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Revolutionary Science

The Struggle for Agroecology in the Americas

BRUCE H. JENNINGS

critical development studies

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Contents

Glossary

ahupua'a: Hawaiian term for a portion of land, often shaped like a pie slice, extending from the top of a valley or mountain to the ocean

'āina: Hawaiian term referring to land that reflects its historical, ecological, social and spiritual values

Article 27: a part of the Mexican Constitution relating to property rights, including provisions establishing communal land tenure to groups of campesinos. Until 1992, it prohibited the sale of ejidos and communal land

campesino/a: Spanish term meaning peasant; as used in this book, generally refers to people engaged in a range of agricultural pursuits — partially employed workers on small plots and farms, fisherfolk, as well as landless workers in peri-urban agricultural industries and regional markets

campesino a campesino: social methodology based on the collective participation and central role of campesinos guiding decisions about agricultural production, including agroecological transformations of their territories

chinampas: raised beds surrounded by canals that deliver water to the root zone of plants; a traditional agricultural practice extending over thousands of acres that provided sustenance to the people of Tenochtitlán (present-day Mexico City)

diálogo de saberes: dialogue bridging distinct kinds of knowledge with different origins, containing no preconceived hierarchy or superiority

ejidatarios: users of ejido land

ejido: A land grant, typically established after the Mexican Revolution, operated collectively by a group of members

extensionismo: as used here, a semi-pejorative term referring to extension workers having expertise in industrial agriculture

hacendados: owners of haciendas

haciendas: colonial estates, many of which were formed prior to the Mexican Revolution, frequently representing very large landholdings

indígena: Indigenous person, representing one of the many hundreds of Indigenous communities across the Americas

maíz: maize or corn

patronato: literally "patron"; here refers to a wealthy landholder or association of employers; a group increasingly linked to larger regional, national, or even international financial interests

técnicos: agricultural extension workers

tianguis (from Nahuatl): a local or regional market

transgénico: transgenic; generally a shortened reference to a genetically engineered or modified plant

waru-waru: traditional agricultural practice based on raised planting beds surrounded by canals for flood and frost protection, improved soil fertility, and enhanced crop yields.

Zapatistas: a group of campesinos and others who led a national insurrection that began in Chiapas to protest neoliberal policies advancing free trade as well as the destructive character of capitalism across Mexico

Acronyms and Abbreviations

CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical, International Centre for Tropical Agriculture (Colombia)
CIMMYT	Centro Internacional de Mejoramiento de Maíz y Trigo, International Maize and Wheat Improvement Center (Mexico)
CIOAC	La Central Independiente de Obreros Agrícolas y Campesinos Independent Centre of Agricultural Workers and Campesinos
CIP	El Centro Internacional de la Papa, International Potato Centre (Peru)
CLADES	Consorcio Latinoamericano sobre Agroecología y Desarrollo Latin American Consortium for Agroecology and Development
ECOSUR	El Colegio de la Frontera Sur, College of the Southern Frontier
FIOAC	Federación Independiente de Obreros Agricolos y Campesinos, Independent Federation of Agricultural Workers and Campesinos
GEB	General Education Board, Rockefeller Foundation
IALA	Instituto Agroecológico Latinoamericano, Latin American Institute of Agroecology
IIA	Instituto de Investigaciones Agrícolas, Institute for Agricultural Investigations
INIA	National Institute for Agricultural Investigations
IRRI	International Rice Research Institute
LVC	La Vía Campesina
MAP	Mexican Agricultural Program, Also referred to as OEE/OSS

NAFTA/TLC	North American Free Trade Agreement, Tratado de Libre Comercio (Tratado)
NFU	National Farmers Union (Canada)
OEE/OSS	Oficina de Estudios Especiales, Office of Special Studies (MAP)
OTA	Office of Technology Assessment
SOCLA	Sociedad Científica Latinoamericana de Agroecología, Latin American Scientific Society of Agroecology
UACH	Universidad Autónoma de Chapingo, Autonomous University of Chapingo
UC	University of California
UGOCM	Unión General de Obreros y Campesinos de México, General Union of Mexican Workers and Campesinos
USDA	United States Department of Agriculture

Introduction

It was a place unlike any other I had experienced in my young life. I awoke to the pounding of the ocean surf. The campsite was at the mouth of a valley where a waterfall delivered a seemingly endless supply of crystal clear water. It was a lush valley with a diversity of plants and life. And all of this appearing on an island in the middle of an ocean. It was obvious why so many people referred to this place as paradise.

In that moment, however, my attention was focused on the quite lovely person next me; a young woman who would soon become my partner for decades to come. Cheri Lucas Jennings then distracted me into thinking about breakfast and what to add to the meagre provisions we had brought from Honolulu to Hanakāpiʻai, a now uninhabited valley along the Nāpali Coast on the island of Kauaʻi in the state of Hawaiʻi.

After spending the night in this remote valley, Cheri searched for and found herbs to add to our breakfast. Her discovery revealed plants emerging from a terraced stonework reflecting a system of irrigation that had endured for many decades. All of this suggested a system of food production that meshed perfectly with the surrounding ecology. The enduring architecture of this system would, in years to come, remind us of the genius of the early Hawaiians who once populated these islands in great numbers.

Within a couple of years, Cheri and I would relocate our doctoral research to Kauaʻi, a place where we would live at the back of another valley and not far from where Cheri taught at the local community college. It was here where Cheri and I witnessed firsthand more traces of the early Hawaiians' astonishing construction of a system where intensive agricultural production was integrated into divisions of land beginning high in the mountains, continuing through forests and meadows, and terraces typically ending with streams feeding nutrients into fish ponds. These extraordinarily complex systems — an ecologically based architecture of living systems that the Hawaiians referred to as ahupuaʻa[1] — were at that time only beginning to be more fully recognized and understood by non-natives in this place.

In striking contrast to the ingenuity of ancient Hawaiian systems of blending agriculture and the surrounding ecology stood the sugar cane and

pineapple plantations that still dominated much of Hawai'i's landscapes in the 1970s. The sheer brutality of plantation agriculture was evident in the treatment of the land and waters, disregarding any sense of the surrounding ecology. The design of plantations cut across and through any existing ahupua'a with systems of production focused solely on yields of a single commodity for export to distant lands. The overriding goal of production was antithetical to the deeply embedded concept of 'āina held by Hawaiians. From the perspective of Hawaiians, 'āina conveyed a sense of land as a sacred entity, with landscapes deserving care and respect. It was not simply that plantations resulted in damaging environmental impacts; they fostered a broader array of negative consequences, including the community's access to a diversity of plants for medicines and food, jobs linked to maintaining ahupua'a, education centred on understanding the entirety of island ecosystems, and a system of governance ensuring that the uses of the land were integrally linked to providing food for the island's community. In a place with such tremendous potential for both feeding a substantial population and preserving its natural ecology, the legacy of plantations meant that access to land and food would become increasingly precarious for the residents of these islands.

Our experience at Hanakāpī'ai, introductions to the world of a'ina and the multiple dimensions of ancient landscapes, along with reflections on plantations and their larger consequences would slowly develop into deeper investigations into the science of industrial agriculture. The seed was planted in our minds that something was profoundly flawed with the kind of agriculture taking hold in many parts of the world. Our research evolved into much longer discussions about the rationale explaining how the ancient agricultural systems that had flourished throughout these islands could be so thoroughly and rapidly dismantled and replaced by industrial agriculture; how paradise could be so thoroughly displaced.

The islands' history of colonization by foreign powers was accompanied by a thorough replacement of its abundance of a diverse source of local foods into what would become a largely industrial model of agriculture for the export of sugar and pineapples. Long before the close of the twentieth century, the islands were importing upwards of 90 percent of its foods from the United States mainland. With the vanishing of local food production and the ever-increasing prices for imported foods, residents of the islands wondered where all of this would end. What, if anything, could they do to achieve some kind of alternative? Was it possible to recapture those aspects of life that made this place a paradise on Earth?

Coinciding with our lives on Kaua'i, our research increasingly led us back to a less recognized set of institutions that had been so important

to transforming agriculture on a global scale. These institutions — from agricultural colleges to international agricultural research centres — frequently figured prominently in defining the design of agricultural production throughout the world. More than anything else, this may explain why our community of mentors and colleagues encouraged us to examine science itself, a process many of us refer to as the "politics of science." In the years that followed, we gained a greater appreciation that dominant narratives of selected scientific projects have severely misrepresented these works in the world. More specifically, what is generally received as agricultural science is influenced by significant political considerations.

Coinciding with the time we were initiating our studies, a young Latin American was engaging in a separate investigation of ancient agricultural systems and the scientific complexity of the multiple layers of benefits purposely designed into these systems. This young scientist, Miguel Altieri, would bring attention to what would become a recognized alternative to industrial agriculture: agroecology. The work of Miguel, his colleagues, and innumerable agricultural workers across the Americas would eventually become recognized as a competing science, but also as a social movement dedicated to advancing agroecology.

One of the most concise definitions of agroecology, particularly for readers in Canada and the United States, can be found in the statements written approximately a decade ago by the National Farmers Union (NFU), an organization representing many thousands of Canadian farmers and farmworkers. To be clear, the NFU statement largely paraphrases earlier definitions authored by a group of Latin American agroecologists as a guide regarding its own struggles in Canada.

The NFU acknowledges that many of the scientific dimensions of agroecology are anchored in traditional agricultural practices devised by Indigenous people and communities across the Americas. Many of these practices, often honed over centuries, have evolved into agricultural systems that maintain, or even enhance, the ecology of surrounding landscapes. For scientists who have studied these traditions for decades, especially Latin America's agroecologists, the practices still used by many Indigenous and small farmers throughout the America's represent a wealth of knowledge about how to devise an agriculture yielding a much broader array of benefits than the industrial agricultural systems that dominate landscapes in the United States and Canada. The statement issued by the Canadian farmers and farmworkers is especially striking in how it situates agroecology and agroecologists in the context of an epic struggle between the forces supporting industrial agriculture versus the hundreds

of millions of campesinos and agroecologists who are advancing a very different vision for the future.

Miguel Altieri figures prominently in this book, first as a notable agroecologist whose work has included numerous professional activities across North and South America. Indeed, Miguel Altieri is generally regarded as one of the most recognized authorities on agroecology. Readers looking for a more comprehensive and thorough explanation about agroecology's principles and practices are strongly encouraged to consult the seminal work authored by Miguel Altieri and Peter Rosset (Rosset and Altieri 2017).

Dr. Altieri's position as a professor at the University of California–Berkeley has intersected at various points with my own career as a researcher and policy advisor for the state's premier lawmaking body, the California Legislature. My responsibilities to protect farmworkers and their communities from agrichemicals and other toxic substances often placed me in an adversarial position with lobbyists representing petroleum and chemical companies, agribusinesses, and major financial interests; whereas I represented the people of California, these corporate lobbyists were typically accountable to a very small group of wealthy and powerful individuals.

It is important for readers to recognize that my accomplishments, like Miguel's, have involved a much larger community of scholars, activists, and ordinary workers. This book seeks to highlight the vital and pivotal role of that larger collective, ensuring that any accomplishments discussed are not attributed to individuals alone but understood as the countless efforts by many others. Whereas my previous published work revealed the political dimensions of the international agricultural research centres, this work expands on that history with the study of a newly emergent science. The new science of agroecology is noteworthy as it represents an alternative to the agricultural sciences of recent decades and their emphasis on industrial agriculture. One of agroecology's most distinctive characteristics is its explicit link to the traditional knowledge of those who work the land — campesinos — a group referring to farmworkers but also many others. Beyond this trait, leading voices of agroecology across the Americas insist that their work is not just about studying agricultural systems, but about advancing the role of campesinos in shaping the field itself. Integrating this social purpose is what reveals the revolutionary potential of this new science.

Casual observers may argue that the social purpose of agroecology means it has moved beyond the realm of science. A narrative that demarcates a divide between science and politics, however, is deeply flawed. Our work documents how the importing of the agricultural sciences from the United States to the rest of the Americas aligned with a very specific set of social and

political interests. In that same vein, we focus on what the current struggle for agroecology means for people across the Americas and particularly for those living in the United States.

The loss of Hawai'i's paradise is not unique. As I earlier described our initial witnessing of the losses accompanying the rise of plantations in Hawai'i, we would grow to recognize similar transitions identified by others occurring elsewhere in the world. Transformations happening at Xochimilco in Mexico, Lago Atitlán in Guatemala, the valleys surrounding Cuzco in Peru, Chiloé's meadows in Chile, California's Central Valley, and innumerable other locations have contained what many of their inhabitants regard as the loss of lands possessing equally sacred and paradise-like qualities. The notion that such transformations are simply an inescapable process of modernization, however, fails to comprehend the work being conducted by a large number of agroecologists throughout the Americas. It is in this regard that agroecology offers the opportunity to pursue a very different science — along with its potential for constructing not simply a new agriculture, but a new social order as well.

This book has been written as narrative nonfiction, which means that many chapters combine extensively researched and documented material with scenes taken from the lives of people who have witnessed parts of this history.

While I have compressed this book to provide a more readable and accessible work, I am indebted to a much larger group of authors and researchers — only some of whom I have listed in footnotes. I gratefully acknowledge the contributions of many, many others.

The characters in this book are all real, having myself witnessed a large number of the scenes presented herein. In select passages, I assume limited interpretive licence and rely on my best memory of these events. Additionally, I encourage the reader to refer to others' reflections, written or otherwise, so as to better understand underrepresented perspectives of other social groups. This particular history is only the first step in appreciating a broader understanding of this world.

Note

1 *Ahuapua'a* is a Hawaiian term often denoting a wedge of land extending from the top of a mountain or valley to the seashore. Ahupua'a represented a political, cultural, and social division of Hawaiian territory that recognized the interconnectedness of the land, waters, and ecology of the islands.