.

A qualitative case study is necessary for understanding the extent to which UC is supporting sustainable agriculture, social science approaches to sustainability, agroecology, and agroecological partnership models for development.¹⁹⁰ Is UC supporting the institutions which specialize in these sciences, (CASFS and the ART Laboratory)? Is SAREP, with state-wide reach, modeling the successes of these institutions and, if not, why not? In what ways are these institutions enabled or constrained by the university? As each deserves scrutiny, these institutions tri-partition my case study.

¹⁸⁹ California Legislature. 1986. *Food and Agricultural Code: Section 550-555*. Sacramento: Legislative Counsel of California. <http://www.leginfo.ca.gov>, accessed October 8, 2013.

¹⁹⁰ "Case studies are the preferred strategy when 'how' or 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context." p. 1 of Yin, R. 2002. *Case Study Research Design and Methods*, (Second Edition). Applied Social Research Methods Series, (Volume Five). Thousand Oaks: Sage Publications.

Methods: Mixed

To craft this case study, I used a mixed methods approach. My methods included library and internet searches for scholarly sources, books and peer-reviewed journals; and non-scholarly sources, such as films, radio shows, newspaper and magazine articles, book reviews, press releases, and other media. I visited many websites for private non-profit groups and government-based science agencies. I conducted semi-structured interviews with eight key informants - researchers - from UC's three most important sustainability research centers: (1) the Sustainable Agriculture Research and Education Program, (SAREP); (2) the Center for Agroecology and Sustainable Food Systems, (CASFS); and (3) the Agroecology Research and Training, (ART), Laboratory. I used a snowball sampling technique, and interviewed whoever was willing to speak with me.¹⁹¹ Each interview lasted approximately one hour. My schedules are attached as appendices.

Once my interviews were complete, I transcribed and coded them using the method recommended by Kathy Charmaz.¹⁹² I studied the transcriptions and identified the following themes: administration, funding, organizations, inter-organizational connections, privilege, academic freedom, and the law. I then organized each segment and phrase of my transcripts into one, (or more), categories. My original themes subdivided rather naturally as I worked. Administration divided into two categories:

¹⁹¹ The majority of people who responded to my inquiries were staff researchers. I did not interview administrators at the Berkeley campus, within ANR, nor at the Office of the President, in Oakland.

¹⁹² Charmaz, K. 2005. "Grounded theory in the 21st century: applications for social justice studies." In *The Sage Handbook of Qualitative Research, (Third Edition)*, eds. N. Denzin and Y. Lincoln. Thousand Oaks: Sage Publications.

structures and functions of administration. Structures of administration divided into campus administrations; deans of colleges; and administration of the division of Agriculture and Natural Resources, (ANR). Functions of administration divided into hiring; cutting, (e.g., programs); and restructuring, (e.g., departments). Funding divided into two categories: incoming funds and outgoing funds, (i.e., expenditures). Incoming funds divided into government funding; ANR funding; funding from outside, or private, sources; individual researchers seeking grants; organizations seeking grants, (i.e., fundraising); and defunding, (of programs by administrators, for example). Organizations divided into three categories: SAREP, CASFS, and the ART Laboratory. Each of these subdivided into the following categories: organization, (general information regarding the organization and its programs); director, (information regarding the director); clients; and research activities and projects. I divided the category of SAREP a fifth time for information regarding its external advisory board, (the only of the three organizations to have such an entity). Inter-organizational connections did not divide, since formal ties were not found. However, many informal ties were found as researchers at CASFS and ART had much to say about SAREP, whose work was viewed as highly controversial. These comments were wrapped into the category for inter-organizational connections. Privilege divided into race and the privileging of 'whiteness'; class and the privileging of wealth; the privileging of disciplines, (e.g., natural sciences over social sciences); critical consciousness or identity studies and pedagogy; and exclusion, (i.e., who or what is excluded). Neither categories of academic freedom nor the law subdivided. I was left with a category I dubbed 'other,' which divided into students and researchers studying

sustainable agriculture at UC, but outside of SAREP, CASFS, and ART; and the broader social movement for sustainable agriculture.

Reorganizing the contents of my interviews according to these categories enabled me to sift through and hone in on key pieces of information. Data set side by side allowed for easy cross-referencing and comparative analysis. While broad themes were clarified, emergent themes received lexis. The result of these processes, (i.e., my methodology), is a qualitative case study of sustainable agriculture at UC, in three parts, presented below.

RESULTS FROM THE UNIVERSITY OF CALIFORNIA

The Sustainable Agriculture Research and Education Program at UC Davis

The California Agrarian Action Project, (CAAP), and the California Association of Family Farmers, (CAFF), were instrumental in the passage of Senate Bill 872 in 1986, which ordered UC to create a program specifically devoted to research and education in sustainable agriculture.¹⁹³ UC was to design a program capable of developing knowledge, technologies, methods, and means for “the production, processing, and distribution of food and fiber’ in ways that would (1.) ‘reduce or eliminate the use of pesticides and petrochemicals,’ and (2.) ‘consider the interactions among soil, plants, water, air, animals, tillage, machinery, labor, energy, and transportation to enhance agricultural efficiency, public health, and resource conservation’ within the state of California.”¹⁹⁴

In response, the Regents established the Sustainable Agriculture Research and Education Program, (SAREP), in 1986. They chose to locate this new program at the university’s Davis campus, under the auspices of the division of Agriculture and Natural Resources, (ANR). The issue of *where* SAREP should have been located was contentious from the beginning. Public interest in sustainable agriculture had burgeoned in the extended municipalities of Santa Cruz and Berkeley, and researchers at these two campuses were pioneering models in sustainability and agroecology. Stephen Gliessman,

¹⁹³ California Legislature. 1986. *Food and Agricultural Code: Section 550-555*. Sacramento: Legislative Counsel of California. <http://www.leginfo.ca.gov>, accessed October 8, 2013.; section 552

¹⁹⁴ *ibid.*; section 551, part (a) and section 552, part (b)

at UC Santa Cruz, and Miguel Altieri, at UC Berkeley, had been conducting experiments, publishing results, and educating students in these subjects for years. Locating SAREP at either one of these two campuses would have provided especially rich opportunities for research as much as education, and would have bolstered crucial work already being carried out. The Regents decided, nonetheless, to locate SAREP at UC Davis.

Proponents of sustainable agriculture feared that, if SAREP was located in Davis, it would be vulnerable to cooptation by UC administrators affiliated with ANR, the Davis campus, or by both at once. What was feared came to pass as certain people at ANR, along with certain people at the Davis campus-level, were well-poised to control the precise formation and subsequent activities of the new program.¹⁹⁵ “From the very beginning,” said a member of SAREP’s founding board of directors, “Davis tried to control it, set the agenda, and determine the advisors. I fought all the time,” to keep the program true to the spirit behind the law, but “they finally won.”¹⁹⁶ “[They] started setting up their own committees, and *excluding* people, (agroecologists and rural sociologists, namely).”¹⁹⁷ “[SAREP] was not meant to be what it [became].”¹⁹⁸ “It was all manipulated.”¹⁹⁹ Administrators, (affiliated with ANR and the Davis campus),

¹⁹⁵ The money provided to SAREP, (\$300,000 annually for operating expenses), came from the President of UC Davis. See Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.; My informant explained that, since the money came from Davis, Davis administrators had the authority to decide how the money would be spent. I quote: “by the university coming up with the money, the university sort of took over, saying what [the money] was going to be used for” (*interview*).

¹⁹⁶ *interview*

¹⁹⁷ *interview*

¹⁹⁸ *interview*

¹⁹⁹ *interview*

“resented having to set up this special program.”²⁰⁰ It made the rest of their work in agriculture “look bad.”²⁰¹ It was a threat and they, therefore, hobbled it at the gates.

UC’s responsibility to agriculture, as a land-grant institution, is three-pronged: it is to provide research, education, and extension. The bill that created SAREP stipulated that the program promote research and education functions, and, while a directive to provide extension services was not made explicit, it called for “immediate efforts to provide farmers with practices” pursuant to the goals of the legislation.²⁰² However, after ANR and Davis campus administrators set up their own committees to design the details of the program²⁰³ - and after excluding key proponents of sustainable agriculture, (faculty members and others who had worked to pass the law that established SAREP in the first place)²⁰⁴ - they designed a program that barely met these criteria.

ANR and Davis campus administrators designed SAREP to *lack* a structure that would have provided formal extension services to the public: they chose neither to hire nor place advisors in the field - an unusual decision in terms of the rest of UC’s agriculture programs.²⁰⁵ Instead, services are limited to what can be delivered over the telephone, through the mail, or via the internet - pamphlets, brochures, and general

²⁰⁰ *interview*

²⁰¹ *interview*

²⁰² California Legislature. 1986. *Food and Agricultural Code: Section 550-555*. Sacramento: Legislative Counsel of California. <http://www.leginfo.ca.gov>, accessed October 8, 2013.; section 551, part (c)

²⁰³ *interview*

²⁰⁴ *interview*

²⁰⁵ SAREP later made numerous requests “that extension agents... receive full or part time appointments in SAREP, but this never occurred.” See Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP. p. 5

advice. Outreach is achieved through presentations and workshops, which are open to the public, though not necessarily free.

ANR and Davis campus administrators designed SAREP to *lack* a structure that would have fulfilled an education function. There are no faculty. There is no teaching. There are no classes. No degree is offered. What SAREP refers to with its name, in regards to education, is its collection of pamphlets, in addition to its workshops. While the legislation had ordered UC to “promote” education in sustainable agriculture, it did not specify that UC establish an academic department.²⁰⁶ In the absence of such language, administrators were free to omit any provisions for formal education.

SAREP was designed to *lack* a structure that would have fulfilled even a basic research function.²⁰⁷ “It was not originally intended that SAREP conduct its own research,” according to a key report.²⁰⁸ Referring to the Associate Vice President of ANR, (whose direct authority SAREP was subject), the report states that “[his] vision appears to have been that SAREP would be only a competitive grants program -- [even though] the legislation was clear that they were to go beyond that.”²⁰⁹ Subsequently, SAREP was designed to be a granting agency.

²⁰⁶ California Legislature. 1986. *Food and Agricultural Code: Section 550-555*. Sacramento: Legislative Counsel of California. <http://www.leginfo.ca.gov>, accessed October 8, 2013.; section 552

²⁰⁷ Its first eight years of operation yielded only two academic publications, and five cost of production studies - on almonds, rice, and wine grapes.

²⁰⁸ Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP. p. 10

²⁰⁹ *ibid.* p. 8

The legislation had, in fact, directed that SAREP fulfill a granting function. It specified that two standing committees²¹⁰ be assembled to inform SAREP's granting decisions - a Program Advisory Committee, (PAC), and a Technical Advisory Committee, (TAC).²¹¹ Each committee would be composed of twenty people.²¹² The PAC would be composed of "individuals representing agriculture," but it could also include "representatives from government, public organizations, and institutions of higher learning."²¹³ It would be responsible for "reviewing the priority of grant applications."²¹⁴ The TAC would be composed of "faculty and staff of the University of California," but it could also include "other experts from outside the university."²¹⁵ The TAC would be responsible for "making recommendations [on] the scientific merit of grant applications."²¹⁶ Authority over the appointments of members to these committees was given to the President of UC.²¹⁷

²¹⁰ Individual committee members were to serve for no more than three years, according to section 554, part (f).; California Legislature. 1986. *Food and Agricultural Code: Section 550-555*. Sacramento: Legislative Counsel of California.

<http://www.leginfo.ca.gov>, accessed October 8, 2013.

²¹¹ *ibid.*; section 554, part (a)

²¹² Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²¹³ California Legislature. 1986. *Food and Agricultural Code: Section 550-555*.

Sacramento: Legislative Counsel of California. <http://www.leginfo.ca.gov>, accessed October 8, 2013.; section 554, part (c)

²¹⁴ *ibid.*; section 554, part (b)

²¹⁵ *ibid.*; section 554, part (e)

²¹⁶ *ibid.*; section 554, part (d)

²¹⁷ *ibid.*; section 554, part (a)

The first person hired to the program was the director,²¹⁸ the second was his assistant.²¹⁹ Seven others were hired, eventually, including three analysts and a secretary. For each of fiscal years 1989-1990 and 1990-1991, SAREP was provided with \$175,000 of university funds to award as grantors, and staff began carrying out annual rounds of grant distributions.²²⁰ How this money was distributed would later become a point of controversy.

“Basically, what they did,” explained a key informant, “[was] they invested a lot of money into [a single] long-term experiment” at UC Davis.²²¹ It is a 100-years-long study to compare three different management approaches to planting commodities, (like ‘processing’ tomatoes, for example), and other high-value cash-crops: conventional, low-input, and organic. For the purpose of this experiment, SAREP defined ‘organic’ to mean that pesticides are applied to crops when ‘economic thresholds’ are met, referring to when producers might begin to lose profits for their crops. Measuring soil properties and the effects of fertilizers on crop yields, this experiment replicates several other 100-years-long experiments, (e.g., the Morrow Plots in Illinois and the Rothamsted Fields in England). “It is just a conventional rotation,” my informant continued, “that will prove things we already know - that organic fields will exhibit increased soil nutrients and

²¹⁸ The first director served his post until 1998, when he stepped down. He is remembered for writing an article that was critical of bovine growth hormone, (entitled, *The Dairy Debate*, 1993), which caused a row with animal science faculty at Davis. See Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²¹⁹ *ibid.*

²²⁰ *ibid.*

²²¹ *interview*; The experiment is located on 28 acres of the Agronomy Farm. See UC SAREP. 1995. *Biennial Report to the California State Legislature*. Davis: UC SAREP.

organic matter. It will provide more data, but the general concepts we already know.”²²²
 The project is neither “innovative nor critical.”²²³ Moreover, SAREP awarded \$150,000 to this project,²²⁴ when it had only received \$175,000 in funds to disburse, (i.e., fiscal year 1989-1990). It was a major investment - one that sank resources which could have been applied to projects that were both innovative and critical.²²⁵

By this time, proponents of sustainable agriculture were leveling broad criticisms against land-grant institutions, (and other government sponsored institutions for agricultural research, such as the federal SARE program and the USDA), for failing to recognize the need to integrate social science perspectives into sustainable agriculture.²²⁶

²²² *interview*

²²³ *interview*

²²⁴ Plans for this project had been initiated in 1988 by the TAC, (i.e., Davis faculty and staff). SAREP continued annually awarding grants of approximately \$40,000 to \$50,000 to this project, entitled, *Long-term Research on Agricultural Systems*, (LTRAS). Funds were awarded to a team of eighteen faculty and staff at UC Davis.; UC SAREP. 1995. *Biennial Report to the California State Legislature*. Davis: UC SAREP.; and UC SAREP. 1997. *Biennial Report to the California State Legislature*. Davis: UC SAREP.

²²⁵ The Agroecology Research and Training Laboratory in Berkeley applied for funds for several projects, but never received a single grant from SAREP. In 1991, SAREP approved a grant to Steve Gliessman and Jim Pepper for their project, (“Agriculture and Community Program” to investigate farm worker housing issues in Santa Cruz and Monterey Counties), but awarded them just \$8,000. Only one other grant went to a researcher at CASFS, in the amount of \$5,000, to look at land preservation models. SAREP awarded grants primarily to faculty at UC Davis for production oriented projects.; See UC SAREP. 1995. *Biennial Report to the California State Legislature*. Davis: UC SAREP.

²²⁶ Allen, P., D. van Dusen, J. Lundy, and S. Gliessman. 1991. “Integrating social, environmental, and economic issues in sustainable agriculture.” *American Journal of Alternative Agriculture* 6 (1): 34-39.; Allen, P., D. van Dusen, J. Lundy, and S. Gliessman. 1991. “Expanding the definition of sustainable agriculture.” *Issue Paper*, no.

Due to pressure, coming largely from researchers within the university - agroecology and social science researchers affiliated with CASFS in Santa Cruz, notably²²⁷ - SAREP added a community food systems component in 1991. This meant that SAREP's competitive grants program would include requests for proposals, (RFPs), that considered community food systems issues, and that SAREP would allocate a proportion of its funds to community food systems projects. Despite this, SAREP favored production-oriented projects.²²⁸ Coincidentally, as soon as the community food systems component was added, ANR administrators, (under the auspices of the Office of the President), withdrew their annual \$175,000 allocation to the program, cutting its budget by 40%.²²⁹

The following year, the California Association of Family Farmers, (CAFF), began seeking assistance from SAREP for their project, Biologically Integrated Farming Systems, (BIOS).²³⁰ CAFF had been working with the Anderson brothers - both Merced-county almond growers, who had experimented with, and carried out research on,

3. Santa Cruz: UC CASFS.; Allen, P. and C. Sachs. 1991. "The social side of sustainability: class, gender, and ethnicity." *Science as Culture* 2 (13): 569-590.

²²⁷ Pressure was coming, also, from outside of the university. CAFF, (the California Association of Family Farmers), along with the California Agrarian Action Project, (CAAP), had been expressing concern over UC's research priorities, and its lack of support for socially sustainable agriculture, since the 1970s.; See Warner, K. 2007. *Agroecology in Action: Extending Alternative Agriculture Through Social Networks*. Cambridge: MIT Press.

²²⁸ The aggregate amount of money spent on community food projects reached a 32% proportion of total grant funds distributed in 2003.; See Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²²⁹ SAREP retained, at that time, an annual allocation from Davis campus administrators in the amount of \$300,000.; See Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²³⁰ Warner, K. 2007. *Agroecology in Action: Extending Alternative Agriculture Through Social Networks*. Cambridge: MIT Press.

agroecological methods in their own orchards.²³¹ The brothers had found that agroecological methods, (such as the use of leguminous cover crops and beneficial insects), were significantly more cost-effective than conventional methods, which required growers to make expensive purchases of pesticides. This ‘proof’ of the economic feasibility of sustainable farming attracted the attention of many people. With sponsorship from CAFF, they developed a comprehensive set of management guidelines that became known as BIOS. CAFF needed sponsorship from SAREP for further experimentation, and scientific expertise to elaborate on, and help promote, their findings.

There was very little that SAREP could do, however, given its budget situation. Appeals made to ANR and the Office of the President went nowhere. CAFF continued agitating, until pushing a bill through the legislature that compelled UC to address their concerns.

Assembly Bill 3383, (passed in 1994), bid the Regents to employ SAREP to conduct pilot projects.²³² “The structure of each pilot demonstration project,” the bill states, “should be patterned, to the degree feasible, after the successful BIOS program coordinated by CAFF.”²³³ Since neither ANR nor the Office of the President would

²³¹ Warner provides a detailed account of this story in his book, *Agroecology in Action*, (ibid.).

²³² Office of the President and the Division of Agriculture and Natural Resources. 1997. *Biologically Integrated Farming Systems Program: a Progress Report to the California State Legislature on the Implementation of Assembly Bill 3383 (Chapter 1059, Statutes of 1994)*. Oakland: Office of the President.

²³³ California Legislature. 1994. *Food and Agricultural Code: Section 591-600*. Sacramento: Legislative Counsel of California. <http://www.leginfo.ca.gov>, accessed

provide requisite funding to SAREP, the legislature provided \$250,000 of state money to fund these activities.

BIOS became the blueprint for much of SAREP's subsequent work as it was reconfigured for applications to other commodity crops grown in California. SAREP named its own versions of BIOS, Biologically Integrated Farming Systems, (BIFS), and sponsored twelve projects. Lasting between two and four years each, these projects were situated in the state's most concentrated farming regions. Commodities that received SAREP's expert attention were: citrus, (in Riverside county); table grapes, (in Tulare, Kern, and Fresno counties); rice, (in Butte county); strawberries, (on the Central Coast); tomatoes and cotton, (in the San Joaquin Valley); walnuts, (in the San Joaquin Valley); apples and pears, (in Contra Costa county); lettuce, (in Monterey and Santa Cruz counties); prunes, (in the Sacramento area and the San Joaquin Valley); and wine grapes, (on the Central Coast and in the Lodi area). SAREP also assisted dairy farmers with better managing their manure lagoons by showing them how to recycle manure into fertilizer for forage crops, (in the San Joaquin Valley).

Each of these projects emphasized economic viability and cooperation with conventional producers. Each was designed to improve producers' gains through reducing production costs, (by reducing dependency on off-farm inputs such as pesticides). Each offered producers ways to generate and utilize ecosystem services, (to

January 23, 2014.; section 592, part (b); In 1993, the California Alliance of Family Farmers merged with the California Action Network, (CAN), composed of former members of the California Agrarian Action Project, (CAAP), and renamed itself the Community Alliance of Family Farmers. See CAFF website. <http://caff.org/wp-content/uploads/2010/07/CAFFhistory.pdf>, accessed June 7, 2008.

lessen their burdens making regular, costly payments to pesticide-dealers, or manure-haulers, in the case of dairy farming). Each found ways for conventional farmers to switch to more sustainable practices - and provided that they could gain profits by doing so. When there are financial incentives, producers shift to alternatives - *if* they can. The transaction costs involved with converting operations to involve more sustainable practices - or, the short-term reduction in profits required to invest in new formats - can effectively preclude a producers choice. However, those who have the resources and assets to convert their fields are rewarded with the option to certify organic, and receive the highest returns possible for produce on the open market. A great part of SAREP's work, therefore, has been to study best practices associated with conversions from conventional to organic operations. The parameters for the development of alternative practices, thus, are effectively set by conventional commodity producers moving to enhance the profitability of their operations.

Projects supported producers in reducing their applications of certain types of pesticides. They did not, however, eliminate their overarching need for them - this is a need that is rooted into the design of monocultural production. Monocultures are inherently unstable, and crops planted in this way are prone to disease and outbreaks of pests.²³⁴ Monocultural production, therefore, requires that crops receive routine

²³⁴ Shiva, V. 2009. *Healthy Food, Organic Food, Abundant Food*. Krista Keenan interviews Dr. Shiva at the Delhi offices of Navdanya. Posted on Pierre Terre website at <http://pierreterre.com/video/organic-food-diverse-food-abundant-food-dr-vandana-shiva>, accessed on April 11, 2010.

treatments of broad ranges of pesticides throughout their growing cycles.²³⁵ Whether they are certified organic or not, monocultures are destructive as they release concentrated levels of chemicals, the by-products of their operations, into the environment. Even organic chemicals, such as nitrogen or phosphorus, at high levels act as pollutants. Monocultures are even more destructive when planted to irrigation-dependent, or ecologically inappropriate crops, to consume freshwater in areas that suffer from water shortages, (such as the Central Valley). Nonetheless, SAREP has worked primarily for the benefit of these commodity producers whose incomes rely on monocultured fields of irrigation-dependent crops destined for out-of-state markets.²³⁶

As their principal strategy has been to convert conventional monocultures to organic monocultures, the BIFS projects have contributed much to the momentous growth of the state's organic sector. By the same token, the bulk of this growth has come - not through developing local food systems - but through increasing the numbers of commodity producers certified organic and, thereby, increasing statewide sales and exports of organic produce.²³⁷

²³⁵ *ibid.*

²³⁶ For details on the transnationalization of the organic agri-food sector, see Clark, L. 2007. "Globalization, corporatization, and the organic philosophy: social sustainability in question." *Progressive Economics Forum*. Burnaby: Simon Fraser University.; Clark, L. 2007. "Business as usual? Corporatization and the changing role of social reproduction in the organic agrofood sector." *Studies in Political Economy* 80: 55-74.

²³⁷ *ibid.*

This productionist orientation, and preoccupation with commodity growers, continued to be a source of contention.²³⁸ Critics asserted that SAREP was not fulfilling its legislative mandate.²³⁹ They pointed to issues with SAREP's Public Advisory Committee, (PAC),²⁴⁰ and Technical Advisory Committee, (TAC).²⁴¹ In forming these committees, they contended, the President of UC had excluded key proponents of socially sustainable agriculture - members of the public, and faculty who had been involved in the legislative discussions that created SAREP.²⁴² The TAC, in particular, was composed of people who lacked expert knowledge about sustainable agriculture - especially, with respect to social science and agroecological approaches.²⁴³ The TAC itself professed that there was no such knowledge; that "there is little understanding on any campus of how to conduct participatory research in communities and on farms."²⁴⁴ This was untrue, though, as an academic department for Community Studies had existed at UC Santa Cruz since

²³⁸ Allen, P. and C. Sachs. 1992. "The poverty of sustainability: an analysis of current positions." *Agriculture and Human Values* 9 (4): 29-35.; Allen, P., ed. 1993. *Food for the future: conditions and contradictions of sustainability*. New York: John Wiley and Sons, Inc.; Altieri, M. 1992. "Where the rhetoric of sustainability ends, agroecology begins." *CERES: FAO Review on Agriculture and Development* 134: 33-39. Rome: Food and Agriculture Organization of the United Nations.

²³⁹ Among these critics were the members of a 1995 external review committee. For details on their findings, see Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²⁴⁰ The board of the first Program Advisory Committee changed its name to Public Advisory Committee.; *ibid.*

²⁴¹ The PAC was composed mostly of farmers and representatives from NGOs, while the TAC was composed of university researchers, mostly trained in conventional agricultural production.; *ibid.*

²⁴² *ibid.*

²⁴³ *ibid.*

²⁴⁴ *ibid.* p. 4

1969.²⁴⁵ The Agroecology Program, (in Santa Cruz), and the Agroecology Research and Training Laboratory, (in Berkeley), also, were expert in these areas. As a result of the arrangement, interactions between the PAC and the TAC were characterized by disagreement and polarization.²⁴⁶ This circumstance was later used to justify doing away with the committees altogether.²⁴⁷ In disregard of the law,²⁴⁸ the President of UC dissolved the PAC and the TAC, and appointed a single Advisory Committee for SAREP in 1994.²⁴⁹

Constituents who *were* being served by SAREP, (i.e., CAFF), expressed dissatisfaction, also. The originators of BIOS alleged that SAREP had taken the Anderson brothers' model and "watered it down" to constitute its new BIFS programs.²⁵⁰ They observed that each successive BIFS program increasingly resembled conventional practices.²⁵¹ The partnership between SAREP and CAFF sparked internal disagreements at CAFF, as allegations of co-optation persisted. For continuing this partnership, CAFF came to be viewed as a more mainstream organization, (even by its own members).²⁵²

²⁴⁵ Regional Oral History Project. 2013. *Cultivating a Movement: an Oral History Series on Organic Farming and Sustainable Agriculture on California's Central Coast*, eds. S. Rabkin and I. Reti. Santa Cruz: University of California. <http://library.ucsc.edu/reg-hist/friedland>, accessed January 26, 2014.

²⁴⁶ Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²⁴⁷ *ibid.*

²⁴⁸ California Legislature. 1986. *Food and Agricultural Code: Section 550-555*. Sacramento: Legislative Counsel of California. <http://www.leginfo.ca.gov>, accessed October 8, 2013.; section 554, parts (a), (b), (c), (d), (e), and (f)

²⁴⁹ Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²⁵⁰ Campbell, D. 2001. "Conviction seeking efficacy: sustainable agriculture and the politics of co-optation." *Agriculture and Human Values* 18: 353-363. p. 360

²⁵¹ *ibid.*

²⁵² *ibid.*

SAREP, for its part, has been highly constrained by the administration of UC, since its inception. There have been “multiple, on-going efforts by UC leadership to suppress [SAREP],” wrote Warner.²⁵³ The administration at Davis “has consistently undermined SAREP,” according to Kate Clancy.²⁵⁴ Her report goes into a number of details drawn from previously conducted internal reviews with staff researchers. She writes that administrators have been “open [about] their lack of interest” in both SAREP and sustainable agriculture; that SAREP staff were instructed “to not talk about organic agriculture”; that SAREP staff were “harassed”; and that “over most of the history of the program, the staff has had to justify their existence to people at the university.”²⁵⁵ An informant explained that, while the situation is considerably better today, “there are certain people, at the top, who are still somewhat negative, so that is still an element.”²⁵⁶

Institutional constraints imposed by UC have included, firstly, its original decision to situate the program’s office in an unfavorable location. UC chose to locate SAREP on its Davis campus, a place where industrial agricultural interests are entrenched. SAREP is housed some three miles away from the center of campus, on the other side of a busy highway, near the apiaries. This has kept researchers at SAREP relatively isolated from other academic departments and disciplines, as well as faculty

²⁵³ Warner, K. 2007. *Agroecology in Action: Extending Alternative Agriculture Through Social Networks*. Cambridge: MIT Press. p. 55

²⁵⁴ Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP. p. 13

²⁵⁵ *ibid.* p. 5

²⁵⁶ My informant added that those administrators who are “more negative, have to be more careful in what they say now... [and] what comes out,” since sustainability is “in the public eye now.”; *interview*

and students.²⁵⁷ Sustainable agriculture researchers have not, on the whole, been regarded as peers by either administrators or the body of agricultural academics at the university.²⁵⁸ The culture of productionism is thick at Davis, and has especially shunned SAREP's social science researchers.²⁵⁹ Secondly, the staff at SAREP has been kept surprisingly small. It has been composed of between two and eleven people, up to half being employed only part-time.²⁶⁰ ANR administrators denied numerous requests that extension agents and other faculty be hired to the program.²⁶¹ Thirdly, there has been an apparent unwillingness to properly fund the program.

The state ruling which mandated SAREP stipulated that administrators establish the program with UC's existing resources.²⁶² However, by 1992, administrators had cut the program's budget by 40%.²⁶³ At the behest of civil society, (CAFF and other proponents of sustainable agriculture),²⁶⁴ the state intervened again in 2000, by way of

²⁵⁷ Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²⁵⁸ *ibid.*

²⁵⁹ *ibid.*

²⁶⁰ *ibid.*

²⁶¹ *ibid.*

²⁶² California Legislature. 1986. *Food and Agricultural Code: Section 550-555*. Sacramento: Legislative Counsel of California. <http://www.leginfo.ca.gov>, accessed October 8, 2013.; section 555

²⁶³ While ANR had withdrawn its support, (an annual allocation of \$175,000), SAREP retained an annual allocation from Davis campus administrators in the amount of \$300,000. While various and shifting funding streams pass through SAREP, they are not part of its permanent budget, (which pays for staff salaries and basic operating expenses). Including funding streams, (i.e., pass-through grants like BIFS, for example), its total budget has hovered at \$650,000.; See Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²⁶⁴ CAFF website. <http://caff.org/wp-content/uploads/2010/07/CAFFhistory.pdf>, accessed June 7, 2008.

Assembly Bill 2663.²⁶⁵ The legislature ordered UC to provide “permanent and adequate” funding to SAREP.²⁶⁶ It specified that this funding be provided through UC’s own annual budget process, “to ensure the program’s ongoing ability to respond to the needs of all sectors of California agriculture.”²⁶⁷ Nonetheless, administrators cut SAREP’s budget again by 33% in 2004,²⁶⁸ and yet again by another 20% in 2009.²⁶⁹

As internal funding has been slashed, SAREP has had to rely on sources outside of the university for funding - federal, state, and private grants. This has diminished the program’s ability to control its own research agenda. Researchers must take what is there, and agree to study topics for which there are funds available. SAREP engages with commodity groups, and adopts a productionist orientation, because these are the activities for which there are funds available, (e.g., the state allocated \$250,000 to SAREP to work on BIFS-related projects).²⁷⁰ Informants at SAREP explained - and the record shows - that most of their funding comes from large, government contracts.²⁷¹ Extramurally,

²⁶⁵ Before this bill passed, it was known as the California Biological Agriculture Initiative.; California Legislature. 2000. *Assembly Bill 2663*. Sacramento: Legislative Counsel of California. <http://www.leginfo.ca.gov>, accessed January 26, 2014.

²⁶⁶ *ibid.*

²⁶⁷ *ibid.*

²⁶⁸ Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²⁶⁹ Dooley, D. 2009. *Budget and Restructuring Announcement*. Office of the President, UC Division of Agriculture and Natural Resources. Oakland: UC ANR. <http://ucanr.org/pdfs/10-2-09.pdf>, accessed February 28, 2011.

²⁷⁰ The US Environmental Protection Agency, also, contributed funds to the BIFS program. Office of the President and the Division of Agriculture and Natural Resources. 1997. *Biologically Integrated Farming Systems Program: a Progress Report to the California State Legislature on the Implementation of Assembly Bill 3383 (Chapter 1059, Statutes of 1994)*. Oakland: Office of the President.

²⁷¹ BIFS, Alternatives to Methyl Bromide, and the Buy California Initiative were the largest.; Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

SAREP is funded by the USDA, (through Western SARE and other programs of the National Institute of Food and Agriculture), and state agencies, (the Department of Pest Regulation and the Department of Food and Agriculture).²⁷² Consequently, SAREP's research profile lines up with state and national economic development agendas, (i.e., producing high-value commodities for export), whether researchers themselves would choose this or not. For example, one researcher confided a desire to study the topic of hunger, but went on to explain the unfeasibility of it without funding.²⁷³

All of my informants noted the difficulty of obtaining grant funding. While SAREP's researchers spend considerable amounts of time applying for grants, they are less likely than faculty to actually receive funding.²⁷⁴ They are less able to effectively compete, preemptively, or by design, *because* they are not designated faculty.²⁷⁵ They lack the appropriate criteria, such as extensive publishing records of peer-reviewed research.²⁷⁶ Thus, while internal budget cuts have intensified an emphasis on fundraising, returns on these efforts are reduced as a result of the organizational structure in which SAREP is bound.

SAREP has struggled to prove its "relevance" to administrators at UC - both within ANR and on the Davis campus.²⁷⁷ For this reason, it acquiesces to conventional

²⁷² *ibid.*

²⁷³ *interview*

²⁷⁴ *interview*

²⁷⁵ *interview*

²⁷⁶ *interview*

²⁷⁷ *interview*

agricultural interests.²⁷⁸ As early as 1997, SAREP's research priorities began overlapping with those of ANR.²⁷⁹ There is now a strong tendency for SAREP to mimic, on a much smaller scale, the main agricultural agenda at UC. This is because, when industry-wide production problems arise, industry representatives appeal to the highest echelon of administrators at UC for assistance with their issue, (i.e., ANR). Upon an agreement to help, administrators consign the issue to one or more of UC's various programs in industrial agriculture and, sometimes, also to SAREP.²⁸⁰ While researchers in conventional programs seek conventional solutions to industry problems, researchers at SAREP are asked to find sustainable alternatives. Examples are numerous and range from dealing with invasive pests, (such as the wine industry's glassy-winged sharpshooter), to dealing with industrial waste problems, (such as the dairy industry's oversupply of manure). SAREP sees itself as "bringing a sustainability component" to the larger project of conventional agriculture.²⁸¹ "It makes us more relevant," said one informant, "the more that we tie in with all the other people and efforts in ANR."²⁸²

In 2006, SAREP was officially subsumed by Davis campus administrators. Plans for this restructuring had been set into motion by the budget cut of 2004.²⁸³ By way of a specially written 'memo of understanding,' authority over the administration of SAREP

²⁷⁸ *interview*

²⁷⁹ Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

²⁸⁰ ANR administers grants annually to fund these pursuits. See UC ANR website. Agriculture and Natural Resources, Divisionwide Planning. <http://ucanr.edu>, accessed March 22, 2014.

²⁸¹ *interview*

²⁸² *interview*

²⁸³ ANR administrators had cut SAREP's internal budget by 33%. See Clancy, K. 2008. *A Descriptive Survey of UC SAREP*. Davis: UC SAREP.

was passed from ANR officials to Davis campus officials affiliated with its College of Agriculture. These administrators launched their own Agricultural Sustainability Institute, (ASI), by conglomerating SAREP with the Russell Ranch Sustainable Agriculture Facility, (the location of SAREP's 100-years-long experiment), and the Student Farm, (where one half of one acre is designated for the study of ecological agriculture). The director of ASI is now, ipso facto, the director of all three programs. SAREP is now administered by ASI, under the Dean of the College of Agriculture and Environmental Science in Davis, (even though the legislature had intended for SAREP to be a statewide program).

Under this new organization, the mandated functions and responsibilities of SAREP's former Public Advisory Committee were assigned to the External Advisory Board for ASI.²⁸⁴ The research and development agenda for ASI now engulfs the agenda for SAREP. This agenda is intended to balance "what stakeholders want" with the "needs of UC Davis."²⁸⁵ Representing the board, stakeholders are identified as producers, followed by the food and agriculture industry, and environmental organizations.²⁸⁶ Appointments to this board are made by the director of ASI, who is advised by the Dean of the College of Agriculture, (in Davis), and the Vice President of ANR, (in Oakland).²⁸⁷

²⁸⁴ Agricultural Sustainability Institute. 2008. "Appendix ten: External Advisory Board, purpose and operation." In *External Advisory Board Meeting*, eds. K. Thomas, B. Ransom, and T. Tomich. Davis: UC Davis ASI. <http://asi.ucdavis.edu>, accessed January 31, 2014.

²⁸⁵ Thomas, K., B. Ransom, and T. Tomich, eds. 2008. *External Advisory Board Meeting*. Davis: UC Davis ASI. <http://asi.ucdavis.edu>, accessed January 31, 2014. p. 2

²⁸⁶ See the chart on page six.; *ibid.*

²⁸⁷ *ibid.*

The legislature's stipulation, (that advisory members for SAREP serve no more than three years), does not seem to apply to the board for ASI, since its inaugural members continue to serve at their posts today.²⁸⁸

ASI, openly and actively, seeks industry partnerships for sponsorship. For example, in 2007, Campbell Soup gave \$250,000 to ASI for the development of its programs in sustainable agriculture.²⁸⁹ Carl Johnson of Camden, New Jersey, the Senior Vice President and Chief Strategy Officer for Campbell Soup, thereby, gained a seat on the board.²⁹⁰ In addition to operating processing plants in Dixon and Stockton, and a major production factory in Sacramento, Campbell Soup operates a private research facility in Davis that serves as headquarters for the Campbell Seed Company.²⁹¹ By virtue of being a member of the board, Johnson also sits on the Public Advisory Committee for SAREP, where he assists with setting priorities for research and development.²⁹² Doubts are understandable, about whether SAREP is capable of providing for public interests, when board members are being selected on the basis of the funding opportunities they offer.

²⁸⁸ Comparing a list of inaugural members with a list of current members, I found few differences. See <http://asi.ucdavis.edu>, link to 'current members'; and Agricultural Sustainability Institute. 2008. "Appendix nine: External Advisory Board, inaugural members." In *External Advisory Board Meeting*, eds. K. Thomas, B. Ransom, and T. Tomich. Davis: UC Davis ASI. <http://asi.ucdavis.edu>, accessed January 31, 2014.

²⁸⁹ Staff. 2007. "Campbell Soup gives \$250,000 to sustainable ag." *Central Valley Business Times*, October 8. Stockton: Central Valley Business Times. <http://www.centralvalleybusinesstimes.com>, accessed October 3, 2013.

²⁹⁰ ASI website. <http://asi.ucdavis.edu/about/advisory-board>, accessed October 3, 2013.

²⁹¹ Staff. 2007. "Campbell Soup gives \$250,000 to sustainable ag." *Central Valley Business Times*, October 8. Stockton: Central Valley Business Times. <http://www.centralvalleybusinesstimes.com>, accessed October 3, 2013.

²⁹² ASI website. <http://asi.ucdavis.edu/about/advisory-board>, accessed October 3, 2013.

Concern over the issue of SAREP “selling out” has been characterized as a futile dispute between “liberal and radical factions” within the sustainable agriculture movement²⁹³ and, despite contention over the issue of cooptation, many view the intersection of industry and sustainability as a positive trend. Warner argues that these types of partnerships are the best possible, and perhaps the only possible, compromise given the tenacity of industry in this state so in need of social and ecological reprieve.²⁹⁴ However, to frame this in terms of tradeoffs, and then to argue about whether tradeoffs are a necessary evil, is to lose sight of a much larger context.

While the effects of corporate capital in the domain of public interest research and development are dubious, the entrance of capital into this domain is a policy choice. Adhering to this method of operation - allowing industry to define the agenda for sustainability - results in research and development that favors California’s most capitalized producers and their high-value crops, (*value* being defined by commodities markets). Industry determines which crops are studied and for what ends. For example, the state’s wine grape industry has “invested more... than any other commodity” to find alternatives to pesticides.²⁹⁵ In exchange for their investments, a tremendous amount of

²⁹³ Campbell, D. 2001. “Conviction seeking efficacy: sustainable agriculture and the politics of co-optation.” *Agriculture and Human Values* 18: 353-363. p. 354

²⁹⁴ Warner, K. 2007. *Agroecology in Action: Extending Alternative Agriculture Through Social Networks*. Cambridge: MIT Press.; This approach also emerged in Australia, and has been adopted by Landcare Australia Limited. See <http://www.landcareonline.com.au>, accessed October 3, 2013.

²⁹⁵ Warner, K. 2007. *Agroecology in Action: Extending Alternative Agriculture Through Social Networks*. Cambridge: MIT Press. p. 20; See also Warner, K. 2007. “The quality of sustainability: agroecological partnerships and the geographic branding of California wine grapes.” *Journal of Rural Studies* 23: 142-155.

scholarly work on sustainable production practices for wine grapes has followed. On the other hand, so-called minor crops, (such as quince, quinoa, or jicama), which are of major importance in holistic systems, go unstudied. At the same time, research tends to focus on improving market returns for single-crop producers, (e.g., through organic conversions), as opposed to, say, designing viable agroecosystems for communities in California.

Research and development outcomes at SAREP proceed from administrative decisions about how the program should be structured, and how it should operate. For example, SAREP will remain subject to the inclinations, (or, the political economy), of the broader funding landscape, in the absence of basic, structural funding. ANR needs to appropriate permanent funding to SAREP, sufficient for it to function as the state-wide, research and education program intended by the legislature. Funding, however, is not the only issue.

To function as a statewide program, SAREP needs to be separated from ASI. The mandated Public and Technical Advisory Committees, (the PAC and the TAC), both need to be reinstated, while the condition of three year appointments needs to be observed. How, (and by whom), these appointments are made should be carefully considered. In its own definition of sustainability,²⁹⁶ SAREP needs to include ideas about agroecology, food sovereignty, and food as a basic human right. The PAC and the TAC both need to reflect these interests. Meetings of the PAC should be open to the public.

²⁹⁶ Its mission statement reads: "SAREP provides leadership and support for scientific research and education in agricultural and food systems that are economically viable, conserve natural resources and biodiversity, and enhance the quality of life in the state's communities."; ASI website. <http://asi.ucdavis.edu/sarep>, accessed February 3, 2014.

Forums should involve non-appointees - representatives from civil society groups, faculty, students, and members of the public who might wish to participate. All meetings should emphasize consensus building, and decision-making should be collaborative. Sustainability depends on the inclusion of more than traditional ‘stakeholders,’ (i.e., producers, commodity groups, and food industry representatives). SAREP, therefore, needs to invite participation from underserved constituencies, (i.e., groups in need of agri-food development, such as fast food workers, urban agriculturists, limited-resource producers, and Native American governments). To be more visible, SAREP needs offices that are accessible to university students and the wider population. Annexes should be established at UC Santa Cruz, UC Berkeley, and other campuses.

To be more than a granting agency, SAREP must be equipped to do its own research. For this, SAREP needs to hire staff - faculty and extension agents with *designated* positions in agroecology, rural sociology, and urban agriculture. With faculty appointments, the program would be able to offer classes to students, and further develop an educational component. In providing extension services, SAREP should break from the traditional, top-down approach: rather than offering findings after the fact of research, it needs to actively engage with agroecological approaches to knowledge production and development. In light of the UN’s Assessment, SAREP needs to employ agroecological partnership models that use local expertise to promote “democratically-controlled” methods of production, local agro-biodiversity, and community-based development.²⁹⁷

²⁹⁷ Bureau of the International Assessment of Agricultural Knowledge, Science, and Technology for Development. 2008. *International Assessment of Agricultural*

The Center for Agroecology and Sustainable Food Systems at UC Santa Cruz

Stephen Gliessman was hired to the faculty of the Environmental Studies Department at UC Santa Cruz in 1981. Upon his arrival, he founded the Agroecology Program - the first program at UC devoted to sustainable agriculture, and the first in the nation devoted to agroecology. Since a college of agriculture had never been established at UCSC, the Agroecology Program was housed, administratively, within the Environmental Studies Department, but headquartered at the student farm.²⁹⁸ The farm served as a site for practical training through demonstrations and experimentation. Conjoining science with practice, Gliessman created the first curriculum in agroecology. He taught classes to undergraduates, graduate students, and members of the community.²⁹⁹

Knowledge, Science, and Technology for Development. Nairobi, Paris, Rome, Washington, DC: United Nations Environment Programme, Division of Early Warning and Assessment. <http://www.unep.org/dewa/Assessments/Ecosystems/IAASTD>, accessed September 25, 2013.; Holt-Gimenez, E. 2009. "From food crisis to food sovereignty: the challenge of social movements." *Monthly Review* 61 (3): 142-156. p. 148

²⁹⁸ Established by a student-led initiative in 1972, the farm was not supported by the administration at Santa Cruz. It was supported, instead, by students and the Friends of the Farm and Garden, a community organization based in Santa Cruz. In 1975, administrators formalized the farm's Apprenticeship Program, (which had been instituted by Alan Chadwick in 1967), but offered enrollment only to non-matriculated students, (i.e., through extended education). The farm and its activities were more or less tangential to the university until Gliessman arrived.; Brown, M. 2000. "The Farm and Garden Projects at the University of California, Santa Cruz." *Chronicle of the University of California* 3: 29-42. Berkeley: Center for Studies in Higher Education. <http://casfs.ucsc.edu>, accessed February 3, 2014.

²⁹⁹ Gliessman later published the first English-language textbook on agroecology. See Gliessman, S. 1997. *Agroecology: Ecological Processes in Sustainable Agriculture*. Charlotte: Baker and Taylor, Inc. The subtitle of the second and third editions, (2006 and 2014), is *The Ecology of Sustainable Food Systems*.

Gliessman's groundbreaking work attracted the attention of philanthropist Alfred Heller and, in 1983, an endowment of \$375,000 created the Alfred E. Heller Chair in Agroecology at UCSC.³⁰⁰ Heller awarded the chair to Gliessman, who used these funds to hire his own researchers.³⁰¹

Hired to the program in 1984, Patricia Allen carried out some of the first work in the nation on the social science of sustainable agriculture.³⁰² Her efforts focused on social aspects - hunger and poverty - and attempted to address issues of gender, class, and race, as they relate to agri-food systems. In 1985, Allen launched the first system-wide conference on sustainable agriculture at UC.³⁰³ The following year, she organized the first international conference on agricultural sustainability at UC.³⁰⁴ She continued to work with faculty across campuses, arranging seminars, and establishing working-groups, to focus on special topics in sustainable food systems.³⁰⁵ From these proceedings, in conjunction with her own research, Allen published many papers advocating an equitable and just vision for sustainable agriculture.

³⁰⁰ *ibid.*

³⁰¹ Regional Oral History Project. 2013. *Cultivating a Movement: an Oral History Series on Organic Farming and Sustainable Agriculture on California's Central Coast*, eds. S. Rabkin and I. Reti. Santa Cruz: University of California. <http://library.ucsc.edu/reg-hist/cultiv/home>, accessed October 25, 2013.

³⁰² Allen, P. and M. Brown. 2006. "Growing a Program in Sustainable Agriculture at UC Santa Cruz." *Chronicle of the University of California* 8: 49-64. Berkeley: Center for Studies in Higher Education. <http://casfs.ucsc.edu>, accessed July 14, 2010.

³⁰³ *ibid.*

³⁰⁴ This meeting of the International Federation of Organic Agriculture Movements, (IFOAM), was described in *Global Perspectives on Agroecology and Sustainable Agricultural Systems*, (Allen, P. and D. van Dusen, eds. 1988. Santa Cruz: UC CASFS.); *ibid.*

³⁰⁵ *ibid.*

Local growers began approaching the new Agroecology Program for assistance converting their operations from conventional to organic. Early work focused on strawberries, a major crop of the area.³⁰⁶ The conventional use of methyl bromide, a toxic fumigant, had become increasingly problematic.³⁰⁷ Program researchers, using the agroecological partnership model, worked closely with Jim Cochran on his berry farm, (a.k.a. Swanton's), to develop sustainable methods for farming strawberries. The results of these studies were published in a compendium that enabled other berry growers to convert their operations, and certify organic.³⁰⁸ Swanton's became the first berry farm in the state to certify organic, (1987), and, later, it was recognized by the Environmental Protection Agency for its role in helping to develop these methods, (for growing strawberries without the use of methyl bromide).³⁰⁹

The Agroecology Program initiated its own Farm Extension Project in 1989, to assist local and small-scale growers on their farms with converting their operations to organic.³¹⁰ Gliessman assembled a "team to work with local growers, [since] he recognized a need. It was the first attempt by the UC system to formally assist organic

³⁰⁶ *ibid.*

³⁰⁷ Regional Oral History Project. 2013. *Cultivating a Movement: an Oral History Series on Organic Farming and Sustainable Agriculture on California's Central Coast*, eds. S. Rabkin and I. Reti. Santa Cruz: University of California. <http://library.ucsc.edu/reg-hist/cultiv/home>, accessed October 25, 2013.

³⁰⁸ *ibid.*

³⁰⁹ *ibid.*

³¹⁰ Allen, P. and M. Brown. 2006. "Growing a Program in Sustainable Agriculture at UC Santa Cruz." *Chronicle of the University of California* 8: 49-64. Berkeley: Center for Studies in Higher Education. <http://casfs.ucsc.edu>, accessed July 14, 2010.

growers with coop-extension style services.”³¹¹ These conversion projects built on the program’s work with strawberries.³¹² They partnered program researchers and cooperative extension specialists with local growers, and worked in situ to convert their operations.³¹³ Local apple and artichoke growers benefited directly.³¹⁴

Certain features made these projects “unique to the Agroecology Program: they examined whole systems rather than isolated factors within the farming system; they took place on local farms rather than agricultural experiment stations; they focused on small- and medium-scale growers rather than large, corporate farms; and they included the growers as integral parts of the research team.”³¹⁵ The development of the program’s agroecological partnership model is described as it happened on Jim Cochran’s farm:

“It was a collaboration between us and the farmers... back and forth... learning from each other... asking questions... and getting to the point where we realized that two things had to happen. [Firstly], input substitution wasn’t enough. We needed to re-*design* the system, so [that it would be] resistant to problems in the first place, (i.e., the problems that the inputs were trying to control)... by doing rotations, and intercropping, and cover cropping, and integrated pest management, and a whole lot of [other] things that give a system resistance... grounded in ecological understanding. But the other piece... [Secondly, we also needed to bring in the social sustainability piece.] Jim redesigned his system. He couldn’t just be a conventional operator of a strawberry monoculture, treating workers as a cost, only, and losing them every year because he only needed them for certain times of the year. But the diversification helped him create opportunities to maintain his folks. And he also began thinking about... he was always kind of a progressive thinker anyway... and that’s when he decided to sign a contract with the UFW, and *give* them benefits and vacation... and, now, [he] gives them even shares in the business. It’s a whole different way of thinking. It brings in the social justice piece. You couldn’t have had that piece, though, without the

³¹¹ Sean Swezey quoted by Allen and Brown, *ibid.*

³¹² *ibid.*

³¹³ *ibid.*

³¹⁴ *ibid.*

³¹⁵ *ibid.*

ecological diversification piece. See, the two went together. Then he diversified his market base... and [created a situation] where he wasn't just selling strawberries wholesale at a cheap price to the stores who mark up [the price] and take all the profit [so that] he gets hardly anything for what he grows. He went into farmers' markets, and direct sales to restaurants, and has a farm-stand... and [has been] really successful. But this is the way we've always sort of thought about it, you know. Agroecology is an action-oriented activity focused on creating change... bringing equity and social justice."³¹⁶

Committed to serving the public, the Agroecology Program initiated a number of community development projects: Gliessman and Jim Pepper created the Agriculture and Community Program, to investigate farm worker housing issues in the vicinity of Santa Cruz; Allen and Debra Van Dusen teamed with local non-profits to establish the Santa Cruz Food Security Project, to address issues of hunger, access, and food security; and staff researchers also helped to develop the Santa Cruz County Food Forum, to encourage community dialogue on these issues.³¹⁷

For its innovative work, the Agroecology Program received acclamation. "A 1989 academic external review extolled the program and stated that it was unique in three ways: 1) it is the only research and education unit at a major research university dedicated to research in agroecology; 2) it is the only such program to address the

³¹⁶ Swanton's Berry Farm became the first organic farm to sign a contract with the United Farm Workers Union. See the Regional Oral History Project. 2013. *Cultivating a Movement: an Oral History Series on Organic Farming and Sustainable Agriculture on California's Central Coast*, eds. S. Rabkin and I. Reti. Santa Cruz: University of California. <http://library.ucsc.edu/reg-hist/cultiv/home>, accessed October 25, 2013.

³¹⁷ Allen, P. and M. Brown. 2006. "Growing a Program in Sustainable Agriculture at UC Santa Cruz." *Chronicle of the University of California* 8: 49-64. Berkeley: Center for Studies in Higher Education. <http://casfs.ucsc.edu>, accessed July 14, 2010.

socioeconomic dimensions of agricultural sustainability; and 3) it is independent of the established research traditions of agricultural experiment stations.”³¹⁸

Gliessman and Allen continued calling for the integration of social considerations into working ideas for sustainable agriculture. They “raised concerns over the direction research efforts were taking [at UC and elsewhere] under the rubric of sustainability.”³¹⁹

Gliessman published articles critiquing ‘input-substitution narrowness’³²⁰ - the myopia of agricultural science that disregards social fabrics. Allen organized further rounds of conferences, inviting faculty from Santa Cruz and beyond, to focus on integrating social science into sustainability research, education, and development. She published the first book to discuss the social dimensions of sustainable agriculture, *Food for the Future: Conditions and Contradictions of Sustainability*.³²¹

To reflect the Agroecology Program’s concentration on the social science of agricultural sustainability, it was renamed the Center for Agroecology and Sustainable Food Systems, (CASFS), in 1993.³²² Gliessman continued to serve as director, until

³¹⁸ *ibid.*

³¹⁹ *ibid.*

³²⁰ “i.e., focusing solely on substituting one type of farm input or practice for another,” *ibid.*; See Gliessman, S. 1990. "Sustainability is not just input substitution." *The Cultivar*, Summer. Santa Cruz: UC Agroecology Program.; and Gliessman, S., ed. 1990. *Agroecology: Researching the Ecological Basis for Sustainable Agriculture*. New York: Springer-Verlag.

³²¹ Allen, P. and M. Brown. 2006. "Growing a Program in Sustainable Agriculture at UC Santa Cruz." *Chronicle of the University of California* 8: 49-64. Berkeley: Center for Studies in Higher Education. <http://casfs.ucsc.edu>, accessed July 14, 2010.; See Allen, P. 1993. *Food for the Future: Conditions and Contradictions of Sustainability*. New York: John Wiley and Sons, Inc.

³²² CASFS website. History and News Archive. <http://casfs.ucsc.edu/about>, accessed February 5, 2014.

stepping down to focus on research in 1997.³²³ Another member of the faculty from the Environmental Science Department, Carol Shennan served as the Center's second director,³²⁴ until 2007, when Allen was appointed.³²⁵ Allen served until 2012, at which point, the Center's social science program was defunded, and her position was cut.³²⁶

As the Center's director, Allen had maintained the Center's commitment to the social science of agricultural sustainability. Her departure signified, to many, an abatement of university support for the Center and its commitment to this kind of work. Instated to replace her was another member of the faculty from the Environmental Science Department, a natural scientist whose background does not include studies in sustainable agriculture. Rather, it is composed of studies in environmental policy, water quality, and wine-making, along with administration and fundraising. Center researchers explained that directors are being selected now - not for their vision or dedication to

³²³ *ibid.*

³²⁴ Shennan is remembered for a tremendous amount of work on strawberries, (building on the success of Gliessman's earlier work with Jim Cochran). Since stepping down, she continues to run a strawberry laboratory at the Farm. She uses participatory approaches to study "high input, high capital, intensive" strawberry and vegetable production: "our work targets the development of alternatives to soil fumigants for soil borne disease management, strategies for improved nutrient use and disease suppression in high intensity organic strawberry and vegetable rotation systems, and the potential for landscape diversification to enhance biological control of arthropod pests." See the Shennan Laboratory website at <http://people.ucsc.edu/~cshennan>, accessed February 13, 2014.

³²⁵ CASFS website. History and News Archive. <http://casfs.ucsc.edu/about>, accessed February 5, 2014.

³²⁶ Since Allen was not a member of the faculty, her position was not spared from administrative budget cuts.; *interview*

sustainability - but for their fundraising capabilities.³²⁷ Allen was replaced with a natural scientist in order to generate greater funding.³²⁸

The increasing premium placed on fundraising is tied with the Center's decreasing budget. Over the years, deep cuts have been made.³²⁹ A key informant recounted:

“If you were to ask about our budget somewhere around a decade ago, I would have been able to point to several hundred thousand dollars of state money that [used to] come from the Legislature through the Office of the President to Santa Cruz. And, I would have pointed to an earmark in the USDA budget that our representative Sam Farr would write in - a \$300,000 earmark. That was wonderful. It was great to have both the state and federal support, because these were relatively unrestricted dollars. They could support our core functions. We did fundraising on the side.”³³⁰

With these funding streams now gone, how the Center operates has changed. My informant continued:

“We are a smaller organization than we were a decade ago, or five years ago, partly because of the budget cuts. We hope to build ourselves back out again, but we're in a period of having to transition from enjoying a relatively large amount of unrestricted public money to operating more like a nonprofit... that happens to be located on a UC campus. So, if you know how a nonprofit works... they're constantly raising money. You're moving salaries from one fund that gets used up to another one that just came in, and so on. So, it's a different budget model. It's a different business model than what we could have, [or than we had] ten years ago.”³³¹

³²⁷ *interviews*

³²⁸ Administrators can raise more money by focusing on natural science research, (as opposed to social science research), since, for natural science research, more outside funding is available, (from the government *and* the private sector).; *interviews*

³²⁹ Allen, P. and M. Brown. 2006. "Growing a Program in Sustainable Agriculture at UC Santa Cruz." *Chronicle of the University of California* 8: 49-64. Berkeley: Center for Studies in Higher Education. <http://casfs.ucsc.edu>, accessed July 14, 2010.

³³⁰ While public funds are 'relatively unrestricted,' private funds are restricted in terms of how the money must be spent and accounted for.; *interview*

³³¹ *interview*

“We’re fundraising like crazy,” he said. “But it’s hard to count on - even though the Center *has* to count on it, because it’s a significant part of our budget [now]. We have to do it all year long, and hope - and to some extent, count on - our private gifts coming through, so that we can continue our program.”³³²

At the same time, “extramural funding is only available for certain kinds of activities, which means that [the Center’s] priorities will inevitably be shaped more by the priorities of funders, than by the mission and priorities of the Center itself.”³³³ During a separate interview, a different informant revealed a more critical perspective:

“The issue with funders is [that] they become very instrumental. The funders that are going to help with CASFS right now want it to be used for sustainable business practices, and not necessarily critical research for its own sake. That’s when you have [a situation where] funder-driven becomes... [the professional program]. And that’s *not* what... that’s not how university research should take place. It should be for its own sake.”³³⁴

While the Center operates differently than it used to, the merits of this are dubious. Some staff researchers see the prospects for basic research diminishing, (i.e., academically-driven research, as opposed to funder-driven research). Increasing reliance on outside funding, (whether from private or governmental sources), means reducing the Center’s ability to control its own research agenda. It means, also, reducing the abilities of individual researchers to control their own agendas - particularly those researchers inclined to study social science, since, for applied solutions to industry problems, funders

³³² *interview*

³³³ Allen, P. and M. Brown. 2006. "Growing a Program in Sustainable Agriculture at UC Santa Cruz." *Chronicle of the University of California* 8: 49-64. Berkeley: Center for Studies in Higher Education. <http://casfs.ucsc.edu>, accessed July 14, 2010.

³³⁴ *interview*

tend to favor natural science research. Thus, increasing reliance on outside funding results in decreasing opportunities for social science inquiry, and reducing academic freedom.

People do not agree upon *why* the Center's budget was cut in the first place. One view is that UC cannot afford to operate the Center, (or any other program in sustainability), without outside funding because it is broke, due to declines in public funding, exacerbated by the state budget situation.³³⁵ According to this view, budgetary concerns drive administrative cuts and reductions of certain programs. This perspective is often accompanied by discourse reflecting an acquiescence to austerity, (i.e., much talk of being tough and making do without).³³⁶

Other people, though, believe that the cuts are actually politically motivated. After all, UC *could* supply more of its own base funding.³³⁷ Different kinds of funding decisions could be made at ANR that would support sustainability research.³³⁸ Certain researchers pointed out that "ANR could [just *decide* to] spend thirty per cent of its budget on sustainable agriculture, instead of the *less than* one per cent that it currently

³³⁵ One of my interviewees remarked: "I put the blame squarely on the Republicans in the Legislature. Because of our constitution and because of the voting rules, they can hijack the budget process - at least the revenue generating part of [it]. I blame them. I'm not shy to say it, nor is anybody else... nor is the UC president. The Governor would do it. The Democrats would do it. The Regents would send us the money. There's nobody else that we're talking about," (interview).

³³⁶ interview

³³⁷ interview

³³⁸ interview

spends.”³³⁹ Meanwhile, administrators use the budget crisis as pretext for cutting unfavored researchers, their positions, whole programs, and entire departments.³⁴⁰

“There’s been just this ongoing struggle to get the social science piece of sustainable agriculture into the research and development programs and centers at UC,”³⁴¹ researchers explained. Regarding administrators, one researcher commented, “they want to talk... they want to claim they’re on the cutting edge, but they’re not walking their talk.”³⁴² Being on the cutting edge would mean “supporting the kinds of work that people here at Santa Cruz are trying to do,” which is something that they aren’t really doing.³⁴³

Administrators do not perceive the value of supporting sustainability studies. “For years we’ve talked to administrators about the strengths of food studies on campus, and they just don’t see it,” said my informant.³⁴⁴ “Now that everybody else is doing food studies [and] agricultural sustainability, now they’re talking about it, but they’ve just never recognized the strengths that we’ve had there [all along]. So it’s not all... it’s not only UC, it’s within the campus itself.”³⁴⁵

Not surprisingly, Center researchers feel indignant. An interviewee confided, “I’m embittered because the university hasn’t recognized the value [of] the work [we’ve been doing]. The research we’ve been doing *is* at the cutting edge. We are, in terms of the food

³³⁹ *interview*

³⁴⁰ *interview*

³⁴¹ *interview*

³⁴² *interview*

³⁴³ *interview*

³⁴⁴ *interview*

³⁴⁵ *interview*

work, the agri-food work at Santa Cruz... We have an international reputation that our own university hasn't recognized. That's why I'm embittered, [as are] many [of the] people you're talking to."³⁴⁶

Administrators' apparent subversion of the Center's social sustainability program is not viewed as outright sabotage by all. One researcher explained that, "[while] administrators *do* get in the way, they are only operating in the broader context of what they think is possible, and their decisions make sense in that context."³⁴⁷ What appears as duplicity between stated support and actual support is explainable, (at least in part), by the fact that decisions to support sustainable agriculture are not rewarded by the current, meta-level incentive structure; i.e., administrators are neither necessarily nor directly rewarded for supporting sustainable agriculture, and may risk suffering professional losses for doing so.³⁴⁸

Administrators would change, though, if the incentive structure would - if the incentives rewarded research and development in sustainable agriculture. For example, my informant offered, "let's say the legislature [mandated] ANR to spend thirty per cent of its budget on sustainable agriculture... then all these administrators would change. You would be seeing them left and right trying to enable us to get that money."³⁴⁹ The need, therefore, is to alter the broader context, (the incentive structure under which administrators operate), but Center researchers do not foresee UC changing on its own

³⁴⁶ *interview*

³⁴⁷ *interview*

³⁴⁸ *interview*

³⁴⁹ *interview*

accord.³⁵⁰ Rather, they predict that, under the Office of the President and the Regents, ANR will continue to spend its funding on industrial agriculture; i.e., it will continue to reward researchers, programs, and departments for pursuits that generate their own funding streams, and continue to cut programs which do not generate revenue on their own, (programs devoted to the social science of agricultural sustainability, for example). Changing this incentive structure, researchers believe, is something that could only be achieved by way of another legislative act, since only the legislature has authority over UC.³⁵¹

Several of my informants recommended a lawsuit - one that would mandate UC ANR to shift over a larger proportion of its budget to sustainable agriculture.³⁵² Grassroots social movements for sustainability, and public demand, will be essential for swaying the legislature and university officials. One researcher elaborated: “the knowledge that the general public is developing about what sustainability in food systems is all about - the fair trade movement, the beyond organic movement, the local movement... food justice movements - all of this is creating an awareness,” that UC will, ultimately, “have to pay attention to. And not just lip-service,” he added.³⁵³

Yet, supporting sustainable agriculture is not simply about money. The larger problem of the university’s priorities needs to be addressed. The research priorities of ANR must change. “To call the university into account for the research priorities that it

³⁵⁰ *interviews*

³⁵¹ *interviews*

³⁵² *interviews*

³⁵³ *interview*

engages in [will] take... political action,” said my informant.³⁵⁴ It will take a “broader recognition that the University of California’s research in industrial agriculture is *wrong*,” (i.e., the research of ANR).³⁵⁵ The responsibility of recognizing that the bulk of research in industrial agriculture is wrong falls on the people of California. Civil society organizations, (such as the International Society for Ecology and Culture, the Community Food and Justice Coalition, and Food First), help disseminate research and information to the public on the true costs of the global food and agriculture system, and sustainable alternatives. Nevertheless, efforts to educate the public in these matters are obfuscated by the ‘official knowledge’ of the university, which endorses and promotes industrial productionism - even in the context of sustainable agriculture, as the case of SAREP shows.

Reaching a critical mass of public understanding is encumbered by ‘official knowledge’ that decrees partial understandings about sustainability and agroecology. Center researchers were especially troubled over a particular article - a review of agroecology, written by sixteen faculty and research staff at UC Davis, in connection with SAREP.³⁵⁶ This paper asserts a notion of agroecology which contradicts the literature. It defines agroecology as a way of “mitigating [the] environmental impacts of agriculture while dramatically increasing global food production, improving livelihoods,

³⁵⁴ *interview*

³⁵⁵ *interview*

³⁵⁶ Tomich, T., Brodt, S., Ferris, H., Galt, R., Horwath, W., Kebreab, E., Leveau, J., Liptzin, D., Lubell, M., Merel, P., Michelmore, R., Rosenstock, T., Scow, K., Six, J., Williams, N., and Yang, L. 2011. "Agroecology: a review from a global-change perspective." *Annual Review of Environment and Resources* 36: 193-222.

and thereby reducing chronic hunger and malnutrition over the coming decades.”³⁵⁷

While improving livelihoods is part of agroecology, increasing global food production is not. In fact, productionism is antithetical to agroecology. Moreover, the literature on hunger corroborates that a lack of food is not the cause of hunger. Hunger befalls those who are bereft of social entitlements: access is its root cause.³⁵⁸ According to one of my interviewees:

“What’s really causing us problems in our food systems globally are the injustices that are in those systems... from the concentration of wealth and control that exists in the industrial model, to the degradation of the natural resource base upon which agriculture depends, to the loss of knowledge that is happening as people leave agriculture or as the generations that do agriculture age and [are] not replaced by younger people. All these kinds of things, together, are part of the problem. Access to food, food security, food sovereignty, food justice... all of these are elements that our [Center] has always tried to integrate.”³⁵⁹

One researcher was incensed over the situation: “[they] will tell you they’re doing agroecology over there [at SAREP], but as far as I’m concerned, it isn’t agroecology - not without the social movement aspect.”³⁶⁰ Noting that agroecology has three components, (the science, the practice, and the social movement), he continued: “they [will say] that agroecology has [these] three components, but then ignore - completely - the social movement... the social change piece... and the social justice piece... and focus just on

³⁵⁷ *ibid.* p. 193

³⁵⁸ See Lappé, F., J. Collins, and C. Fowler. 1977. *Food First: Beyond the Myth of Scarcity*. Boston: Houghton Mifflin.; Lappé, F., and J. Collins. 1986. *World Hunger: Twelve Myths*. New York: Grove Weidenfeld.; and Sen, A. 1981. *Poverty and Famines: an Essay on Entitlement and Deprivation*. Oxford: Oxford University Press.

³⁵⁹ *interview*

³⁶⁰ *interview*

the science. And that's not agroecology."³⁶¹ Aside from the problematic association between food production and hunger alleviation, SAREP promotes a narrow view of agroecology that is shorn of its key commitments to community-based processes and social equity. The activities of SAREP bear upon the Center and its researchers in Santa Cruz, because SAREP is the university's statewide program for sustainability. Closely connected with ANR and the Office of the President, SAREP represents the university, its 'official knowledge' regarding sustainability, and its official engagement with sustainable agriculture in California.

While the legislature had intended for SAREP to be a system-wide program, capable of serving the entire state, the Center in Santa Cruz is a campus-based institution, capable only of reaching communities in the vicinity of Santa Cruz. The campus at Santa Cruz is neither part of the land-grant system, nor part of the agricultural experiment station of the university, so a college for agriculture does not exist. As a campus-based institution, the Center functions relatively independently from ANR and the rest of the UC system. While this has afforded Center researchers a certain degree of freedom to carry out their innovative work, the Center's academic contributions are not necessarily absorbed by the larger agro-industrial complex of the university. These academic contributions should not be marginalized. SAREP, in particular, needs to incorporate

³⁶¹ *interview*

knowledge about agroecology and social sustainability: it needs to learn from the experts in Santa Cruz.³⁶²

To support the work of the Center, UC must support the larger project of sustainable agriculture. ANR must change its incentive structure, its research priorities, and its funding patterns - in addition to changing how it administrates SAREP. To bring the greatest benefit to the people of California, the work of the Center, (i.e., agroecology and socially sustainable food systems), needs to be carried out by SAREP. ANR must redesign SAREP with a capacity to build on the work of the Center - to expand the field of agroecology. SAREP must change how it gathers its knowledge, and how it operates. It needs to model its work on the Center's successes, (e.g., agroecological partnerships, participatory forms of knowledge production, and inclusive forums for agenda setting).

To carry out its own research and local development projects - and to set its own agenda - the Center needs adequate, permanent, block funding, whether it comes from the Office of the President, ANR, or Santa Cruz campus administrators. Unrestricted, block funding is crucial for the Center to set its own research and development priorities. To be relinquished from the constraints and demands of grantors, the Center must be relieved of its obligation to seek outside funding. In a context of stable and sufficient support, the Center would be free to carry out, (and expand upon), the work for which it became

³⁶² Whether researchers at SAREP would be amenable to this is another question. An interviewee at SAREP commented, "you're probably aware of some of the programs at UC Santa Cruz, but, you know, the 'real ag' - the real scientific research - is mainly happening [elsewhere - i.e., Berkeley, Davis, and Riverside]," (*interview*). Biases at SAREP, (toward productionism and market-oriented 'solutions' for social-ecological problems, for example), could prove to be obstacles.

famous - agroecology and socially sustainable food systems - the sciences called for by the Assessment of the UN.

The Agroecology Research and Training Laboratory at UC Berkeley

Research and education in agroecology began at the Berkeley campus in 1981, when Miguel Altieri was hired to the faculty of the Division of Biological Control. Conducting research and publishing papers on agroecology since the late 1970s, Altieri wrote the first English-language book on the subject in 1983, *Agroecology: the Scientific Basis of Alternative Agriculture*.³⁶³ He has since become the most prolific author in the field.³⁶⁴ After joining the Division, he served as a catalyst, stirring interest amongst faculty, researchers, and students in the new field of agroecology. The Division was decidedly amenable, given its own history.

The Division of Biological Control was a pillar of the university. It began in 1944, when a Biological Control Experiment Station was established on a parcel of university-owned agricultural land - the Gill Tract - in Albany, (three miles from campus, near San

³⁶³ Altieri, M. 1983. *Agroecology: the Scientific Basis of Alternative Agriculture*. Division of Biological Control, University of California. Berkeley: Cleo's Duplication Services. (out of print).; This book was reprinted as a second edition in 1987, and again in 1995, by Westview Press in Boulder.; For a list of publications, see <http://nature.berkeley.edu/~miguel-alt/publications.html>, accessed November 8, 2013.

³⁶⁴ Wezel, A. and V. Soldat. 2009. "A quantitative and qualitative historical analysis of the scientific discipline of agroecology." *International Journal of Agricultural Sustainability* 7 (1): 3-18.

Pablo and Marin Avenues).³⁶⁵ The Station was instituted as a branch of the Division of Beneficial Insect Investigations, which had been housed at the Citrus Experiment Station in Riverside since 1923 - reflecting that the field of biological control had been instigated, largely, by the citrus industry.³⁶⁶ Given the inherent vulnerability of single-crop production systems, growers in Riverside were beset by losses incurred by all manners of unwanted insects, (e.g., orange thrips, cottony cushiony scale, and mites),³⁶⁷ and eager for help from the university. Researchers used exotic predators, pathogens, and parasites to control the insects and, having met with success, sought to expand research and development to other crops; apple orchards on the Central Coast, pear orchards near the Sacramento River, and grapevines in Northern California.³⁶⁸ Researchers in Riverside and Albany worked in tandem to control the pests of these crops and others - entirely without the use of chemicals - and, in so doing, developed the field of biological control.³⁶⁹

³⁶⁵ Marvin, J., R. Groza, and A. Pulcheon, eds. 2003. *Report: Experiment Station Research and History, Gill Tract, University of California, Albany*. Richmond: LSA Associates, Inc.

³⁶⁶ Stoll, S. 1995. "Insects and institutions: university science and the fruit business in California." *Agricultural History* 69 (2): 216-239. Agricultural History Society.; and Stoll, S. 1998. *The fruits of natural advantage: making the industrial countryside in California*. Berkeley: University of California Press.

³⁶⁷ *ibid.*

³⁶⁸ *ibid.*

³⁶⁹ Warner, (et al.), defines classical biological control as "the introduction of novel natural enemies" to control pests. See Warner, K., et al. 2011. "The decline of public interest agricultural science and the dubious future of crop biological control in California." *Agriculture and Human Values* 28 (4): 483-496. p. 485

Also applying their efforts to these crops were pesticide companies which, by 1913, were in operation throughout the state.³⁷⁰ The pesticide industry began in 1907, with the establishment of the California Spray-Chemical Company, through efforts to control the codling moth in the Pajaro Valley, (Monterey County) - the largest apple-producing region in the state at that time.³⁷¹ In addition to botanicals, (made with tobacco or chrysanthemum, for example), inorganic compounds like lead arsenate and copper arsenate, (also known as Paris Green), were commonly used in commercial orchards.³⁷² Following World War II, and the reorienting of wartime industries,³⁷³ these were replaced by synthetic organic compounds - organochlorines, (such as DDT), and organophosphates, (such as parathion).³⁷⁴ Less expensive and more effective than their inorganic predecessors, they fueled the “chemicalization of insect control.”³⁷⁵ By 1950, “research on biological control was largely abandoned, especially by the USDA, in favor

³⁷⁰ Stoll, S. 1995. “Insects and institutions: university science and the fruit business in California.” *Agricultural History* 69 (2): 216-239. Agricultural History Society.

³⁷¹ The California Spray-Chemical Company founded the Ortho Brand, which “became associated with one of the largest industrial corporations in the world and the maker of hundreds of chemical and petroleum products. The Standard Oil buy-out, [in 1930], indicated the rising importance of the insecticide market in the US and predicted a time when all insecticides would be manufactured by large chemical companies,” (ibid. p. 239). Stoll also notes that “the revolving door connecting college and company - especially the one at Ortho - blurred the distinction between faculty and [private] research staff,” (ibid. p. 237).

³⁷² ibid.

³⁷³ Perkins, J. 1978. “Reshaping technology in wartime: the effect of military goals on entomological research and insect-control practices.” *Technology and Culture* 19 (2): 169-186.

³⁷⁴ Warner, K., et al. 2011. “The decline of public interest agricultural science and the dubious future of crop biological control in California.” *Agriculture and Human Values* 28 (4): 483-496. p. 486

³⁷⁵ Perkins, J. 1983. “Insects, Food, and Hunger: the Paradox of Plenty for US Entomology, 1920-1970.” *Environmental Review* 7 (1): 71-96. p. 79

of the new insecticides.³⁷⁶ Yet, as the new chemicals became preponderant, issues emerged, including reports of adverse effects on human health and the safety of workers;³⁷⁷ the destruction of non-target species, (such as bees);³⁷⁸ the biological desertification of fields, (due to the broad-range effectiveness of the new chemicals); and resistance.³⁷⁹ The facts of these issues would be the focus of bitter disagreement between those who supported the use of pesticides, and those who did not.

By 1954, “a feud developed among some of the top administrators in the University of California and within the [Station] itself,” as a faction of Station researchers staged a backlash against the new orthodoxy of pesticides, and openly criticized the university’s ties to the industry.³⁸⁰ A researcher at the Station’s headquarters, in Riverside, described what happened:

"The then Dean of Agriculture, Dr. Alfred Boyce, operating through departmental administrators, organized a voting block among the younger faculty against Dr. Robert van den Bosch, who was very vociferous in denouncing what he perceived to be administrative [corruption]. This ultimately led to van den Bosch being

³⁷⁶ John Perkins wrote that “entomologists and farmers drifted away from cultural controls, such as crop rotation and orchard sanitation, because the toxic chemicals obviated the need for such expensive, labor intensive practices,” (ibid. p. 79).

³⁷⁷ Claims were substantiated by the increasing number of medical scientists who concluded that pesticides are dangerous to human health.; ibid.

³⁷⁸ Stoll, S. 1995. “Insects and institutions: university science and the fruit business in California.” *Agricultural History* 69 (2): 216-239. Agricultural History Society.

³⁷⁹ Perkins wrote that “resistance emerged as a crisis issue on the research agenda only after disease vectors became resistant in the early 1950s.” See Perkins, J. 1983. "Insects, Food, and Hunger: the Paradox of Plenty for US Entomology, 1920-1970." *Environmental Review* 7 (1): 71-96. p. 86

³⁸⁰ Legner, E. 2008. "History of Biological Pest Control." In *Report: Experiment Station Research and History, Gill Tract, University of California, Albany*, Marvin, J., R. Groza, and A. Pulcheon, eds., Appendix C: History of Biological Insect Pest Control, (prepared by T. Klatt). Richmond: LSA Associates, Inc.; This article is also available at <http://www.faculty.ucr.edu/~legnerref/biotact/bc-2.htm>, accessed February 16, 2014.

asked to leave the unit, especially after his rebellion extended to a denunciation of the scientific integrity of several active faculty. [In 1963], Van den Bosch left the Riverside campus for the branch laboratory in Albany, taking with him some highly skilled technical personnel... Boyce then, against the wishes of all the faculty, unilaterally abolished the [unit, in 1969], and forced it to reorganize as a subsidiary Division within the Department of Entomology, that was largely devoted to the use of pesticides.”³⁸¹

That same year, the Albany site, also, was designated a Division, and folded into the Berkeley campus Department of Entomology.³⁸² As administrators and faculty throughout the university system increasingly subscribed to the interests of pesticide companies, researchers at the Gill Tract began using the term, classical biological control, to refer to their own work.³⁸³ Moreover, they kept a critical stance toward the university and its receptivity to corporate interests.³⁸⁴ Van den Bosch later published *The Pesticide Conspiracy*, wherein he described, (according to Warner):

“...a ‘pesticide mafia’ of agrochemical manufacturing companies, UC and public officials, and large growers who found it to their personal financial interest to promote pesticides, in violation of ecological common sense. In his analysis, growers, farm workers, the public, and the natural world were the chief victims of this conspiracy. He charged the entire pesticide research, manufacture and use system of suffering from a conflict of interest, and in the tradition of Carson, risked his reputation by going public with knowledge about the abuse of pesticides.”³⁸⁵

Van den Bosch wrote that:

³⁸¹ *ibid.*

³⁸² Warner, K., et al. 2011. “The decline of public interest agricultural science and the dubious future of crop biological control in California.” *Agriculture and Human Values* 28 (4): 483-496.

³⁸³ Jennings, B. 1997. “The killing fields: science and politics at Berkeley, CA.” *Agriculture and Human Values* 14: 259-271. p. 263

³⁸⁴ *ibid.*

³⁸⁵ Warner K. 2007. *Agroecology in action: extending alternative agriculture through social networks*. Cambridge: MIT Press. p. 49

“By and large, [agricultural colleges] are social anachronisms that view their mission as narrowly oriented to crop production and agri-business and hardly concerned with broader societal interests. What else explains their virtual neglect of the concerns of the farm worker, the consumer, the urban homemaker, and the environmentalist?”³⁸⁶

The book fueled public debate, and “fed interest in the 1979 lawsuit” that challenged UC’s research priorities.³⁸⁷

The Division was already broadening the scope of its research and development activities by the time Altieri arrived in 1981.³⁸⁸ Research interests and priorities were already moving beyond applied ecology, to include issues affecting farm workers, consumers, and urban homemakers. The faculty welcomed Altieri and his ideas about agroecology and social equity. Over the next several years, the Division initiated a range of development activities, that included coordinating seminars and classes with public interest groups, actively participating in the causes of farm workers, and engaging the needs of small farmers.³⁸⁹

³⁸⁶ Van den Bosch, R. 1978. *The Pesticide Conspiracy*. Garden City: Doubleday. p. 185; “[Van den Bosch’s] research often suggested that less or no pesticides should be applied, which made him the target of both open and clandestine attack from industry and government figures,” wrote the publisher of the book’s second edition; the University of California Press in Berkeley, (1978). See www.ucpress.edu, accessed February 18, 2014.

³⁸⁷ Warner, K., et al. 2011. “The decline of public interest agricultural science and the dubious future of crop biological control in California.” *Agriculture and Human Values* 28 (4): 483-496. p. 487

³⁸⁸ Jennings, B. 1997. “The killing fields: science and politics at Berkeley, CA.” *Agriculture and Human Values* 14: 259-271.

³⁸⁹ *ibid.* p. 264

Over the same period of time, administrative support for the Division began to decline.³⁹⁰ By 1989, the Division in Riverside was eliminated. According to one member of the faculty, this was the result of “intense efforts” on the part of the Dean of the agricultural college in Riverside.³⁹¹ Following a battery of funding reductions, the Division in Albany was cut in 1992.³⁹² According to one of my interviewees, the decision to cut this Division was made by the Dean of the agricultural college in Berkeley.³⁹³ Although Deans do not have the authority to make programmatic decisions, they do have the authority to make budgetary decisions - this loophole allows Deans to effectively make programmatic decisions, by defunding programs.³⁹⁴ Programs are whittled down until they are deemed unviable, and then they are cut.³⁹⁵ “[He] just [defunded it],” my

³⁹⁰ Warner, K., et al. 2011. “The decline of public interest agricultural science and the dubious future of crop biological control in California.” *Agriculture and Human Values* 28 (4): 483-496.

³⁹¹ Professor Legner wrote: "At Riverside the Division gradually became dominated by chemical control oriented faculty in the Department of Entomology. In 1989, [it] was abolished... Ignorance and pecuniary control among the ranks of University of California bureaucrats is believed to be the principal cause. Although the dissenting faculty in the Division each wrote a personal plea to the then Chancellor Rosemary S. J. Schraer to discuss the matter, in not one case was a reply received." See Legner, E. 2008. "History of Biological Pest Control." In *Report: Experiment Station Research and History, Gill Tract, University of California, Albany*, Marvin, J., R. Groza, and A. Pulcheon, eds., Appendix C: History of Biological Insect Pest Control, (prepared by T. Klatt). Richmond: LSA Associates, Inc.; This article is also available at <http://www.faculty.ucr.edu/~legner/biotact/bc-2.htm>, accessed February 16, 2014.;

³⁹² Warner, K., et al. 2011. “The decline of public interest agricultural science and the dubious future of crop biological control in California.” *Agriculture and Human Values* 28 (4): 483-496.

³⁹³ *interview*

³⁹⁴ *interview*

³⁹⁵ *interview*; The agricultural college at Berkeley merged with the School of Forestry in 1974 to become the College of Natural Resources. The Dean of the agricultural college is, formally, the Dean of the College of Natural Resources.

informant explained. “He was taking advantage of a lot of professors who died and [who] were retiring.”³⁹⁶ Baser means of eliminating programs are also employed. During the years preceding its demise, administrators were overtly unsupportive of the Division’s work - particularly regarding its inclination to engage with civil society. For example:

“[In 1989], Professor Altieri prepared a memo inviting guests from various non-profit organizations in the Bay Area to a campus meeting to discuss the formation of a public advisory board... The meeting, however, was canceled at the last minute when the Dean threatened unspecified sanctions should the meeting take place. Many of the faculty, already feeling besieged by a hostile administration, counseled Dr. Altieri to cancel the meeting. The Dean’s strategy not only divided the faculty internally, it also distanced the Division’s relationship with non-profit organizations. At the same time, traditional advocates of biological control found it difficult to engage in the subtle struggles over science within the corridors of academia.”³⁹⁷

That “UC abolished its two dedicated biological control institutions... provided evidence, for some, to a corruption theme,” wrote Warner, (and others).³⁹⁸ Bruce Jennings asserted that “UC suppressed these institutions because they offered support to scientists and activists who critiqued chemical-intensive agriculture and [university] research priorities.”³⁹⁹ It seems that they were suppressed, also, because they sought to engage with civil society.

³⁹⁶ *interview*

³⁹⁷ Jennings, B. 1997. “The killing fields: science and politics at Berkeley, CA.” *Agriculture and Human Values* 14: 259-271. p. 265-266

³⁹⁸ Warner, K., et al. 2011. “The decline of public interest agricultural science and the dubious future of crop biological control in California.” *Agriculture and Human Values* 28 (4): 483-496. p. 487

³⁹⁹ See Jennings, B. 1997. “The killing fields: science and politics at Berkeley, CA.” *Agriculture and Human Values* 14: 259-271.; Quote taken from Warner, K., et al. 2011. “The decline of public interest agricultural science and the dubious future of crop biological control in California.” *Agriculture and Human Values* 28 (4): 483-496. p. 487

When the Division in Albany was dismantled, (in 1992), its faculty and researchers were moved to the main campus in Berkeley, where they were absorbed into the Department of Environmental Science, Policy, and Management, (ESPM), within the College of Natural Resources.⁴⁰⁰ At the Gill Tract, university administrators established their own Center for Biological Control,⁴⁰¹ and hired their own directors, who would report to the Dean: one located on campus, (within ESPM), and the other located at a research and extension facility in Parlier, (Fresno County).⁴⁰² The new Center would be populated by new people - researchers from the state Department of Food and Agriculture and the federal Agricultural Research Service of the Department of Agriculture, (USDA-ARS) - and its priorities would be aligned with new interests.⁴⁰³ The advisory committee for the Center is comprised of government officials and representatives from the private sector.⁴⁰⁴ Its work now focuses on solving pest problems for commodity growers of grapes, lettuce, and olives in the Central Valley.⁴⁰⁵

⁴⁰⁰ *ibid.*

⁴⁰¹ *ibid.*

⁴⁰² "Parlier is a giant migrant labor camp," said the town's mayor, in 1971. Parlier is the largest grape and raisin producing region in the nation; and one of the most impoverished regions in the state. See Lindquist, D. 2005. "The new grapes of wrath." *San Diego Union Tribune*, January 23. legacy.utsandiego.com/news/reports, accessed February 18, 2014.; Quote taken from Runsten, D., Kissam, E., and Intili, J. 1995. "Parlier: the Farmworker Service Economy." Prepared for the Conference on the Changing Face of Rural California, Asilomar, June 12-14. *Changing Face* 1 (4). p. 1

⁴⁰³ UC CBC. Center for Biological Control. <http://nature.berkeley.edu/biocon/about.html>, accessed February 18, 2014.

⁴⁰⁴ *ibid.*

⁴⁰⁵ *ibid.*

Faculty members and researchers formerly associated with the Division managed to hold onto a seven-acre section of the Gill Tract,⁴⁰⁶ where they established the Agroecology Research and Training, (or ART), Laboratory. Initiated under the auspices of the former Division, the ART Laboratory was formalized in 1992, in response to the elimination of the Division, and as an attempt to preserve a connection to the Tract for faculty and researchers who were still committed to the goals of the former Division. At the Tract, these faculty members and researchers continued with their work co-creating and providing research and development to local constituents. ART researchers used the agroecological partnership model, and worked closely with local civil society organizations. Members of these organizations were included as “integral parts of research teams,” in order to bring local concerns, perspectives, and knowledge to the table.⁴⁰⁷ Hunger, food deserts, and food insecurity - all locally occurring issues - needed remedy. Along with ART researchers, they assessed needs for local development, and saw solutions in urban agriculture. ART, therefore, focused efforts on developing science and practical methods for urban agriculture.

⁴⁰⁶ *interview*; The original acreage of the Gill Tract, allocated to the Division in 1944, was thirty-six acres. Twenty one and one half acres were transferred to the College of Natural Resources in 1992, and seven of these were acquired by the ART Laboratory. See Marvin, J., R. Groza, and A. Pulcheon, eds. 2003. *Report: Experiment Station Research and History, Gill Tract, University of California, Albany*. Richmond: LSA Associates, Inc.

⁴⁰⁷ The general methods of ART researchers, (to invite participation and solve problems in situ, for example), ran parallel to those of the Agroecology Program in Santa Cruz: their approaches to inquiry and knowledge production were both grounded and participatory. Quote from Allen, P. and M. Brown. Allen, P. and M. Brown. 2006. "Growing a Program in Sustainable Agriculture at UC Santa Cruz." *Chronicle of the University of California* 8: 49-64. Berkeley: Center for Studies in Higher Education. <http://casfs.ucsc.edu>, accessed July 14, 2010.

In 1997, the Bay Area Coalition for Urban Agriculture, (BACUA), formally proposed that UC establish a Center for Sustainable Urban Agriculture and Food Systems.⁴⁰⁸ BACUA is an umbrella for over thirty different civil society groups devoted to issues of food and agriculture. It also includes concerned UC faculty, who support the idea of creating such a center, (Miguel Altieri, Claudia Carr, Ignacio Chapela, Don Dahlsten, Jeff Romm, Richard Walker, and Michael Watts, among others). An excerpt of the proposal reads:

“BACUA... proposes that [UC] enter into a university / community partnership in order to create the world's first university center on sustainable urban agriculture and food systems. The purposes of the Center would be to promote research, education, extension and outreach on the various social, environmental, economic and ecological dimensions of urban farming and sustainable food systems. The expansion of urban agriculture and alternative food systems is a worldwide phenomenon that has caught the attention of policy makers, activists, and funders as a new response to issues of food security, economic development, poverty alleviation, urban blight, waste recycling, and environmental preservation. The proposed Center would be located at the Gill Tract, in Albany, and would benefit the university community...”⁴⁰⁹

It would have been “a major center for research, teaching, extension, and outreach in urban agriculture,” said an ART researcher. “We were thinking way ahead at that time. Even the old buildings could have been rented to NGOs that were working on [the issues]. We wanted to create a synergetic type of situation with civil society.”⁴¹⁰ BACUA

⁴⁰⁸ Bay Area Coalition for Urban Agriculture. 1997. *Creating a Center for Sustainable Urban Agriculture and Food Systems at the UC Gill Tract in Albany: a Preliminary Proposal by the Bay Area Coalition for Urban Agriculture for a Partnership with the University of California at Berkeley and the Division of Agriculture and Natural Resources*. See http://nature.berkeley.edu/srr/BACUA/bacua_proposal.htm for the full text.

⁴⁰⁹ *ibid.*

⁴¹⁰ *interview*

prepared their proposal, and took it to the Dean, who never replied. “Zero answer... ever,” my informant stated. The proposal was never officially rejected, since administrators did not even acknowledge receiving it. Subsequently, the old buildings were torn down. “They are all gone now. They [were] destroyed.”⁴¹¹

University administrators had other plans for the Gill Tract: two members of the faculty, (from the College of Natural Resources), were appointed to design a new Center for Diversified Farming Systems that would, later, be expanded into an institute, the Berkeley Institute of Sustainable Food.⁴¹² For these designs to be realized, the whole acreage of the Gill Tract needed to be appropriated. An ART researcher recounted how this was accomplished:

“When the original [Division] was in place, [we] used to farm the whole Tract with [our] students. We had almost like an experimental farm, like [they have] at Santa Cruz. The Division controlled that land. We did not allow any pesticides there, because we were doing biocontrol research. It’s not compatible, since we were working with beneficials. So we had it ‘off limits.’ A lot of people were really pissed off about this... but, you know, we controlled it. [Then] this new Dean took over and he demised the Division. [After this], they immediately... What he did [was] he started giving land to the biotechnology people.”⁴¹³

At the Gill Tract, conditions were made so inhospitable that ART researchers were forced to relocate entirely. My informant continued:

“When these guys took over the land... they started then charging. (‘How are we going to get rid of them?’ ‘We’ll start charging.’) So they started charging a lot of

⁴¹¹ *interview*

⁴¹² Gilles, K. 2012. "Open letter to the Members of the Albany City Council, and the Albany community: CNR dean outlines new plans for Gill Tract." *Public Affairs*, September 19. Berkeley: University of California New Center. <http://newscenter.berkeley.edu/2012/09/19/cnr-dean-outlines-new-plans-for-gill-tract>, accessed November 29, 2012.; See also <http://dfs.berkeley.edu>.

⁴¹³ *interview*

money. [We] had to kind of retreat because [we couldn't afford the fees. They charged] everybody... [each individual researcher]... anybody who used the Gill Tract. [We] had to pay for the water, the labor of the guy that runs the tractor, the electricity... everything. But these guys that had Novartis money⁴¹⁴... they could pay. [They could pay easily. So the people with the deep pockets were the ones who got to stay... those who had corporate sponsors, (or government funding through the USDA). Researchers without sponsors, (or personal funds), to pay the hefty fees were forced out. We] had to give up. [We were] left with one acre out of seven acres - one acre. And the rest [now] is all corn."⁴¹⁵

Under the administration of the agricultural college and the new Center for Biological Control, (the CBC), much of the Gill Tract was planted to corn, including genetically modified corn.⁴¹⁶ Moreover, pesticides were being used. "Yeah," a researcher said, "they sprayed pesticides. They were even using Round-Up."⁴¹⁷ Consider that having one acre of pesticide-free land, surrounded by fields of corn being treated with pesticides, means not simply that the results of experiments will be skewed. They will be invalid in the tradition of the scientific method. The situation disallows experimentation using control

⁴¹⁴ A rise in corporate interests and corporate control over research followed restructuring immediately. "At that point, also - coincidentally - with *that*, [i.e., the restructuring], came the Novartis agreement... where the university, my college, [i.e., the agricultural college], received \$25 million from Novartis," a biotechnology firm. For details on what became an intensely contested research agreement, see Dunning, R. 2009. *A Synergistic Union, or Selling Out?: University-Industry Relations, Biotechnology, and the UC-Berkeley/Novartis Partnership*. Durham: The Kenan Institute for Ethics at Duke University. <http://kenan.ethics.duke.edu/wp-content/uploads/2012/07/Case-Study-Synergistic.pdf>, accessed November 30, 2012.

⁴¹⁵ *interview*

⁴¹⁶ Marvin, J., R. Groza, and A. Pulcheon, eds. 2003. *Report: Experiment Station Research and History, Gill Tract, University of California, Albany*. Richmond: LSA Associates, Inc.

⁴¹⁷ Reports were that Round-Up was being used on the land at Gill Tract, around the tiny plot worked by the biocontrol and ART researchers. People felt that allowing the release of Round-Up (and all other dangerous chemicals) into the residential neighborhood of Albany is a reckless endangerment of the public health. "[Albany] is an urban area with families, kids... They didn't care." - *interview*

groups that are free from the effects of pesticides. Researchers wanting to conduct *valid* experiments were, thus, forced to relocate to some area free of pesticides. They hope they will be able to work in peace at their new location, a plot of land they recently acquired at the Oxford Tract in North Berkeley, (near Walnut and Virginia Streets).

Administrators appropriated the last of what could not be gained surreptitiously. “The way it works... is every researcher is allotted land every year. I have to apply for the land, [but] because I have been using the Gill Tract for thirty-one years, [I have always been automatic]. This year, I’m not automatic. When I applied, they said, ‘well, I’m sorry,’ you know.”⁴¹⁸

⁴¹⁸ *interview*; Following this incident, (which occurred in April of 2012), several hundred people - proponents of sustainable agriculture and food justice amongst them - arrived to the last acre of the Gill Tract to protest the university’s priorities, and to propose, again, the establishment of a Center for Sustainable Urban Agriculture and Food Systems. People explained to news reporters that they have been appealing to UC for fifteen years for such a center: “we have held over ten public forums in the last year [alone] and invited the UC every single time, and they have never shown up.” People planted vegetables on vacant plots, and set up a kitchen, to prepare food for the hungry. This was done each day for three weeks, until UC put an end to it. “About one hundred officers from eight of the ten UC campuses, along with a dozen Alameda County sheriff deputies, participated in the clearing of the property,” which was thereafter bulldozed. Some people suffered minor injuries. Nine were arrested. This scenario recurred the following year, in May of 2013. This time, one hundred and fifty people came to plant vegetables, and to reiterate needs for a center for urban agriculture, and food for the poor. Two days passed before they were raided. Their crops, also, were bulldozed. This time, four were arrested.; See Yee, Christopher. 2012. “Occupiers take over UC-owned land for farm.” *The Daily Californian*, April 22. Berkeley: The Independent Berkeley Student Publishing Company. <http://www.dailycal.org>, accessed November 19, 2013.; Second quote from Staff. 2012. “Nine arrests made as police break up Occupy the Farm encampment.” *CBS Local News*, May 14. San Francisco: CBS Local Media. <http://sanfrancisco.cbslocal.com>, accessed May 15, 2012.; Cabanatuan, M., and E. Huet. 2012. “UC police clear farm - nine arrests.” *San Francisco Chronicle*, May 15. <http://www.sfgate.com/crime/article>, accessed February 22, 2014.; Wu, D. 2012. “Occupying farmland for organic food and fairness exposes university elitism.” *AlterNet*, May 17. Berkeley: Independent Media

Restructuring amounts to the appropriation and redistribution of resources, autonomy, and power. These are removed from those who may have them, and reassigned to those who are already more powerful. An informant explained:

“The people that are [there now] doing research... When [the Dean] talks about ‘his researchers’ - you know, ‘my faculty [need] the land, to [do] the research to save the world, to feed the world’ - it’s all BS. First of all, none of those people that exist in the Gill Tract are faculty. They are all from the USDA. And the reason they are there is because they pay a huge overhead to the university. [Secondly], corn, as you know, is being used as a ‘model plant.’ They say that they are doing basic research, that they are using corn as a model plant to do basic research. [But] it’s all precursory for biotechnology and biofuel research, (silencing genes, making plants young forever, all kinds of stuff). And they even have patents. We have found the patents that these guys have... on this precursory science that is basic for biotechnology and biofuels. So when they say, ‘it’s basic’ ... yeah, it’s basic, but it’s precursory. You’re doing it for some reason. Basic for what? The foundation for what? There is no neutral research. So anyway... It’s all lies. That’s the problem.”⁴¹⁹

Regarding the Center for Diversified Farming Systems, (CDFS), and the Berkeley Institute of Sustainable Food, (BISF), my informant continued:

“This whole show that they’re going to do at the Gill Tract now, [i.e., the CDFS and the BISF], is all going to be... just a show. The [new] institute doesn’t include anybody that has any history related with the Gill Tract. Basically, it’s all populated by big interests. There is an agenda here to promote... an image, but nothing that’s going to have an impact - there’s no participation [with] the community. There’s exclusion of certain faculty. As a matter of fact, [they] receive money from British Petroleum, [in addition to Novartis, now Syngenta]. See what happens when they come in with this agenda of biotechnology and biofuels - that *is* the agenda - [they] just invent a brand new program in agriculture just like that... just to kind of say, ‘hey, yeah. We’re [doing

Institute. <http://www.alternet.org>, accessed February 22, 2014.; Staff. 2013. "Four arrested: crops removed from 'Occupy the Farm' site." *KTVU News*, May 13. Oakland: Cox Media. <http://www.ktvu.com/news/news/crime>, accessed November 19, 2013.; First quote from Zhou, Mary. 2013. "Occupy the Farm in Albany continues planting in protest." *The Daily Californian*, May 20. Berkeley: The Independent Berkeley Student Publishing Company. <http://www.dailycal.org>, accessed November 19, 2013.

⁴¹⁹ *interview*

something]. So, you see, they create these things, [like the CDFS or BISF], to kind of wash their image.”⁴²⁰

The politics of exclusion, at the university, are extended to people, knowledges, technologies, and legacies. Certain people would routinely not be invited to, (or notified of), meetings, either with the CBC or ESPM. Certain faculty would not be consulted on projects squarely in their fields of expertise. Neither the CDFS nor the BISF included researchers with practical experience in agroecology or urban agriculture. “They didn’t speak with us,” an ART researcher said. “They didn’t involve us.”⁴²¹ Knowledges and technologies are, thus, left out of the field of sustainable agriculture. My informant continued, “when [administrators] gave the presentation about the construction of the new CDFS, Carol Merchant, who’s been a professor for forty years, got up and said, ‘why are you inventing new words, [such as ‘diversified farming systems,’ instead of using ‘agroecosystems’]?’ [They] got all nervous because, basically, what they did is they wiped out a legacy.”⁴²² Legacies are social, intellectual, and technological. They may be historical or current, professional or informal, personal or collective. One of many effects of exclusionary practices is that legacies are obscured - in this case, the legacy of agroecology, along with its focus on social equity and local community development through partnerships.

⁴²⁰ *interview*

⁴²¹ *interview*

⁴²² *interview*

Reflecting on the trajectory of exclusionary practices at the university, my informant asserted that such politics played out in the original formation of SAREP, as well:

“There were people that had been working on... alternative agriculture for many years before [SAREP] was started. [At Santa Cruz], we had the Agroecology Program with Steve Gliessman (with whom I had worked [with many years] before in Mexico). And you had [Bill] Friedland, the rural sociologist. And then [at Berkeley], we had the Division of Biological Control, [and] Richard Walker, the geographer. And then [at Davis], you had a student farm and some [others]. These people were totally ignored by the new wave. The sustainable agriculture program *never* included these people - at all - in committees, or granting, or anything.”⁴²³

There is exclusion at the university, also, with respect to race. Racial discrimination occurs on institutional levels, and at social and interpersonal levels. Racial discrimination occurs with respect to salaries paid and rates of promotions through standard tenure tracks. Cases of discrimination which are brought to the attention of administrators are treated as oversights and aberrations. Private legal action or the threat of such is necessary to compel UC to correct its ‘mistakes.’ Regarding hiring and promotion decisions, UC does not weigh or count academic work done in the Spanish-language in the same way as work done in the English-language; i.e., it is ‘worth’ less. Moreover, certain researchers - ART researchers - were routinely made the subjects of racialized invectives.⁴²⁴

The matter of race converges on a political struggle over knowledge, knowledge production, and the material resources necessary to produce technology and development,

⁴²³ *interview*

⁴²⁴ *interview*

i.e., the public university. Race intersects issues of economic inequality and class, i.e., who owns and controls the public wealth, (including the university). Since knowledge is based on identities, positions, perspectives, and worldviews, (social, economic, cultural, and political), certain knowledges - and the people who represent them - are racialized and oppressed while others are privileged. Efforts to exclude people are bids to relegate, (or erase), knowledges.⁴²⁵ In real terms, they are attempts to restrict access to technology and development for certain people.

In regard to sustainable agriculture, “[administrators] fall very short in the political discussion. They don’t want to deal with the political discussion. That’s why they exclude all these people,” an ART researcher explained. “It’s all related to huge political interests... That’s what’s going on. [It has] nothing to do with science. I mean, science, obviously, has to do with it, [but] science is influenced by the political agenda.”⁴²⁶ Meanwhile, the political agenda favors a narrow model of agricultural sustainability - one that precludes engaging with issues of social equity - one that focuses,

⁴²⁵ Consider the case of Ignacio Chapela, a professor at Berkeley who was denied tenure after publishing research which found that GM-corn is contaminating Oaxacan landraces. After the article was published, telephone calls were made and, "for the first time in the 133-year history of this highly respected journal, the editor announced that it should not have published the article in the first place due to insufficient evidence... [even though it] had gone through a rigorous peer review before publication." Denying him tenure, UC was complicit in this attempted erasure. The case made international news due to its grave implications.; Quist, D., and I. Chapela. 2001. "Transgenic DNA introgressed into traditional maize landraces in Oaxaca, Mexico." *Nature* 414: 541-543. <http://www.nature.com/nature/journal>, accessed November 19, 2013.; Quote taken from Wirz, J. 2003. "The case of Mexican maize." *In Context*. 9: 3-5. Ghent: The Nature Institute. <http://natureinstitute.org/pub>, accessed November 19, 2014. p. 3; published originally in Switzerland: Wirz, J. 2002. "Der fall des Mexikanischen mais." *Das Goetheanum*, (Dezember). Dornach: Allgemeine Anthroposophische Gesellschaft.

⁴²⁶ *interview*

instead, on yields and profitability for capitalized producers, on upholding the status quo. Versions of sustainability that emphasize equity and social justice, therefore, are excluded: knowledges which incorporate a right to food or food sovereignty are framed as radical. My informant elaborated:

“It is very radical to talk about [food] as a right. [There is] this divide in the alternative movement. You have the reformists talking about fair trade and organic agriculture, without changing the system. And then you have the radical... there is a right to food and, therefore, everybody has to have access to the food web, but in order to have access to the food web, corporations cannot control the food system... We need to change the dominant economic system. We need to dismantle corporate control over the food system.”⁴²⁷

“There is a suppression of knowledge,” he continued. SAREP, for example, “was taken by the reformists.”⁴²⁸ It offers market-based ‘solutions’ to issues that cannot be solved by markets - a verity increasingly being supported by research. To promote ‘business as usual,’ equity issues must be ignored. “They want a mundane view of sustainable agriculture that doesn’t mean anything. Monsanto has sustainable agriculture, [as does] the World Bank. Everybody does sustainable agriculture... it has been co-opted. It doesn’t mean anything [anymore].”⁴²⁹ Researchers pointed to work recently published by

⁴²⁷ *interview*

⁴²⁸ *interview*

⁴²⁹ *interview*

SAREP.⁴³⁰ “Now, they are busy co-opting the concept of agroecology.”⁴³¹ They are “erasing its history, [and] stripping it of its political content.”⁴³²

Agroecology is contentious because it is about *creating* access to technology and development for people. As “an action-oriented activity focused on creating change, [and] bringing equity and social justice” to people and their communities,⁴³³ it begins with recognizing a human right to food, and continues with recognizing domestic and international human rights to food sovereignty. The need is to develop local food systems - sustainable, diverse, and equitable systems - capable of providing food, employment, and impetus for community economic development. Agroecological, (i.e., participatory), approaches are necessary for democratizing knowledge, knowledge production, and technology development, so that local food systems can be made capable of serving the needs of people and their communities, (instead of elite corporate interests); so that agricultural science can be made to serve society.⁴³⁴ Yet, as ART Laboratory researchers have attempted to carry out their work, (i.e., serving civil society), they have been undermined by the administration at UC.

⁴³⁰ Tomich, T., Brodt, S., Ferris, H., Galt, R., Horwath, W., Kebreab, E., Leveau, J., Liptzin, D., Lubell, M., Merel, P., Michelmore, R., Rosenstock, T., Scow, K., Six, J., Williams, N., and Yang, L. 2011. "Agroecology: a review from a global-change perspective." *Annual Review of Environment and Resources* 36: 193-222.

⁴³¹ *interview*

⁴³² Holt-Giménez, E. and M. Altieri. 2013. “Agroecology, food sovereignty, and the new green revolution.” *Agroecology and Sustainable Food Systems* 37 (1): 90-102. p. 94

⁴³³ *interview*

⁴³⁴ Food First. 2014. *Agroecology*. Oakland: Institute for Food and Development Policy. <http://foodfirst.org>, accessed April 20, 2014.; Méndez, et al. 2013. “Agroecology as a transdisciplinary, participatory, and action-oriented approach.” *Agroecology and Sustainable Food Systems* 37 (1): 3-18.

The case of the ART Laboratory clarifies that supporting the work of agroecology goes beyond money. The administration can do more than provide basic funding to the Laboratory for its operations, (which it needs in order to work with non-profit entities). The administration could support these researchers' efforts to engage with civil society interests, by not threatening sanctions, for example, when meetings are arranged. UC could provide the Laboratory with land, experiment fields, and demonstration sites - free from contamination by pesticides and windborne genetic pollution. Properly funded, sufficiently staffed, and adequately equipped, the Laboratory would be able to continue with and expand its work.

Some Comparative Insights

Certain themes emerged during the course of investigating UC's three most important sustainability research centers: the Sustainable Agriculture Research and Education Program at UC Davis, (SAREP); the Center for Agroecology and Sustainable Food Systems at UC Santa Cruz, (CASFS); and the Agroecology Research and Training Laboratory at UC Berkeley, (ART). Firstly, the administration at UC is doing little to support the progress and effectiveness of these programs, principally, by keeping them underfunded and unsupported - except insofar as they align with conventional, industrial, and commercial interests. When these programs purposefully align themselves with community interests, they are undermined through organizational restructuring, sanctions, budgetary cuts, and administrative appropriation of resources, (i.e., laboratories, outreach and meeting spaces, classrooms, and fields for experimentation and

demonstrations). To support research and development in sustainable agriculture, UC must fund *and* otherwise support these programs in their endeavors. To set their own research and development agendas, each of these programs must be provided with stable, unrestricted, block funding from the university. They must be provided with campus resources, (e.g., laboratories and fields), and qualified staff. UC must create and fill *designated* positions for these programs - new professorships and research and extension positions in agroecology, rural sociology, and urban agriculture.

Yet, a gap exists which must be addressed: SAREP, (the only statewide program), is lacking in knowledge and expertise regarding agroecology. It does not research, develop, or deploy agroecological partnership models as part of its own work. That SAREP is quite behind ‘the cutting edge,’ is part of the problem. SAREP must be reorganized, fundamentally. Instead of existing as a granting agency, SAREP should be made a center for research and education - as the legislature stipulated, (and as its name suggests). For this, it needs faculty appointments. SAREP must integrate working concepts of agroecology and agroecological partnership models into its own operations. To serve the people of California, SAREP cannot set its agenda for research and development in private. It must be accountable to public interests and non-corporate public entities, (as CASFS and ART have been). Forums should be instituted which are open to the public. Underserved constituencies must be invited to participate. SAREP needs to be engaging with, and making use of, local expertise to promote

“democratically-controlled” methods of production, local agro-biodiversity, and community-based development - in Davis and throughout California.⁴³⁵

⁴³⁵ Bureau of the International Assessment of Agricultural Knowledge, Science, and Technology for Development. 2008. *International Assessment of Agricultural Knowledge, Science, and Technology for Development*. Nairobi, Paris, Rome, Washington, DC: United Nations Environment Programme, Division of Early Warning and Assessment. <http://www.unep.org/dewa/Assessments/Ecosystems/IAASTD>, accessed September 25, 2013.; Holt-Gimenez, E. 2009. “From food crisis to food sovereignty: the challenge of social movements.” *Monthly Review* 61 (3): 142-156. p. 148

IMPERATIVES FOR LOCAL AND SUSTAINABLE DEVELOPMENT IN CALIFORNIA

Exclusionary practices, social and institutional, couched in pretenses of objectivity and expertise, must be recognized for what they are - barriers against the access of common people to knowledge and development infrastructures and resources. In discussing the problem of economic inequality, (or control over economic production), John Gaventa writes:

“The concentration of dominating knowledge in the hands of the few and the power to proclaim it as ‘official’ is... producing new debates about what constitutes genuine democracy in a knowledge society. ...it is not enough simply to democratize access to existing information. Rather, fundamental questions must be raised about what knowledge is produced, by whom, for whose interests, and toward what end.”⁴³⁶

Exclusionary politics delineate the boundaries of the field of sustainable agriculture at the University of California. Accordingly, they characterize the knowledge, technology, and development that it produces. The ‘official’ knowledge of the university - produced and projected through its flagship program for sustainable agriculture, SAREP - excludes notions of social justice, even though such notions are foundational for creating true social-ecological sustainability. By refusing to define, in its mission statement, sustainable agriculture as encompassing basic rights to food, food sovereignty, and socially equitable development - and by refusing

⁴³⁶ Gaventa, J. 1991. “Toward a knowledge democracy: viewpoints on participatory research in North America.” In *Action and Knowledge: Breaking the Monopoly with Participatory Action Research*, eds. O. Fals-Borda and M. Rahman. New York: Apex Press. p. 130-131

to organize the program in a way that would reflect such a definition - the university undermines the larger project of sustainable agriculture. Excluded are people with expertise in social sustainability and agroecology. Excluded are the knowledges of these disciplines, and the technologies derived by them - e.g., agroecological partnership models that involve grounded, participatory, and experiential approaches to knowledge production. Decision-making regarding the agenda for research and development at SAREP is, instead, a distinctly top-down process. It mirrors the process used for conventional agriculture; where decisions are made, in private, between commodity board members, industry representatives, and high-level administrators, (overseen by ANR and the Office of the President); and where research and development are rendered to parties able to either provide or leverage funding. Consequently, research and development revolves around the needs of the state's highest bidders, (i.e., it focuses on farm-level production for commodities producers and profitability for wholesalers). A political economy of knowledge production emerges, in that the greatest amount of research is generated for those who provide, (or leverage), the greatest levels of funding - producers of organic wine grapes, for example.

Mired in the politics of exclusion, SAREP is structured to reproduce the status quo - to be incapable of impacting the larger project of sustainable agriculture in California. The primary method of its operation, competitive granting, is the *least*

efficient approach to solving complex social-ecological problems.⁴³⁷ Competitive granting prohibits grounded inquiry, reduces opportunities for long-term research, and provides the *lowest* rate of social return on agricultural research.⁴³⁸ In the main, SAREP functions as an accessory for ANR, (aligned with the administration at Davis), attendant to the larger agro-industrial complex of the state. It serves the same clients, and its research and development priorities overlap as a matter of course.

Power, at the root of the matter, is exercised both through the control of knowledge and through the control of knowledge production.⁴³⁹ To contend with power - to address issues of social and economic inequality - people must gain access not only to knowledge: they must gain access, also, to knowledge production and the tools which it generates, i.e., technology and development.⁴⁴⁰ Addressing issues of social and economic inequality demands:

“...the creation of an alternative organization of science - one that is not only *for* the people, but [one that] is created *with* them and *by* them, as well. Genuine popular participation in the production of knowledge has implications, of course, not only for the realization of classical notions of democracy, but also for the body of knowledge produced. By altering who controls knowledge, the type of

⁴³⁷ Huffman, W., G. Norton, G. Traxler, G. Frisvold, and J. Foltz. 2006. “Winners and losers: formula versus competitive funding of agricultural research.” *Choices: the Magazine of Food, Farm, and Resource Issues* 21 (4): 269-274. American Agricultural Economics Association.

⁴³⁸ *ibid.*

⁴³⁹ Gaventa, J. 1991. “Toward a knowledge democracy: viewpoints on participatory research in North America.” In *Action and Knowledge: Breaking the Monopoly with Participatory Action Research*, eds. O. Fals-Borda and M. Rahman. New York: Apex Press.

⁴⁴⁰ *ibid.*

knowledge produced - and the very definition of what constitutes knowledge - may also change."⁴⁴¹

Agroecology presents an alternative organization of science, because it recognizes the need for power-sharing. Its approach is to invite popular participation, engage with civil society groups, and directly involve these groups in decisions about research and development goals - along with decisions about what strategies and methods should be used for achieving them. Its precepts are that public participation is essential for creating science and technology that serves the public, and that social and economic justice are predicated on inclusivity. By recalibrating notions of agri-food development, trajectories are redirected away from mass production for export trade, toward small-scale production for localized trade.

The need to expedite socially equitable and local sustainable development is confirmed by the Assessment of the United Nations, which calls for researching and implementing methods of production that are democratically-controlled, and that rely on local biodiversity and local expertise to meet local needs.⁴⁴² At the same time, the connections between food equity, cultural diversity, and agro-biodiversity must be

⁴⁴¹ *ibid.* p. 131

⁴⁴² Bureau of the International Assessment of Agricultural Knowledge, Science, and Technology for Development. 2008. *International Assessment of Agricultural Knowledge, Science, and Technology for Development*. Nairobi, Paris, Rome, Washington, DC: United Nations Environment Programme, Division of Early Warning and Assessment. <http://www.unep.org/dewa/Assessments/Ecosystems/IAASTD>, accessed September 25, 2013. For a useful synopsis, see Bureau of the International Assessment of Agricultural Knowledge, Science, and Technology for Development. 2009. *Agriculture at a Crossroads: Synthesis Report: a Synthesis of the Global and Sub-global IAASTD Reports*, eds. B. McIntyre, H. Herren, J. Wakhungu, and R. Watson. Washington, DC: Island Press. p. 17

underscored.⁴⁴³ Furthermore, understanding international rights to food sovereignty means recognizing these rights domestically for Native American sovereign nations. California's multicultural composition is wealth on its own, and addressing equity issues will be essential for creating networks of truly sustainable, place-based, agri-food systems capable of providing both sustenance and livelihoods.

Yet, UC excludes the field of agroecology from sustainable agriculture, and actively undermines the work of agroecology and its partnership model for socially equitable agricultural development. Its two programs in agroecology - CASFS and the ART Laboratory - exist principally on funding that comes from outside of the university, (i.e., the endowed chair; the earmarks of a sympathetic congressman; the Friends of the Farm and Garden, a community-based organization; and researchers' own pockets). While administrators have been overtly unsupportive, university resources for these programs have been cut and appropriated.

When pressed as to why the university is cutting these programs, and why UC cannot do more to support sustainable agriculture, (redesign SAREP, for example), administrators claim that UC is 'broke,' that declines in state and federal funding have made it impossible.

However, UC is not broke at all. Each new year breaks old records for revenue. In 2013, UC "brought in a record \$1.64 billion in private donations... surpassing \$1.5

⁴⁴³ See Lacy, W. 1994. "Biodiversity, cultural diversity, and food equity." *Agriculture and Human Values* 11(1): 3-9.; and Sachs, C. 1992. "Reconsidering diversity in agriculture and food systems: an eco-feminist approach." *Agriculture and Human Values* 9(3): 4-10.

billion for the third time in a row.”⁴⁴⁴ The President of the University Council of the American Federation of Teachers, Bob Samuels, points out that “a close analysis of the university's own audited financial statements shows that in every major category of the budget - ...even state appropriations - the university [has] increased its revenue.”⁴⁴⁵ He explains how UC has generated a revenue surplus.⁴⁴⁶ Moreover, the San Francisco Chronicle reported “that [UC] employees received a total of \$871 million in bonuses [and] administrative stipends,” just in 2005.⁴⁴⁷

In the end, budgets are moral documents as they show what is valued.⁴⁴⁸ They are not the results of numbers, nor are they made by calculators. Descriptions of things that are deemed important, they are made by people. The administrators of ANR should spend *all* of their budget for agriculture on sustainable agriculture - encompassing agroecology

⁴⁴⁴ Murphy, K. 2013. “UC's private donations hit record high.” *San Jose Mercury News*, November 12. San Jose: Media News Group.
http://www.mercurynews.com/education/ci_24509108/university-californias-private-donations-hit-record-high, accessed November 15, 2013.

⁴⁴⁵ Samuels, B. 2009. “Lost trust.” *Inside Higher Education*, December 7. Washington, DC: Inside Higher Education.
<http://www.insidehighered.com/views/2009/12/07/samuels>, accessed November 15, 2013.

⁴⁴⁶ *ibid.*

⁴⁴⁷ Schevitz, T. and T. Wallack. 2005. “UC piling extra cash on top of pay.” *San Francisco Chronicle*, November 13. San Francisco: Hearst Corporation.
<http://www.sfgate.com/education/article/UC-piling-extra-cash-on-top-of-pay-8-500-top-2595624.php#page-1>, accessed November 15, 2013.; See also Schevitz, T. and T. Wallack. 2005. “Outrage in Capitol at UC pay revelations.” *San Francisco Chronicle*, November 16. San Francisco: Hearst Corporation.
<http://www.sfgate.com/education/article/CALIFORNIA-Outrage-in-Capitol-at-UC-pay-2594906.php>, accessed November 15, 2013.

⁴⁴⁸ United States Catholic Bishops. 1986. *Economic Justice for All: Pastoral Letter on Catholic Social Teaching and the U.S. Economy*. Washington, DC: United States Conference of Catholic Bishops.

and socially equitable development - since, according to the Morrill Act, their entire *raison d'être* is to support the production of science and technology in the public interest. The university is a public subsidy and its beneficiary is supposed to be the public. Moreover, there is a moral imperative to support the resolving of hunger and deprivation in our own communities and globally.

For the alternative agri-food landscape to consist of more than organic specialty products and wines, the way that subsidies for sustainable agriculture are allocated must change. What the university chooses to underwrite must change, as must who the university considers to be its 'clients.' For the landscape to change, development would need to go, not to commodities producers and volume exporters, but to communities within this state, both urban and rural, who need access to food and development. The need for sustainable economic development in California is profound as hunger, poverty, inequality, and environmental degradation are all on the rise. All the while, there is tremendous potential for alleviating these conditions through developing local agri-food systems.⁴⁴⁹

Since development, to be sustainable, must be capable of addressing social and economic equity issues, requisites must be met with respect to inclusivity, consensus-building, and community self-determination. Ethnic studies, critical consciousness studies, (or, critical social theory), and community studies are vital and they, also, should be provided with steady block funding from UC's own budget. Further research should

⁴⁴⁹ Schwind, K. 2007. "Growing Local Food into Quality Green Jobs in Agriculture." In *Race, Poverty, and the Environment*. Oakland: Urban Habitat.

be directed toward finding ways to integrate these disciplinary perspectives into sustainable agriculture research and development. Truly sustainable agriculture will depend on participatory forms of knowledge production, in order to produce science, technology, and development that actually aligns with the needs of society in California.

Here are some thoughts on what we can do from outside of the university:

- **Diverse groups unite:** Let us find common ground in the desire for just, sustainable, and abundant agri-food systems: Native American nations; environmentalists and climate change activists; farm workers, fast food workers, union leaders, and labor rights activists; immigration justice advocates; anti-war activists; urban agriculturalists; slow foodists; health food advocates; anti-GMO activists; water conservationists; animal rights activists; religious leaders, spiritualists, and campaigners for peace; and all who support social, economic, and environmental justice. Reach out to members of your extended community to build coalitions. Whether formal or informal, professional or personal, coalitions help to achieve aims through synergy. Let us incite the issue of sustainability.
- **Generate a research priorities lawsuit:** Given the exigencies of climate change and the current water crisis in California, it may be high time for a new research priorities lawsuit. These ecological events, during the hearings of the early 1980s, were not pressing factors as they are today. The likelihood of swaying courts toward the public interest may be much higher, and substantive concessions could be gained. UC must stop supporting industrial agriculture, and start supporting agroecological research and development for communities in California.

- **Compel UC to divest from fossil fuel industries:** Archbishop Desmond Tutu recently called upon the people of all nations to join the global fossil fuel divestment movement.⁴⁵⁰ Go to www.gofossilfree.org, and be a signatory for the campaign already underway at UC Santa Cruz. So far, nine colleges and twenty municipalities across the country - including San Francisco and Seattle - have signed commitments to cut their ties to fossil fuel industries. UC must be made to do the same.
- **Contact Occupy the Farm:** Occupy the Farm is an organization that works for the cause of establishing a Center for Sustainable Urban Agriculture, (at UC Berkeley), which would use community partnership models for research and development. If such a Center were established, the people of Oakland and the greater Bay Area would gain access to research and development, and this would set a precedent. Let us galvanize their cause. Reach them at www.occupythefarm.org. Perhaps your community or organization has skills, information, or resources to share that would help. Perhaps your organization can be enriched by the insight of Occupy the Farm and its ongoing struggle.⁴⁵¹
- **Raise awareness:** The largest part of the work of change is shifting the collective consciousness. Informing and educating each other on the facts of these matters is crucial, because public opinion paves the way for political action. Visit Food

⁴⁵⁰ Carrington, D. 2014. "Desmond Tutu calls for anti-apartheid style boycott of fossil fuel industry." *The Guardian*, April 10. London: Guardian News and Media, Ltd. <http://www.theguardian.com>, accessed May 7, 2014.

⁴⁵¹ See also Movement Generation Justice and Ecology Project, at www.movementgeneration.org.

First, at www.foodfirst.org, for information on the global food system; succinct backgrounders, in-depth topical articles, policy recommendations, and community resources. Share with your family and friends the things you learn and think about climate change, sustainability, and food. Share your ideas on how a better world is possible.

- **Support your local, organic foodshed:** To the extent that you can, buy your groceries from farmer's markets, cooperatives, or community-supported farms. Support local, organic food-crafters and micro-entrepreneurs, whether selecting honey, jams, pickles, or other goods. If you dine out, choose restaurants that serve locally-sourced fare.
- **Become an ecological gardener:** Study the plants, trees, birds, insects, and creatures in your neighborhood. Peruse farmer's markets for locally adapted and heirloom varieties of edibles, ornamentals, and medicinals: look for native plants and perennials. Plant an ecological garden that feeds on compost and rainwater. Situate your garden in your front yard, if you have one, to inspire others who might pass by. Donate your harvests to your local community food bank.

APPENDIX: INTERVIEW SCHEDULES

Schedule One: The Sustainable Agriculture Research and Education Program

1. Who makes decisions about research directions at SAREP?
2. Are agenda-setting protocols for sustainable agriculture the same as, or different from, those for conventional agriculture?
3. Is it researchers who choose research directions? Are there researcher-panels formed to decide on research directions?
4. With respect to SAREP's advisory committees, how are members selected? How heavily is their advice weighed? Who is it that weighs their advice, and what is it weighed against?
5. Are meetings open to the public and to the receipt of public input? What protocols facilitate public participation in the agenda-setting process?
6. Or, is it the case that research decisions are made by funders, de facto?
7. What roles, if any, do university administrators play in shaping the research agenda?
8. Who are the main funders of SAREP?
9. Are funding structures for sustainable agriculture the same as for conventional agriculture, (where individual researchers apply for grants either through the government or through private foundations)?

10. Which government agencies or programs does SAREP tend to rely on for funding?
11. Are there federal or state block grants or 'formula' funds that go directly to sustainable agriculture research, (or, are public funds disbursed to the university which then allocates them according to its own volition)?
12. Are there particular foundations that you tend to work with?
13. Do you have private sponsors?
14. Who are the primary clients of SAREP?
15. Whose problems tend to get solved, (i.e., what segments of society and the agricultural economy)?
16. Can the university do more to invest in the success of its sustainable agriculture centers and programs?
17. What organizational or institutional changes could be made within the university that would facilitate the success of these centers and programs?

Schedule Two: The Center for Agroecology and Sustainable Food Systems

1. Who makes decisions about research directions at CASFS?
2. Are agenda-setting protocols for sustainable agriculture the same as, or different from, those for conventional agriculture?
3. Is it researchers who choose research directions? Are there researcher-panels formed to decide on research directions?

4. Are there advisory committees? If so, how are members selected? How heavily is their advice weighed? Who is it that weighs their advice, and what is it weighed against?
5. Are meetings open to the public and to the receipt of public input? What protocols facilitate public participation in the agenda-setting process?
6. Or, is it the case that research decisions are made by funders, de facto?
7. What roles, if any, do university administrators play in shaping the research agenda?
8. Who are the main funders of CASFS?
9. Are funding structures for sustainable agriculture the same as for conventional agriculture, (where individual researchers apply for grants either through the government or through private foundations)?
10. Which government agencies or programs does CASFS tend to rely on for funding?
11. Are there federal or state block grants or 'formula' funds that go directly to sustainable agriculture research, (or, are public funds disbursed to the university which then allocates them according to its own volition)?
12. Are there particular foundations that you tend to work with?
13. Do you have private sponsors?
14. Who are the primary clients of CASFS?
15. Whose problems tend to get solved, (i.e., what segments of society and the agricultural economy)?

16. Can the university do more to invest in the success of its sustainable agriculture centers and programs?
17. What organizational or institutional changes could be made within the university that would facilitate the success of these centers and programs?

Schedule Three: The Agroecology Research and Training Laboratory

1. Who makes decisions about research directions at ART?
2. Are agenda-setting protocols for sustainable agriculture the same as, or different from, those for conventional agriculture?
3. Is it researchers who choose research directions? Are there researcher-panels formed to decide on research directions?
4. Are there advisory committees? If so, how are members selected? How heavily is their advice weighed? Who is it that weighs their advice, and what is it weighed against?
5. Are meetings open to the public and to the receipt of public input? What protocols facilitate public participation in the agenda-setting process?
6. Or, is it the case that research decisions are made by funders, de facto?
7. What roles, if any, do university administrators play in shaping the research agenda?
8. Who are the main funders of ART?

9. Are funding structures for sustainable agriculture the same as for conventional agriculture, (where individual researchers apply for grants either through the government or through private foundations)?
10. Which government agencies or programs does ART tend to rely on for funding?
11. Are there federal or state block grants or 'formula' funds that go directly to sustainable agriculture research, (or, are public funds disbursed to the university which then allocates them according to its own volition)?
12. Are there particular foundations that you tend to work with?
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