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ABSTRACT

This study examines the unique, local green revolution that took place in Peru as scientists in the second half of the twentieth century sought to adapt transnational agricultural technology to the high-altitude environments of the Andes. Initially, U.S. institutions such as the Rockefeller Foundation sponsored agricultural experimentation on the Peruvian coast, but they failed to address how new technology would reach growing Indigenous and mestizo communities in the Andes. By the 1960s, community protest over a lack of land and farming technology, as well as mass migration to coastal cities, helped prompt the Peruvian military under General Juan Velasco Alvarado (1968-1975) to intervene in national politics and pursue both agrarian reform and agricultural innovation. Although the Velasco administration fell short of its goals, its reforms ushered in a new era in which innovators from government offices, universities, and NGOs began to work more directly with Andean communities than ever before. As these innovators worked to apply technology such as hybrid seeds, pest control, pedigree livestock, and megadams to Andean landscapes, they often realized that community knowledge and perspectives were crucial to the success of any project. In the late 1980s, the nation's internal armed conflict interrupted rural development projects, yet many communities and scientists persisted. In scholarship, the history of violence overshadows the history of science, yet a look beyond the edges of the armed conflict reveals a robust history of innovation efforts that, despite shortcomings, helped raise agricultural production in some communities.

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Hybrids at High Altitudes

In the late 1970s, animal scientists in the southern Peruvian Andes had an idea that generated considerable excitement. The next step for Andean agriculture, they believed, was "the systematic production of the 'paco-vicuña,' a hybrid economically superior to its progenitors."[1] The paco-vicuña was a cross between domestic female alpacas and wild male vicuñas. It would be superior to its progenitors because it would combine the domesticity of the alpaca with the especially fine and valuable wool of the vicuña. As historian Emily Wakild notes, this wool "once fetched prices three to five times the cost of cashmere." A challenge, however, was that vicuñas "have notoriously vicious temperaments and have never been effectively bred in captivity."[2] Crossing alpacas and vicuñas seemed to resolve this ethological barrier.

Furthermore, production of this hybrid would give Andean farmers an incentive to let the vicuña coexist with sheep and cattle. In the high Andes, vegetation was limited, especially during the long dry season (April-December), and domestic livestock had to compete with vicuñas for forage. During the 1950s and early 1960s, wool-harvesters had decimated Peru's wild vicuña population. By the late 1970s, however, state and international efforts to protect these animals had led to a spike in their numbers, which farmers did not appreciate.[3] Viewing vicuñas as little more than a nuisance, a few had even begun shooting them, an act critics condemned as "vicuñicide."[4] Production of the paco-vicuña offered a more humane, scientific, and

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[1] "Ha Llegado el Momento de Emprender la Producción del Paco-Vicuña," *Agronoticas*, agosto 1979. Hemeroteca, Biblioteca Nacional, Lima. All translations from Spanish are mine.
[2] Emily Wakild, "Saving the Vicuña: The Political, Biophysical, and Cultural History Wild Animal Conservation in Peru, 1964-2000," *American Historical Review* 125, no. 1 (February 2020), 55; see also Marcia Stephenson, *Llamas beyond the Andes: Untold Histories of Camelids in the Modern World* (Austin: University of Texas, 2023), 196.
[3] Wakild, "Saving the Vicuña," 55-56, 63.
[4] "¿Qué Pasa con las Vicuñas?" *Agronoticias*, julio 1979.

economically sound solution. To some scientists, the door was wide open. As Rigoberto Calle Escobar stated, "there is nothing that stands in the way of the mass production of this hybrid."[5]

The idea for this new farm animal brought together at least three trends in Peruvian agriculture in the long 1980s. First, in the wake of the county's radical agrarian reform under the military government of General Juan Velasco Alvarado (1968-1975), agronomists and animal scientists led a kind of renaissance of scientific ideas. Where the Velasco administration fell short, they believed, was in "technifying" Peruvian agriculture, especially in the Andes. As the country returned to civilian rule following the more conservative military government of General Franciso Morales Bermúdez (1975-1980), scientific ideas for Peruvian agriculture proliferated.

Within this renaissance, a second trend began to take shape, one that emphasized what scientists called "technological alternatives."[6] This term referred to native species or techniques that the scientific community had historically overlooked but which were, in fact, better suited for the difficult environments of the Andes mountains. Since the era of Spanish colonialism, hacienda (estate) owners had worked to adapt foreign crops and animals—wheat, barley, cattle, sheep, pigs, etc.—to the Andes. In a process of double displacement, colonizers had not only taken land from Indigenous communities, but the crops and livestock of the colonizers had marginalized native crops, such as the grains quinoa and kiwicha, and animals such as llamas and alpacas. For generations, these native species had borne the stigma of being unmodern and fit only for "Indians." In the late 1970s, however, many scientists finally began to appreciate the unique qualities of native species that allowed them to thrive at high altitudes.

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[5] "Ha Llegado el Momento de Emprender la Producción del Paco-Vicuña."
[6] See INIAA (Instituto Nacional de Investigación Agraria y Agroindustrial): Plan de Desarrollo a Mediano Plazo (1990-95) de la Estación Experimental Illpa-Puno, 1990," p. 32, INIA Library, Illpa, Puno.

The idea for the paco-vicuña was also an adaptation of a third agricultural trend, one that is often encapsulated in the term "Green Revolution." While this term has come to refer to crop innovation through hybrid seeds, agrochemicals, mechanization, and irrigation, one of its fundamental tenets emphasized the potential of hybrids to take the best of two parents and create an ideal species for mass production. Norman Borlaug, the "father" of the Green Revolution, became famous for the high-yielding wheat and corn varieties he and colleagues discovered in Mexico in the mid-twentieth century.[7] With the paco-vicuña, Peruvian scientists adapted the idea of hybrids to the high Andes. At 4,000 meters above sea level, poor soil, rugged terrain, and irregular frosts make crop production nearly impossible. Nevertheless, natural grasses still grow, which allows for a livestock industry. The paco-vicuña promised to give this industry a boost.

But there was one problem; something did stand in the way of the mass production of the paco-vicuña: vicuñas and alpacas would not mate. As Dr. Victor Bustinza of the southern state of Puno soon reported in a bewildered tone, "the male vicuña apparently feels no reproductive attraction for female alpacas."[8] The role of the male was crucial because, biologically, female alpacas do not enter an estrous cycle. Rather, the act of mating induces ovulation—a "forced heat" (*celo forzado*), as some veterinarians call it.[9] In order to create this hybrid, the male vicuña had to initiate, but scientists did not know how to make him do so. Their bumbling efforts bespoke a complete lack of familiarity with camelids. As U.S. sociologist Terry West wrote in

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[7] See Leon Hesser, *The Man who Fed the World: Nobel Peace Prize Laureat Norman Borlaug and his Battle to End World Hunger* (Dallas: Durban House, 2006); Charles C. Mann, *The Wizard and the Prophet: Two Remarkable Scientists and their Dueling Visions to Shape Tomorrow's World* (New York: Vintage, 2018).
[8] "El Paco-Vicuña es Una Posibilidad Incierta," *Agronoticas*, septiembre, 1979, 14-15.
[9] See Ahmed Tibary and Abdelhak Anouassi, "The Estrous Cycle," in *Theriogenology in Camelidae—Anatomy, Physiology, Pathology and Artificial Breeding* (Abu Dhabi: Abu Dhabi Printing and Publishing Company, 2022), available online at IVIS (International Veterinary Information Service, https://www.ivis.org/library/.

1981, putting it nicely, "unfortunately, past neglect of alpacas [in Peru] by specialists in sheep and cattle has resulted in an absence of standardized guidelines to alpaca production."[10]

The larger problem, however, was that the "experts" failed to realize that a different sector of the population, namely Indigenous and mestizo highland communities, knew a good deal about alpaca husbandry. After all, they had raised camelids for thousands of years. In the late 1970s, they could have saved these experts some embarrassment by explaining that crossing vicuñas and alpacas requires more than simply putting the animals in the same pen and then trying to force the ornery vicuña to mate. In most cases, before a male vicuña will serve a female alpaca, it must see itself as an alpaca. It must be raised from birth by a mother alpaca, which means that the mother must accept a foreign baby vicuña. Communities had ways to facilitate this maternal bonding if they wanted.[11] Yet the scientists failed to ask.

The case of paco-vicuña provides just one example of widespread experimentation in Peruvian agriculture during the second half of the twentieth century. It also reveals the crucial role of local knowledge. The southern Peruvian *altiplano* (high plains) in the state of Puno, where most alpaca husbandry takes place, makes up one of several regions of experimentation—Andean laboratories—that appear in this study. In each region, agents of innovation, including scientists, technicians, and extensionists from universities, government institutions, and NGOs, sought, with varying degrees of audacity, to overcome ecological barriers and increase agricultural production by technifying Andean landscapes.[12] In a way, they all sought a green revolution; in time, the importance of local knowledge and conditions became more obvious.

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[10] Terry L. West, "Alpaca Production in Puno, Peru," 14. Department of Rural Sociology, University of Missouri, https://pdf.usaid.gov/pdf_docs/pnaaq671.pdf (accessed August 22, 2024).
[11] Ing. Agr. Jorge Gallegos P., Director de la Granja Modelo de Puno, "Explotación de Auquénidos en el Perú," Publicado por la Granja Modelo de Puno, Ayaviri, Febrero 1944, 23, Archivo del EPS Rural Alianza, Ayaviri, Puno.
[12] My idea of "innovating agents" draws on historian Diana J. Montaño's study of "electrifying agents" in Mexico. See Montaño, *Electrifying Mexico: Technology and the Transformation of a Modern City* (Austin: University of Texas, 2021).

Despite stereotypes to the contrary, innovating agents, both Peruvian and foreign, constantly worked in the Andes. As scholar Raúl Asensio argues, the notion that the Andes have always been "forgotten territories, condemned to find their own way," is ubiquitous in Peru and beyond. In many ways, it is true, yet "it is largely the result of collective forgetfulness." Beginning in the 1530s, Spanish colonizers shifted the political center of the region from Cuzco, the Inca capital, to Lima on the coast, and they turned the Andes mainly into an extraction zone for mines and, later, haciendas. Colonization thus marginalized and impoverished the region's Indigenous communities. Following independence in the 1820s, the Peruvian elite continued the process of political and cultural marginalization. In the twentieth century, however, new ideas of nationalism led some intellectual leaders to embrace the county's Indigenous heritage. Instead of a mere extraction zone or *mancha india* (Indian stain), the Andes, to some, became a quintessential part of Peru—and one that needed to be improved or reclaimed. For over a century, Asensio argues, "countless interventions" have sought to "transform, reform, [or] modernize [Andean] agriculture" under the banner of "rural development."[13]

In the early 1970s, General Juan Velasco Alvarado certainly prioritized rural development in the Andes. Critics of Velasco, which abound in Peru, frequently characterize the general as an agrarian Santa Claus who pompously gave out land but did nothing to help communities use it productively. As three of Peru's leading agronomy professors recently wrote: "The ideologues and decision makers in charge of … Agrarian Reform got it wrong. They thought, as José Carlos Mariátegui had argued, that the main problem in the countryside was the concentration of land and, therefore, it should be better distributed. This was not entirely true," the professors continue, "for they forgot that that land alone was not enough. Rather, Peruvians also needed inputs,

[13] Raúl Asensio, *Breve historia del desarrollo rural en el Perú, 1900-2020* (Lima: Instituto de Estudios Peruanos, 2023), 12.

capital, technology, human capacity and resources, markets, good prices, and basic infrastructure."[14] One of these authors, Absalón Vásquez Villanueva, not only has had a forty-five year career as an agronomy professor and textbook writer, but on different occasions he has also served in the federal government.[15] Positions include head of the National Institute of Development (1990-1991), Vice Minister of Agriculture (1991-1992), and Minister of Agriculture (1992-1996).[16] His ideas have shaped generations of agronomists and policy makers.

The archival record does not support his claims. On the contrary, it reveals an acute awareness among Velasco and his ministers of the need to provide technology and training along with land. In fact, Peru's land reform stands out among Latin American countries because the Velasco administration tried to combine agrarian reform with Green Revolution. Moreover, their efforts ushered in a new era of rural development in which innovating agents worked more directly with Andean communities than ever before. Of course, the Velasco administration fell far short of its goals, but it was not because officials "forgot" anything. Rather, more complicated factors kept the combined vision for green and agrarian revolutions from materializing, among them the autocratic nature of the Velasco administration, which was not conducive to meaningful training; the reversal of many of Velasco's policies when General Morales Bermúdez ousted him and took over in 1975; and the nation's internal armed conflict which ravaged rural Peru.

The armed conflict also helps explain the mixed results of many development projects as well as scholars' tendency to overlook these projects entirely. The extremism of the Maoist group

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[14] See Absalón Vásquez V., Abel Mejía M., and Issaak Vásquez R., *Reforma agraria: Fracaso del colectivismo* (Lima: Universidad Nacional Agraria La Molina, 2021), 14.

[15] For more examples of his textbooks, see *Manejo de cuencas altoandinas* (Lima: Universidad Nacional Agraria La Molina, 1997) and *Desarrollo agrario: Antecedentes y propuesta de política para el siglo XXI* (Lima: Universidad Nacional Agraria La Molina, 1999).

[16] Vásquez served as Minister of Agriculture under President Alberto Fujimori (1990-2000), who was a colleague from the National Agrarian University. Although Vásquez's reputation suffered momentarily when Fujimori was convicted of various crimes, Vásquez had already returned to academia when the worst of the scandals occurred in the late 1990s. To this day, he remains one of Peru's foremost authorities on modern agriculture.

known as the Shining Path, along with the Peruvian military's indiscriminate counteroffensives, make up a "jagged scrap of history," as historian Rachel Nolan calls it, that has long held the attention of scholars.[17] After all, the armed conflict, in addition to an economic depression, left Peru, according to political scientists Cynthia McClintock and Abraham Lowenthal, in one of the most critical conditions of all Latin American countries at the end of the Cold War.[18]

The conflict certainly affected agriculture. In several cases, the Shining Path directly targeted agronomists, veterinarians, and other agents of innovation. To this day, people remember this group's 1991 murder of Kiyotada Miyagawa, Seybun Kynra, and Hiroshi Nakanichi, three visiting agronomists from Japan, as they worked in the Hortícola Research and Experimentation Center in Huaral to the north of Lima.[19] As tragic as they were, these murders received extensive press coverage because they involved experts from abroad and because they occurred close to the capital. Yet for years prior to this event, the Shining Path had been pursuing agricultural professionals, pillaging farms, and destroying experimental sites throughout the countryside.

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[17] Rachel Nolan, "A Jagged Scrap of History: On the Shining Path," *Harper's Magazine*, July 2019, https://harpers.org/archive/2019/07/a-jagged-scrap-of-history-shining-path-peru/ (accessed March 26, 2025); see also: Cynthia McClintock, "Why Peasants Rebel, The Case of Peru's Sendero Luminoso," in *World Politics* 37 no. 1 (Oct. 1984), 48-84; "El PCP Sendero Luminoso: aproximaciones a su ideología", en *Socialismo y Participación* No. 37 (marzo 1987), 15-36; Carlos Iván Degregori*, El Surgimiento de Sendero Luminoso en Ayacucho, 1969-1979: Del movimiento por la gratuidad de la enseñanza al inicio de la lucha armada* (Lima: IEP, 1990); Degregori y José López Ricci, "Los hijos de la guerra: jóvenes y criollos frente a la violencia política" en *Tiempos de ira y amor: Nuevos actores para viejos problemas* (Lima: DESCO, 1990), 183-219; Degregori, "Ayachucho 1980-1983: Jóvenes y campesinos ante la violencia política" en *Poder y violencia en los Andes*, ed. Henrique Urbano (Cusco: Centro Bartolomé de las Casas, 1991); *Perú: el problema agraria en debate/ SEPIA IV*, eds. Carlos Iván Degregori, Javier Escobal y Benjamín Marticorena, "Tema III: Violencia y Campesinado," (Iquitos: Universidad Nacional de la Amazonía Peruana, 1992), 411-588; *Shining and Other Paths: War and Society in Peru, 1980-1995*, ed. Steve J. Stern (Durham: Duke University, 1998); Gustavo Gorriti, *The Shining Path: A History of the Millenarian War in Peru*, trans. by Robin Kirk (Chapel Hill: University of North Carolina, 1999); Miguel la Serna, *The Corner of the Living: Ayacucho on the Eve of the Shining Path Insurgency* (Chapel Hill: University of North Carolina, 2011); Orin Starn and Miguel La Serna, *The Shining Path: Love, Madness, and Revolution in the Andes* (New York: W.W. Norton, 2019); see also Miguel La Serna, *With Masses and Arms: Peru's Tupac Amaru Revolutionary Movement* (Chapel Hill: University of North Carolina, 2020).

[18] See Cynthia McClintock and Abraham Lowenthal, "Foreword," In *The Peruvian Labyrinth:Polity, Society, Economy,* eds. Maxwell A. Cameron and Philip Mauceri (University Park: Pennsylvania State University, 1997), ix.

[19] See the "Dedicatorias" in Vásquez, *Desarrollo Agrario*, and Vásquez, et al., *Reforma Agraria*.

Despite such attacks, innovation efforts continued. The armed conflict was not the only thing that went on in Peru during the 1980s. In many branches of scholarship, conflicts, as historian Timo Shaefer argues, become "sui generis in a way that makes it hard to see around their edges."[20] Readers who immerse themselves in recent studies of Peru may even come to see this region as a kind of problem zone—vast, looming mountains upon which mid-twentieth-century ideas of reform crashed, burned, and mutated into violence. This perspective is incomplete. The history of violence has come to overshadow the history of science.

In the wake of the violence, many scholars, pundits, and politicians explained the origins of the armed conflict with a theory of state and scientific abandonment. As Raúl Asensio notes, "this narrative had great success." For many, "'abandonment' became the key to explaining completely and simply the rise of the Shining Path and the persistence of poverty in Peruvian agriculture…. While this [theory] is true on many levels," he concludes, "the rhetoric of abandonment, when taken to an extreme, draws a cloak of amnesia over a rich history of rural development interventions undertaken throughout the country."[21]

This dissertation seeks to pull back this cloak of amnesia from some of the projects that grew out of agrarian reform. It seeks to uncover significant moments of optimism in which agronomists, animal scientists, foreign consultants, and community farmers set out to apply technology to Andean landscapes. Although agrarian reform did not end as its architects envisioned, and although the armed conflict impeded development projects in many ways, the extent of agricultural experimentation, at the very least, raises the questions: "What happened with these efforts? What were the results?" A study of these projects not only yields conclusions

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[20] Timo Schafer, *Liberalism as Utopia: The Rise and Fall of Legal Rule in Post-Colonial Mexico* (Cambridge: Cambridge University, 2017), 12-15.
[21] Asensio, *Breve historia*, 217.

that can inform rural development projects in the twenty-first century, but also suggests that innovation contributed to the resilience of both scientists and communities during the armed conflict and, in some cases, really did raise standards of living for some communities.

To the extent that innovators circumscribed their efforts within community interests and expertise, projects saw greater success. In cases of alternative technologies, such as alpaca husbandry, local knowledge should have been obvious, but it often was not. In cases of more standard technology, such as hybrid seeds, the outside "experts" may have known the science, yet community farmers knew their lands and wanted a say in development projects. Contrary to some assumptions, they did not cling to tradition and oppose the high modernity embodied in new farming techniques.[22] Yet they of supported innovation efforts that would be useful for them. Thus, only by appreciating what historian Sarah Hines calls the "vernacular expertise" of rural residents could scientists come close to achieving their goals.[23] To borrow an image from Indigenous U.S.-based scientist Robin Wall Kimmerer, innovating agents in the Peru had to braid together Indigenous or Andean ways of knowing with standard scientific knowledge.[24]

Overall, collaborative innovation efforts helped many rural residents produce more food or improve standards of living. In her recent study of Guatemala, historian Sarah Foss concludes that, "Undeniably, development projects in Guatemala and throughout the world attempted to order society, make it legible to those in power, and homogenize a diverse citizenry. They certainly did reinforce existing social hierarchies, extend capitalism's reaches, and promote political agendas…. But in some cases," she continues, "it also gave people a way to empower

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[22] This assumption appears, for example, in: Mario Vargas Llosa, *El hablador* (Barcelona: Seix Barral, 1987).
[23] Sarah T. Hines, *Water for All: Community, Property, and Revolution in Modern Bolivia* (Berkeley: University of California, 2022), 15.
[24] See Robin Wall Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teaching of Plants* (Minneapolis: Milkweed Editions, 2013), x.

themselves through providing needed resources and helping to forge horizontal bonds of solidarity and community."[25] Agricultural innovation efforts in the Andes had similar effects.

Along with local farmers' expertise, innovators came to better appreciate the unique environmental conditions of the Andes that required Peruvians to adapt, not merely adopt, transnational technology. When they coined the term "Green Revolution," U.S. policy makers and agronomists essentially argued that if foreign governments adopted the U.S. model of intensive agriculture, voilà, "golden harvest[s]" would abound and, with them, as Norman Borlaug wrote, "new hope for a better life among hundreds of millions of rural people."[26] Behind the scenes, policy makers hoped that food production would reduce the appeal of communist or Cuba-inspired revolutions. This political agenda led them to impose their vision on smaller nations, which, in turn, suffered many unintended consequences, such as the expansion of agribusiness, the displacement of small farmers, and the dangerous use of agrochemicals.[27]

In Peru, however, Andean environments did not allow anyone to simply impose or import an outside vision. As two scientists recently explained, "the Andean Highlands is an extreme, vertical environment with many different, but closely juxtaposed, ecological zones and microclimates."[28] This environment is not conducive to agribusiness, and it requires significant experimentation with most technology. As they conducted this experimentation, innovators

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[25] Sarah Foss: *On Our Own Terms: Development and Indigeneity in Cold War Guatemala* (Chapel Hill: University of North Carolina, 2022), 4.
[26] Norman Borlaug, et. al. "A Green Revolution Yields a Golden Harvest," *Columbia Journal of World Business*, 4, no. 5 (September-October 1969), 9.
[27] See Clifton R. Wharton Jr., "The Green Revolution: Cornucopia or Pandora's Box," *Foreign Affairs*, 47 (April 1969) 464-476; Angus Wright, *The Death of Ramón González: The Modern Agricultural Dilemma* (Austin: University of Texas, 1990); John H. Perkins, *Geopolitics and the Green Revolution: Wheat, Genes, and the Cold War* (New York: Oxford University, 1997); Vandana Shiva, *The Violence of the Green Revolution: Third World Agriculture, Ecology, and Politics* (Louisville: University of Kentucky, 2016); Douglas Hurt, *The Green Revolution in the Global South: Science, Politics, and Unintended Consequences* (Tuscaloosa: University of Alabama, 2022); Aaron Eddens, *Seeding Empire: American Philanthocapital and the Roots of the Green Revolution in Africa* (Oakland: University of California, 2022).
[28] Rebecca Bria and Doris Walter, "Multiple Ways of Understanding Peru's Changing Climate," *Open Rivers: Rethinking Water, Place, and Community* 14 (Summer 2019), 11-15.

actively engaged with what historian Leida Fernández Prieto calls the Cold War era's "global archipelago of knowledge," which included the United States but many other countries as well, such as New Zealand, Colombia, Italy, Israel, and Mexico. [29] They also sought innovation not only in crop production but also in the livestock industry by means of enriched pastures or pedigree breeding programs.

A study of agricultural innovation in the Andes, therefore, supports historian Timothy Lorek's idea of multiple, local green revolutions instead of a single U.S.-centric phenomenon.[30] Morevoer, it contributes to a new iteration of the "animal turn" in the humanities that, as historian John Soluri explains, seeks "to focus less on the killing of animal or destruction of their habitats, and more on interventions in life-creating processes."[31] If the concept of Green Revolution is synonymous with industrial farming in the mold of the United States, then the Peruvian Andes deserve a spot only on the far fringes of discussion. If, however, green revolution refers to agricultural science adapted to local environments and national interests, then Peru has a story of its own.

This dissertation tells a part of that story. Chapter 1 examines agricultural research in Peru during the 1950s and 1960s when haciendas still controlled Peruvian agriculture and U.S. sponsors in the context of the Cold War began investing heavily in farming research. Chapter 2 examines agrarian reform and its impact of agricultural technology. Chapters 3 through 6 zoom in on projects that all stemmed from agrarian reform in some way. These were by no means the

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[29] Leida Fernández Prieto, "Islands of Knowledge: Science and Agriculture in the History of Latin America and the Caribbean." *Isis* 104, no. 4 (2013): 797.
[30] Timothy Lorek, *Making the Green Revolution: Agriculture and Conflict in Colombia* (Chapel Hill: University of North Carolina, 2022); see also "Roundtable: New Narratives of the Green Revolution," *Agricultural History* 81, no. 3 (2017): 397-422; Gabriela Soto Laveaga, "The Socialist Origins of the Green Revolution: Pandurang Khankhoje and Domestic 'Technical Assistance,'" *History and Technology 36*, no. 3-4 (2020).
[31] John Soluri, "Reproducing Animals in Latin America," *Historia Ambiental Latinoamericana y Caribeña (HALAC) Revista de SOLCHA* 14, no. 3 (2024), 118.

only innovation projects that took place following agrarian reform, but they were some of the most ambitious because they each sought to benefit several thousand residents.

Chapter 3 examines the work of Peruvian and New Zealand scientists with nutritious grasses and sheep and alpaca husbandry on the *altiplano* (high plains) of the southern state of Puno. Chapter 4 examines the work of the NGO CEDEP in the northern Lima province of Cajatambo and the region of the state of Ancash known as the *Callejón de Huaylas*. Projects of this NGO ranged from farm technology packages to biodigesters to the reintroduction of alpacas to alternative pest control. Chapter 5 looks at the Majes-Siguas megadam and irrigation project on the desert plains known as the *Pampa de Majes* in the southern state of Arequipa. Chapter 6 considers the efforts of the Cereals Program of the National Agrarian University La Molina to adapt wheat and barley varieties, many of which originated in Mexico, to the environments of the Andes. Its largest experimental site was located in the Valley of Mantaro, the breadbasket of Lima, in the Andean state of Junín. Figure 1 indicates the location of these four states—Puno, Ancash, Arequipa, Junín. In the experimental sites within these Andean states, agrarian reform and agricultural innovation came together in the context of national change and crisis.

Figure 1: Map of Peruvian departments (states) from 2006. Chapters 3-6 of this study will examine projects on the Altiplano of Puno, in the Callejón de Huaylas, Ancash, in the Pampa de Majes, Arequipa, and in the Valley of Mantaro, Junín. Map in public domain, accessed via University of Texas Libraries, Perry-Castañeda Map Collection, https://maps.lib.utexas.edu/maps/peru.html.

Chapter 1

The Context of National Change:

Demographic Growth, Community Protest, and the Grains Race

From the time of our ancestors, we were reduced to a condition of servitude, having to work six days a week on the lands of the *patrón* … with our wives and children [who began] at a most tender age…. In exchange we were given certain sections of these lands for our own crops…. The progress of the republic has not mitigated the condition of servitude in which our ancestors lived and which continues in us…. [Hacienda owners] have always limited their interactions with us to giving us orders regarding the planting, tending, and harvesting of the crops without sharing the least bit of agricultural knowledge, and then they take all that our hands produce.[1]

On August 10, 1956, these lines appeared in a four-page letter that the Indigenous community of El Tingo, located in the central Andean state of Junín, penned for the recently reelected president of Peru, Manual Prado Ugarteche (1939-1945, 1956-1962). The previous year, the community had petitioned regional authorities for legal recognition, a process that would enroll the community in state records and ensure usufruct rights to the land it occupied. In this case, however, the neighboring hacienda (estate) owner, Pablo Landa García, had intervened, claiming that the land was his and that, "from time immemorial," his family had merely allowed El Tingo to share a portion of it.[2] When regional authorities sided with Landa, *comuneros* (community members) wrote to Prado, reminding him that, as a candidate, he had promised "the incorporation of Indigenous [people] into civilized life by recognizing their right to the land."[3]

This letter helps illustrate the situation of many Andean communities in Peru in the mid-twentieth century. For one, many did not see themselves as integrated participants in Peruvian

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[1] Letter from Campesino Community (C.C.) El Tingo to Dr. Manuel Prado Ugarteche, Aug. 10, 1956, El Tingo, Binder 4, Dirección Regional de Agricultura (DRA)-Junín, Huancayo, Peru.
[2] "Informe relativo a la queja formulada por don Pablo Landa García, Dec. 6, 1955, El Tingo, Binder 4, DRA-Junín.
[3] Letter from C.C. El Tingo to Dr. Manuel Prado Ugarteche, Aug. 10, 1956.

society. In their view, obtaining legal rights to the land, instead of living precariously as hacienda laborers, was a precursor for social integration. Along with land, they wanted technology and training. Thanks to money and educational opportunities, hacienda families maintained a virtual monopoly on many forms of technology, such as irrigation infrastructure and pedigree breeding programs for cattle and sheep. As both Landa and El Tingo indicated, these conditions had persisted since the colonial era, which Landa referred to using the common legal hyperbole of "time immemorial."

The late 1950s mark a turning point, however, because of two phenomena: demographic growth and community protest. From 1940 to 1980, the Peruvian population increased from 6.2 to 17 million.[4] This growth put pressure on Andean communities, whose limited arable land offered no additional space to farm. In its letter, El Tingo spoke of its growth positively. "Since our population has increased," it stated, "we have become a *pueblo* [a full-fledged town]," which, it implied, further justified enrollment in the Official Register of Communities.[5] At the same time, land per capita was diminishing. As family trees expanded from one generation to another, family plots shrank by fourths and eighths and sixteenths in a process that community activist Samuel Fernández Gómez calls the "irrational fractionation of family agricultural units."[6] From the late 1940s onward, migration from the Andes to coastal cities, especially Lima, the capital, became an escape valve. As Peruvian anthropologist José Matos Mar puts it, Andean populations "overflowed" into urban and coastal spaces and began to reconfigure the nation.[7]

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[4] See Nelson Manrique, "Historia de la Agricultura Peruana, 1930-1980," en *Compendio de historia económica del Perú, Tomo 5: La economía peruana entre la Gran Depresión y el reformismo militar*, editado por Carlos Contreras (Lima: Instituto de Estudios Peruanos (IEP), 2020), 163-164.
[5] Letter from C.C. El Tingo to Dr. Manuel Prado Ugarteche, Aug. 10, 1956.
[6] Samuel Fernández Gómez, "El Perú Profunde Reconstruye: Proyecto de Reivindicación de los Derechos Comunales, Plan de Desarrollo Rural Integral Sostenible," 24 de junio de 2022, Gráfico 2, in author's posession.
[7] José Matos Mar, *Perú: Estado desbordado y sociedad nacional emergente* (Lima: Universidad Nacional Ricardo Palma, 2011).

Meanwhile, Andean communities not only continued to seek legal recognition, but many, in their frustration with policy makers and bureaucracy that favored *hacendados* (hacienda owners), began to organize and protest with an intensity that had not been seen since the late colonial era. The legal system that had long served to channel and contain their grievances began to fail. In a form of nonviolent but bold protest, many communities invaded contested lands.[8] At the same time, new organizations of *campesinos* (small farmers and farm workers), such as the Campesino Confederation of Peru (CCP), began to assert themselves in national politics.[9]

Although migration and protest forced national leaders to reconsider the role of Andean communities in society, reform efforts in Lima were often perfunctory or anticlimactic, largely because of the influence that hacienda owners wielded in Peruvian politics. When it came to food production, government authorities and foreign sponsors, including the Rockefeller Foundation and several U.S. universities, recognized that agricultural technology would help Peru feed its growing population and maintain political stability. Fears about hunger and communist expansion in Latin America led U.S. leaders to invest heavily in Peru. These investments, however, favored coastal universities and haciendas far more than Andean communities; as a result, they did little to mitigate rural poverty, migration patterns, or social unrest.

The failures of civil governments to address social strife in rural Peru help explain the Peruvian military's intervention in national politics. Following the 1968 coup, the administration of General Juan Velasco Alvarado (1968-1975) used its unique power (military might coupled with political control) to expel hacienda owners and establish a new agrarian order that, in theory, would give land, access to technology, and training to Andean communities. While

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[8] See Virginia Guzmán and Virginia Vargas, *Cronología de Movimientos Campesinos, 1956-1964* (Lima: IEP, 1981).
[9] See the CCP's digitized archives, which include rich collections especially from the 1970s onward. UCLA Modern Endangered Archives Project. https://digital.library.ucla.edu/catalog/ark:/21198/z199252h (accessed March 3, 2025).

Velasco's reforms were rife with inconsistencies, a look at rural Peru prior to the military coup reveals, in broad strokes, centuries of colonial continuity and years of ineffective government reform and foreign agricultural aid, all of which set the stage for the military's bold action.

Andean communities had roots in pre-colonial *ayllus* or Indigenous kin groups. As historian Karen Spalding explains, in addition to common ancestors, ayllu members "were linked by their common claim to … the resources of production held by the group and the goods and foodstuffs produced by it."[10] The environments of the Andes furnished these resources but also imposed limits on them. Anthropologist John Murrah uses the term "vertical archipelagoes" to refer to "complementary forms of production that flourished at different altitudes on the mountains."[11] At 3800 meters above sea level, for example, residents could grow potatoes and other tubers, whereas at 4300 meters, only natural grasses thrived, making alpaca husbandry the main productive venture. To be clear, Andean environments with their high altitudes, rugged terrains, irregular frosts, and thin air make agriculture difficult, and they require organization among farmers to produce food for trade or sale. Yet with organization, communities had thrived for centuries. In fact, Andean society was larger and more stratified in 1535 than in 1935.[12]

Spanish colonization made the difference. Beginning in the 1530s, Spanish soldiers waged war on the Inca empire and operated a "plunder economy," to use Spalding's term, while European diseases killed some three-fourths of the Andean population.[13] In the 1560s, however, authorities began establishing a more sustainable extractive economy based on mines and

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[10] Karen Spalding, *Huarochirí: An Andean Society under Inca and Spanish Rule* (Stanford: Stanford University, 1984), 13-14.
[11] See Olivier Dollfus, "The Tropical Andes: A Changing Mosaic," in *Anthropological History of Andean Politics*, eds. John V. Murra, Nathan Wachtel, and Jacques Revel (New York: Cambridge University, 1986), 14.
[12] See Spalding, *Huarochirí*, 14.
[13] Spalding, *Huarochirí,* 52, 123, 134-137; see also James Lockhart, *Spanish Peru, 1532-1560* (Madison: University of Wisconsin, 1968).

haciendas. In the 1570s, Viceroy Francisco de Toledo oversaw the forced resettlement of approximately 1.4 million Indigenous people into Andean towns called *reducciones*. With this policy, as anthropologist Gabriela de los Angeles Oré Menéndez explains, Toledo sought "to foster Catholic evangelization, facilitate tribute collection [especially corvée labor for mines and haciendas], and monitor the social practices of Andean communities."[14] Geographer Heidi Scott adds that Toledo wanted the ordered grids of the new towns to "distance [Andean] populations from the wilderness beyond and [erase] their memories of precolonial sacred geographies."[15]

While the reducciones campaign marks a low point for Andean communities, it also highlights their autonomy. On one hand, as historian Steve Stern points out, the campaign "conflicted sharply with traditionally dispersed settlement patterns designed to exploit a series of scattered Andean microenvironments." Communities, in his view, went along mainly because they finally "had to accommodate themselves to the reality of defeat."[16] In the reducciones, Scott adds, residents faced "heightened exposure to disease, demographic decline, and the loss of access to lands that were of immeasurable spiritual as well as economic significance."[17] Oré and other scholars also note that the reducciones gradually led to "an agricultural deintensification."[18]

On the other hand, as historian José Carlos de Puente points out, in the Andes the limited Spanish forces could never have resettled so many people on their own. Rather, the reducciones

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[14] Gabriela de los Angeles Oré Menéndez, *Legacies of Colonial Dislocation: Resettlement, Agricultural Deintensification and Infrastructural Reclamation in Huarochirí, Peru* (PhD diss., Vanderbilt University, 2022), 12-13; see also Jay David Thornton, "Without Him the Indians would Leave and Nothing would Get Done: The Changing Relationship Between the Caciques and the Audiencia of Charcas Following Francisco de Toledo's Reform," *Bolivian Studies Journal* 18 (2011), 134-160.
[15] Heidi V. Scott, "A Mirage of Colonial Consensus: Resettlement Schemes in Early Spanish Peru," *Environment and Planning D: Society and Space*, *22*(6), 887; see also Thomas Alan Abercrombie*, Pathways of Memory and Power: Ethnography and History Among an Andean People* (Madison: University of Wisconsin, 1998), 240.
[16] Steve Stern, *Peru's Indian Peoples and the Challenge of Spanish Conquest: Huamanga to 1640* (Madison: University of Wisconsin, 1982), 77 (76-79).
[17] Scott, "A Mirage of Colonial Consensus," 887
[18] Oré, Legacies of Colonial Dislocation, 19, 140-142; see also Steven A. Wernke, "A Reduced Landscape: Toward a Multi-Causal Understanding of Historic Period Agricultural Deintensification in Highland Peru," *Journal of Latin American Geography* 9, no. 3 (2010), 51-83.

campaign built upon practices of negotiated resettlement that had existed in the Inca Empire. In the 1570s, local friars and caciques (hereditary Indigenous rulers), acting as intermediaries, negotiated the locations of reducciones for different communities.[19] Moreover, these reducciones were far from permanent. Many residents soon returned to their historic lands or migrated elsewhere. By the early 1600s, Scott writes, "many settlements lay abandoned or were in a state of disarray." Those who remained "adopted creative strategies to maintain spiritual connections with the landscapes from which they had been wrenched," while also, in some cases, sincerely adopting elements of Catholicism. Overall, she concludes, the reducciones demonstrated the "ambiguities of colonial power and its inextricable connections with indigenous agency."[20]

New haciendas experienced this same ambiguity. Although they came to control the best farmland, their need for Indigenous labor gave Andean communities some power to negotiate for their own land rights. As José Matos Mar and fellow anthropologist Fernando Fuenzalida explain, "From … their formation onward, haciendas and communities evolved in a state of close dependance, complementarity, and/or opposition." Given the vast geography, Matos Mar and Fuenzalida also emphasize "the plurality of situations [based on] specific regional spaces."[21]

Another policy of the Toledo era was the division of society into the Republic of Indians and the Republic of Spaniards.[22] In this case, however, a growing Mestizo population eroded artificial boundaries.[23] The extent of racial and cultural hybridity renders largely inaccurate the

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[19] José Carlos de la Puente, "A Village at the Crossroads: Pathways, Bridges, and Resettlement Landscapes in Colonial Jauja, Peru." Presentation at Rocky Mountain Council for Latin American Studies, April 11, 2025.
[20] Scott, "A Mirage of Colonial Consensus," 888-890; see also Stern, *Peru's Indian Peoples*, 90-91.
[21] José Matos Mar and Fernando Fuenzalida, "Proceso de la sociedad rural," en *Hacienda, comunidad y campesinado en el Perú*, compilador José Matos Mar, 2nd ed. (Lima: IEP, 1976), 15, 19.
[22] See Stern, *Peru's Indian Peoples*, 80.
[23] See Lockhart and Stuart B. Schwartz, *Early Latin America: A History of Colonial Spanish America and Brazil* (New York: Cambridge University, 1983), 129-132, 319-321; Scarlett O'Phelan Godoy, *Mestizos Reales en el Virreinato del Perú: Indios Nobles, Caciques y Capitanes de Mita* (Lima: Fondo Editorial del Congreso, 2013), 1-3; Schwartz, *Blood and Boundaries: The Limits of Religious and Racial Exclusion in Early Modern Latin America* (Boston: Brandeis University, 2020), 72-110.

idea of an "apartheid" in Peru.[24] In their studies of the Andes during the nineteenth century, scholars Tristan Platt and Florencia Mallon use class, not ethnicity, as an angle of analysis because mestizo and Indigenous families often lived in similar situations.[25] In the colonial era, as historian Alejandra Osorio notes, even Lima, the coastal, Spanish capital, was heterogeneous and not, as some studies claim, a "'colonial enclave' divorced from 'deep Peru.'"[26]

At the same time, geography and topography simplified social division. In Mexico, the Spanish had built their capital city directly on top of the ravaged Aztec metropolis of Tenochtitlan.[27] In Peru, by contrast, Francisco Pizarro in 1535 founded Lima on the coast, 500 kilometers west and 3000 meters below the Inca capital Cusco.[28] Life on the coast helped Spaniards stay in touch with their homeland, stay safe from Inca armies (prior to military victory), and avoid the altitude of the Andes, which made them sick. It also facilitated "racecraft," a process in which, as scholars Barbara and Karen Fields argue, racism creates an illusion of race.[29] Even as mixed ethnicity became the norm, to be "white" in Peru meant being coastal, urban, and educated; "Indian" implied Andean, rural, and uneducated.[30] An exception to this dichotomy were rural hacendados. As anthropologist Enrique Mayer writes, "landowners

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[24] Carlos Aguirre and Charles Walker describe parts of modern Lima a "virtual apartheid." Speaking of Bolivia, with whom Peru shares a common Andean and colonial past, Benjamin Dangl writes of "the apartheid in the nation, where a small elite of European descent ruled over the majority of indigenous people." By contrast, José Luis Rénique writes, "No one who has studied the history of Peru could maintain that a kind of apartheid like that of South Africa exists." Aguirre and Walker, "Introduction," in *The Lima Reader: History, Culture, Politics*, eds. Aguirre and Walker (Durham: Duke University, 2017), 2; Dangl, *The Five Hundred Year Rebellion: Indigenous Movements and the Decolonization of History in Bolivia* (Chico, CA: AK Press, 2019), 13; Rénique, *La batalla por Puno: Conflicto agrario y nación en los Andes peruanos* (Juliaca: Universidad Nacional de Juliaca, 2016[2004]), 28.
[25] Tristan Platt, *Estado boliviano y ayllu andino: tierra y tributo en el norte de Potosí* (Lima: IEP, 1982); Florencia Mallon, *The Defense of Community in Peru's Central Highlands: Peasant Struggle and Capitalist Transition, 1860-1940* (Princeton: Princeton University, 1983).
[26] Alejandra B. Osorio, *Inventing Lima: Baroque Modernity in Peru's South Sea Metropolis* (New York: Palgrave Macmillan, 2008), xii, 1-2; Osorio takes issue specifically with "nationalist, dependency, and Marxian" studies.
[27] Barbara E. Mundy, *The Death of Aztec Tenochtitlan, The Life of Mexico City* (Austin: University of Texas, 2015).
[28] See Garcilaso de la Vega El Inca, "The Foundation of Lima," in *The Lima Reader*, 12-15; see also 1-11.
[29] Barbara J. and Karen E. Fields, *Racecraft: The Soul of Inequality in American Life* (New York: Verso, 2012).
[30] My description of these differences follows that of Brooke Larson in *The Lettered Indian: Race, Nation, and Indigenous Education in Twentieth Century Bolivia* (Durham: Duke University, 2023).

considered themselves to be white (no matter what their skin color was), as superior members of the civilized race placed to rule over an inferior race of Indians."[31]

Although the Republic of Indians was inferior to the Republic of Spaniards, it enjoyed legal legitimacy. Tristan Platt and historian Charles Walker have used the terms "reciprocal pact" and "colonial pact" respectively to refer to Indigenous-state relations during the colonial era.[32] In exchange for state respect for their lands and autonomy, communities paid tribute to the Crown and provided labor for the colonial economy. Reciprocity made possible relatively stable colonial relations. Its importance became obvious in the mid- to late-eighteenth century when the Bourbon Reforms, new policies that the Crown imposed to gain greater administrative control, curtailed community autonomy and triggered a series of Indigenous rebellions, large and small.[33]

In some ways, independence in 1824 worsened the situation of Andean communities because it did away with the reciprocal pact. Simón Bolívar, the liberator of much of South America, had good intensions. "The poor Indians [of Peru] are truly in a state of lamentable depression," he declared in 1825. "I intend to help them all I can, first as a matter of humanity, second because it is their right, and finally because doing good costs nothing and is worth much."[34] Unfortunately, Bolívar's idea of help stemmed directly from contemporary notions of liberalism, which tended to nullify collective rights in favor in favor of individuals. As Timo Schaefer explains, "the revolutions that … toppled or undermined old-regime structures … were first of all legal revolutions; they replaced systems in which rights and prohibitions attached to

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[31] Enrique Mayer, *Ugly Stores of the Peruvian Agrarian Reform* (Durham: Duke University, 2009), 88.
[32] Platt, *Estado boliviano y ayllu andino*, 36; Charles Walker, *Smoldering Ashes: Cuzco and the Creation of Republican Peru, 1780-1840* (Durham: Duke University, 1999), 23-24; Walker, *The Tupac Amaru Rebellion* (Cambridge: Harvard University, 2016), 268-270.
[33] See Scarlett O'Phelan Godoy, *Rebellions and Revolts in Eighteenth Century Peru and Upper Peru* (Vienna: Verlag and Wien, 1985); Sinclair Thomson, *We Alone Will Rule: Native Politics in the Age of Insurgency* (Madison: University of Wisconsin, 2002); Sergio Serúlnikov, *Revolution in the Andes: The Era of Túpac Amaru* (Durham: Duke University, 2013); Walker, *The Tupac Amaru Rebellion*.
[34] Bolívar to Santander, June 28, 1825, in J. Lynch, *Simón Bolívar: A Life* (New Haven: Yale University, 2006), 155.

peoples' membership in estates, ethnic groups, and corporations with systems in which rights and prohibitions were equally shared between adult male citizens."[35] Historian Victor Uribe-Uran further observes that "natural rights-based liberal individualism vigorously entered the political and legal scene after independence."[36]

In this context, Bolívar abolished Indigenous tribute and ended communities' legal separation in society. In so doing, he unwittingly removed state recognition of community lands and rights. As Matos Mar and Fuenzalida explain, "Though discriminatory," colonial policies had "played a protective role for communities." With Bolívar's reforms, communities "ceased to be separate entities" and became "mere groups of small landholders dedicated to agriculture."[37] In Bolivia, which shares a colonial history with Peru, Platt adds that with the post-independence demotion from landowners to usufructuaries, Andean allyus or communities lost much of the economic power and political leverage that they had wielded during the colonial era.[38]

Communities were aware of these implications. Historian John Lynch writes that, "Andean Indians did not automatically volunteer to relinquish the tribute or welcome its abolition. They often saw payment of tribute as proof of entitlement to land and a historic defense against attacks on their agrarian property."[39] In Ayacucho, in fact, from 1825 to 1828, communities rebelled against republican authorities with the hope of restoring the Spanish monarchy.[40] "The Indian decrees of Bolívar were limited in scope and misguided in intent,"

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[35] Timo H. Schaefer, *Liberalism as Utopia: The Rise and Fall of Legal Rule in Post-Colonial Mexico, 1820-1900* (New York: Cambridge University, 2017), 13.
[36] Victor M. Uribe-Uran, "The Great Transformation of Law and Legal Culture: 'The Public' and 'the Private' in the Transition from Empire to Nation in Mexico, Colombia, and Brazil, 1750-1850," in *Empire to Nation: Historical Perspectives on the Making of the Modern World*, eds. Joseph W. Esherick, Hasan Kayalı, and Eric Van Young (Boulder: Rowman & Littlefield, 2006), 82
[37] Matos Mar and Fuenzalida, "Proceso de la sociedad rural," 21.
[38] Platt, *Estado boliviano y ayllu andino*, 36.
[39] Lynch, *Simón Bolívar*, 153.
[40] Cecilia Méndez, *The Plebeian Republic: The Huanta Rebellion and the Making of the Peruvian State, 1820-1854* (Durham: Duke University, 2005).

Lynch concludes. "As the great haciendas already occupied most of the best land in Peru, [Bolívar's reforms] simply made the Indians more vulnerable, for to give them land [as mere individuals] without capital, equipment, and protection was to invite them to become indebted to more powerful landowners, to surrender their land in payment, and to end up in debt peonage."[41]

Communities, of course, were not mere victims. As historian Mark Thurner argues, throughout the nineteenth century, they used the rhetoric of republicanism to argue for inclusion in the nation.[42] In theory, nineteenth-century liberalism promised equality and citizenship. In practice, however, it delegitimized communities' right to their lands and discarded their ancestral knowledge about farming. As historian Brooke Larson writes, popular ideas of "liberalism and modernity seemed to unleash a new cycle of territorial and cultural conquest."[43] For example, during the wool export boom of the late nineteenth century, landowners in the southern state of Puno bought up community lands in what historian Nils Jacobsen calls an "avalanche" of expansion.[44] Across Peru, hacienda families came to control nearly ninety percent of all farmland.[45] In turn, community members often ended up working as *colonos* (tenant-peons), *pastores* (sheepherders), *muleros* (muleteers), and *obreros* (laborers) on the very lands they had once owned.[46] Larson and other scholars describe this situation as "internal colonialism."[47]

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[41] Lynch, *Simón Bolívar*, 155.
[42] Mark Thurner, *From Two Republics to One Divided: Contradictions of Postcolonial Nationmaking in Andean Peru* (Durham: Duke University, 1997).
[43] Brooke Larson, *Trials of Nation Making: Liberalism, Race, and Ethnicity in the Andes, 1810-1910* (New York: Cambridge University, 2008), 7.
[44] See Nils Jacobsen, *Mirages of Transition: The Peruvian Altiplano, 1780-1930* (Berkeley: University of California, 1993), 4, 208.
[45] "Reforma Agraria: El Futuro," *Agronoticias: Revista para el Desarrollo*, junio 20, 1979, 3-4, Biblioteca Nacional, Lima; see also Mayer, *Ugly Stories*, 2, 13-15, 23.
[46] See Elba D. Mariscal Flores and Nora V. Mengoa P., "Reforma agraria y situación del campesino en la Sociedad Agrícola de Interés Social 'Rio Grande', Acora, Puno," Tesis, UNTA, 1975, 27-51; INIA Library, Illpa, Puno.
[47] Larson, *The Lettered Indian*, 6-7, 13-14.

For their part, Peruvians spoke of *gamonalismo*, a term that referred to hacendados' land, money, education, perceived ethnicity, and unchecked local power. As sociologist Orlando Plaza explains, "in the countryside, political and economic life were organized around the phenomenon of gamonalismo, which … kept the powers of public exercise in private hands."[48]

Given the consequences of liberalism, it is not surprising that many communities maintained their collective identity, despite legal changes and liberal rhetoric. In his study of nationalism, political scientist Benedict Anderson emphasizes the role of "creole pioneers" such as Bolívar in forming new nations.[49] In a critique of this study, historian Eric Van Young points out that the masses in Latin America seldom embraced the ideas or leadership of creole pioneers. This schism, he argues, requires historians to distinguish between "the development of a 'nationalist movement,' the program of a very reduced segment of the population, and nationalism itself, in the sense of a virtually universal affective and cognitive identification with the nation-in-becoming."[50] These differences mattered greatly in the Andes. Although Peru was a single nation, Andean communities maintained a degree of separation as a defense against hacienda expansion and many forms of cultural conquest.

The first decades of the twentieth century saw several grassroots efforts to challenge this expansion. In her work on Puno, historian Susan Fitzpatrick-Behrens notes that in 1902 the first community representatives travelled to Lima to seek legal redress for land seizures. There they found sympathetic allies in a budding group of *indigenistas*, urban intellectuals who were

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[48] Orlando Plaza, "La Problemática de la Comunidad Campesina," en *Realidad del campo peruano después de la Reforma Agraria: 10 Ensayos Críticos*, ed. Francisco Moncloa (Lima: Centro de Investigación y Capacitación, 1980), 164.
[49] Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (New York: Verso, 1983), esp. 47-67.
[50] Eric Van Young, "The Limits of Atlantic-World Nationalism in a Revolutionary Age: Imagined Communities and Lived Communities in Mexico, 1810-1821," in *Empire to Nation*, 41 (35-67).

interested in bringing Indigenous communities more fully into the nation. Back in Puno, Indigenous activists partnered with Seventh Day Adventists to build community schools.[51]

Partly in response to this movement, the moderately reformist government of President Augusto Leguía (1919-1930) enacted a new constitution in 1920, which declared community lands "indefeasible" and communities, essential agrarian entities.[52] Leguía also allowed José Antonio Encinas, a senator from Puno, to establish a "Special Investigatory Commission on Indigenous Questions" to tour Puno and study the situation. As historian José Luis Rénique notes, people appeared in droves to present grievances to the commission: 521 complaints from the area around the city of Puno, 777 from the province of Ayaviri, 4552 from Azángaro, etc. Of the total 7080 grievances, 86 percent related to land, 7 percent to gamonal abuses, and a smaller fraction to education. In its final report, the Commission noted that communities were well organized among themselves and that the Indians of some provinces, such as Azángaro, "no longer have the timid [*apocado*] spirit that once characterized them."[53] Communities, he suggested, were starting to grow in both size and confidence; Peru needed concrete reforms.

Yet landowners would not hear of reform. In Ayaviri, they and their municipal allies threatened to detain the commissioners. In Azángaro, as soon as the commission departed, local thugs, in Fitzpatrick-Behrens' words, "attacked a Seventh Day Adventist mission, killing twelve indigenous people and injuring four others."[54] Raids on Adventist schools continued because these schools and their promise of education represented a tangible threat to the status quo. While Puno experienced flagrant gamonal repression, other states faced similar situations.

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[51] See Susan Fitzpatrick-Behrens, *The Maryknoll Catholic Mission in Peru, 1943-1989: Transnational Faith and Transformation* (Notre Dame: University of Notre Dame, 2012), 52-53.
[52] See Henry F. Dobyns, *Comunidades campesinas del Perú* (Lima: Editorial Estudios Andinos, 1970), 11.
[53] Rénique, *La batalla por Puno,* 110 (105-112); Fitzpatrick-Behrens, *Maryknoll*, 53.
[54] Fitzpatrick-Behrens, *Maryknoll*, 52-53.

Overall, the Investigatory Commission in Puno proved two things: 1) Andean communities looked to the government for legal redress and protection; and 2) The government was too weak to provide them. The one lasting reformist policy of the Leguía years was a system whereby communities could seek legal recognition and enrollment in state records.[55] Through this system, federal authorities sought to promote social integration, but now they did so at least partly on the terms of Andean communities. As opposed to the liberalism of the past century, recognition implied state acceptance of communities' collective land titles and legal status.

This acceptance, mild though it was, marks the beginning of an important change in Peru and in other Latin American nations with large Indigenous populations. As historians John Charles Chasteen and James A. Wood summarize, "Neocolonial ideologies [of the nineteenth century] had cast Indians as brutish and culturally debased beings who had lost all trace of past Inca or Aztec glory. Nationalists [of the twentieth century], on the other hand, identified distinctive virtues in indigenous villages." They continue, "where neocolonial ideology had dictated the dissolution of Indian communities to promote individual ownership of property, nationalist ideology revered the powerful community ethos of indigenous people."[56]

The Peruvian state had its own agenda. As historian Javier Puente argues, authorities not only wanted to "recast indigenousness as a value no longer … antithetical to progress;" they also wanted to use community labor for roadbuilding and other modernizing projects.[57] Yet overall, Leguía's reforms gave communities a new avenue of legal action. In fact, as the work of historian Martín Arauzo suggests, communities that had formed after the colonial era through

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[55] See Dobyns, *Comunidades campesinas*, 11.
[56] "The Power of Indigenous Community," in *Problems in Modern Latin American History: Sources and Interpretations*, eds. James A. Wood and John Charles Chasteen (Boulder: Rowman and Littlefield, 2009), 166.
[57] Javier Puente, *The Rural State: Making Comunidades, Campesinos, and Conflict in Peru's Central Sierra* (Austin: University of Texas, 2022), 56, 69-70 (47-70).

ongoing patterns of migration sometimes resorted to forging land titles to request recognition. Surprisingly, some local authorities accepted these titles, acknowledging that although a community was relatively new, its members still had a legitimate claim upon the land.[58]

Soon, many intellectual leaders began addressing the question of how Andean communities could become more integrated into the nation. Some agreed that land rights were the answer. José Carlos Mariátegui, founder of the Peruvian Socialist Party, argued that the main obstacle to integration was not one of law, ethnicity, morality, or education, for reform in these realms would be "powerless against [the] authority" of "feudal lords." Rather, he argued, the problem came down to land tenure.[59] Mariátegui's contemporary, Víctor Raúl Haya de la Torre, founded the political party APRA (American Popular Revolutionary Alliance) with the initial goal of exporting the Mexican Revolution to the rest of Latin America. He even used Emiliano Zapata's revolutionary slogan "Land and Liberty!" (which Zapata, in turn, had borrowed from the radical journalist Ricardo Flores Magón).[60] In Mexico, a bloody revolution eventually led to land reform.[61] In Peru, mainstream government officials forced Haya de la Torre into exile.

Other intellectual leaders extolled the virtues of Andean communities, even in the face of injustice. The poet and writer César Vallejo, an acquaintance of Haya de la Torre, wrote a short story in 1931 (although no publisher accepted it until 1951) titled "Paco Yunque," which depicted rural Peru from a child's perspective. In the story, the title character has the chance to

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[58] Martín Arauzo, in conversation with author, June 20, 2023, Huancayo.
[59] José Carlos Mariátegui, "The Problem of the Indian: A New Approach," From *Seven Interpretative Essays on Peruvian Reality*, 1928, https://www.marxists.org/archive/mariateg/works/7-interpretive-essays/essay02.htm (accessed October 8, 2024); see also "Introduction," in *"The Heroic and Creative Meaning of Socialism": Selected Essays of José Carlos Mariátegui*, ed. and trans. Michael Perlman (Atlantic Highlands: Humanities Press, 1996).
[60] See Iñigo García-Bryce, *Haya de la Torre and the Pursuit of Power in Twentieth-Century Peru and Latin America* (Chapel Hill: University of North Carolina, 2018), 6-8, 37-40; Ricardo Flores Magón, "Land and Liberty," in *The Mexico Reader: History, Culture, Politics*, eds. Gilbert Joseph and Timothy J. Henderson (Durham: Duke University, 2003), 335-338.
[61] See "The Constitution of 1917: Articles 27 and 123," in *The Mexico Reader*, 398-402; John Charles Chasteen, *Born in Blood and Fire: A Concise History of Latin America*, 3rd Edition, (New York: W.W. Norton, 2011), 223-225.

attend school in town because his mother works as a maid in the home of a landowning family. At school, however, Paco is in the same class as Humberto, son of his mother's employer, who pulls his hair, steals his work, and lies about him. The teacher does not dare intervene for fear of Humbert's parents. The story closes with Paco crying at the unmitigated unfairness.[62]

Despite the sad ending, Paco's last name, Yunque, means *anvil* in Spanish. With this detail, Vallejo captured the idea of repeated blows but also the resilience of a population forged in the crucible of conquest and ongoing colonization. Ten years later, Vallejo's student, the indigenist Ciro Alegría, pushed the theme of resilience further. In his novel, *The World is Wide and Foreign*, written from exile in Chile, he portrays Indigenous workers as heroic, machete-wielding revolutionaries, weary of the haciendas that made them "stepchildren of the land."[63]

While urban intellectuals questioned the status quo, change began with communities themselves. To borrow a phrase from historian Joaquín M. Chávez, campesinos in Peru were "the agronomists of their own liberation."[64] This agronomy began with a steady push for legal recognition. From 1926 to 1962, over 1600 communities received recognition, and hundreds more began the process.[65] Outcomes were not guaranteed. State authorities required evidence of landownership, economic activity, the establishment of schools, and a population that included more than just one extended family.[66] Most communities accepted these terms, even though they had precolonial ties to the land. Scholar Mary Louise Pratt looks critically at situations in which colonized groups must "represent themselves in ways that engage with the colonizer's own

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[62] César Vallejo, "Paco Yunque," Biblioteca Virtual Universal, https://biblioteca.org.ar/libros/158038.pdf (accessed October 7, 2024).
[63] Ciro Alegría Bazán, *El mundo es ancho y ajeno* (Caracas: Biblioteca Ayacucho, 1978 [1941]; see also *Problems in Modern Latin American History,*166-170.
[64] Joaquín M. Chávez, *Poets and Prophets of the Resistance: Intellectuals and the Origins of El Salvador's Civil War* (New York: Oxford University, 2017), 73, 80.
[65] Dobyns, *Comunidades Campesinas*, 12.
[66] Puente, *The Rural State*, 55.

terms," a process she labels "autoethnography."[67] Similarly, James C. Scott maintains that one of governments' most recurring failures is bureaucratic planning that flattens or erases "exceptionally complex, illegible, and local social practices."[68]

Nevertheless, Andean communities engaged in the homogenizing process of recognition because it made them more visible to state authorities and, in turn, positioned them to better resist gamonalismo and request government aid. To borrow a term from historian Sarah Hines, communities in this case—and in many state-led projects that came later—demonstrated "vernacular modernism" by participating in and adapting development efforts to their needs.[69] One local leader recalled that before his community in Junín received recognition in the 1960s, "it was like we did not exist to the government."[70] Once they existed, however, they could petition for legal redress or technical aid.

As another example, in 1936 the community of Huasicancha, also in Junín, gained recognition and, for the first time, received some government attention. As records indicated, Huasicancha had three main *barrios* (settlements), Chaupimarca, Huasauclo, and Ranracancha, which were home to a total of 406 men, 451 women, and 708 school-age children. The community had 4175 sheep, 547 cows, 347 donkeys, 356 pigs, and 125 horses.[71] It also had 16 square kilometers of land for farming and settlement. Although this amount sounded significant, government authorities noted that agriculture in Huasicancha "barely satisfies the acute needs of the community."[72] In this case, the Hacienda Antapongo to the north likely held the best land.

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[67] Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation* (London: Routledge, 1992), 7.
[68] James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University, 1998), 2.
[69] Hines, "Power and Ethics," 228.
[70] Larson Francisco Chumpe, Native Community of Cachingarani (Satipo, Junín), in conversation with author, June 19, 2023, Huancayo, Peru.
[71] See "Población Total de la Comunidad Indígena de Huasicancha" and "Relación de los Ganados Pertenecientes," in Huasicancha, Binder 1, Oficina de Comunidades Campesinas y Nativas, DRA-Junín, Huancayo.
[72] See "Datos que proporciona la Comunidad de Indígenas de Huasicancha," Huasicancha, Binder 1.

In their inspections of Huasicancha, authorities added that, “there is also a small-scale pottery industry, and, at a primitive level, [community] members make ponchos, blankets, woven cleaning cloths [*bayetas*], or cloth for sweaters [*cordellate*], which the community itself uses; nothing is left for market sale.” Regarding education, the community had two basic schools, one for girls and one for boys. It had donated land to the regional Ministry of Public Education for a larger coed school, but this new building still lacked doors and windows.[73]

After Huasicancha presented all the necessary documents, the state took its time in granting recognition. At one point, Martín Ramos, representative of the community, wrote to the local Director of Indigenous Affairs to complain about unnecessary delay. “It seems that regional political authorities are systematically endeavoring to hold up the [circulation of pertinent] reports month after month with no justification for doing so and against the definitive legal provisions that [pertain to this process].” He continued, “as Indigenous residents, we require protection" from hacienda owners and “resolution of our long-running grievances.”[74] These last lines indicate the perceived benefits of legal recognition, at least for this community.

The process of receiving recognition remained uniformly slow and bureaucratic, yet many communities waded through it. As another example, in 1962 the community of Anansaya in the highland region of Caylloma, Arequipa, appointed a representative (*gestor*) to manage its application for recognition. The local attorney who filed this act of appointment wrote that recognition “would bring enormous benefits” to the community and help it “obtain social and economic organization … and to conserve as inviolable the territorial integrity of its private and community lands, which it had owned ‘since time immemorial.’”[75] One of the next steps was the

[73] See “Datos que proporciona la Comunidad de Indígenas de Huasicancha,” Huasicancha, Binder 1.
[74] Letter from Martín Ramos to Director of Indigenous Affairs, 12 August 1936, Huasicancha, Binder 1.
[75] Eduardo Aramayo González, Notario Público de la Provincia de Caylloma, Chivay, July 7, 1962, Folder: Comunidad Campesina de Anansaya, Oficina de Catastro, Gerencia Regional de Agricultura (GRA), Arequipa, Peru.

community inventory. In this case, 668 individuals raised livestock, ran a small butter shop, and grew wheat, barley, oats, corn, broad beans, quinoa, and potatoes on 3500 hectares of land.[76]

At one point, the neighboring community of Urinsaya argued that in years past both communities had shared some of the land in question, but Anansaya's land titles proved decisive. "After thorough investigation," wrote a regional inspector in 1966, "the Community of Anansaya" has been found to "have immemorial existence preserved by hereditary succession from its ancestors." Its legal recognition, the inspector continued "does not affect in any way the rights of any other community or individual." The rights to privately owned farmland and communal pastures, he added, "have been supported by titles and testaments."[77] The following March, authorities formally enrolled Anansaya in Peru's Official Register of Communities.[78]

While the idea of an ancestral claim on the land could refer to precolonial ayllus, the titles that communities possessed usually came from the colonial era. This legal detail left room for some legitimate debate because other parties also possessed colonial-era land titles. In these debates, parties usually stated that the land had been theirs "from time immemorial." In her work on the colonial era, historian Scarlett O'Phelan Godoy observes that litigants frequently bandied this phrase about, even when they referred to just one or two generations in the past.[79] In the mid-twentieth century, the phrase seems to refer mainly to colonial times because land titles dated back to this era. For communities, however, the phrase had a more literal, precolonial meaning. If time immemorial was the standard, communities could make a stronger case, yet the messy agrarian legacy of past and ongoing colonialism often stalled the legal process.

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[76] Document prepared by Benito Guiérrez Castro of Anansaya for Director General de Comunidades, September 5, 1966, Folder: C.C. de Anansaya, GRA-Arequipa.
[77] Report of Heráclio Chávez Riquelme, Inspector Regional, November 12, 1966, Folder: C.C. de Anansaya.
[78] Resolución Suprema, Lima, March 20, 1967, Folder: Comunidad Campesina de Anansaya.
[79] Scarlett O'Phelan Godoy, "Tiempo inmemorial, tiempo colonial: un estudio de casos," *Procesos: Revista Ecuatoriana De Historia* 1 no. 4 (1993), 3–20.

The community of San Lorenzo de Marca in the state of Ancash further exemplifies this messy legacy. In 1950, the community presented the required evidence and received recognition, yet neighboring small landholders protested. In a petition to annul the recognition, the protesters wrote, "On October 9, 1714, "General Tomás de Urdinola … representing the Royal Crown of Spain, foreclosed on four pieces of land where the huts of the Indians of Marca were located." The general then distributed the lands to Indigenous caciques and sold the rest in public auction. This ownership, they continued, "is confirmed by the many [land] titles issued by General Urdinola, which [we] still hold." Thanks to these titles, they added, "the peaceful possession" of the land in question had continued "from time immemorial."[80]

For their part, however, leaders of San Lorenzo reminded authorities that when they submitted the petition for recognition, they had presented land titles to the pastures in question, which the authorities had accepted. If the plaintiffs who have opened a case against us really do have legal titles of their own, leaders asked, why did they not present them to the appropriate ministry when we began the recognition process? "It is because they do not have them, nor have they ever had them," they wrote. "The only thing they want to do is interrupt our use and possession [of the land] with maundering claims [*peregrinas invensiones*] and arguments."[81]

As the disagreement persisted, the plaintiffs charged that two leaders of San Lorenzo de Marca, Apoleón Ferrer Gamarra and Leonardo Cueva, had "unscrupulously taken advantage of the naivete and ignorance of their agitated community members" and convinced them to take over privately owned lands. What we have before us, they continued "is nothing more than the product of an artificial organization of a ghost community, [designed] to appropriate other

[80] Petition to Minister of Labor and Indigenous Affairs, October 5, 1954, Libro de Actas, C.C. de San Lorenzo de Marca, Dirección Regional de Agricultura (DRA)-Ancash, Huraraz.
[81] Letter, Primitivo Gamarra Ramirez, President, and Apoleón Ferrer Gamarra, Representative, of San Lorenzo de Marca to the Regional Inspector of Indigenous Affairs, August 25, 1951, CC San Lorenzo de Marca.

people's property." In another letter, the petitioners described Apoleón Ferrer as an "agitator with a clearly communist mindset," and they blamed him for the "usurpation of the contested land."[82] After several years, state authorities finally dismissed these charges.

In disagreements with hacendados, communities seldom saw such favorable outcomes. As the case of El Tingo (cited in the chapter introduction) demonstrates, hacienda owners like Pablo Landa García could effectively scuttle a petition for recognition by claiming that the land was theirs and theirs alone. In this case, however, El Tingo pushed back. Eight comuneros asserted their position by refusing to work on Landa's hacienda as they normally did. Landa, in turn, filed a complaint with the Office of Indigenous Affairs in which he charged that these "laborers and *yanaconas* [peons]" were defying "the custom of all haciendas in the region."[83] Furthermore, their refusal to work "was causing much damage and harm and making it impossible to operate the estate properly."[84] Landa then requested that authorities "regulate their labor or, if that failed, [force them to] abandon the property."[85] In a separate letter, he stated that authorities should not allow Indigenous communities to "mock the legal provisions [that govern them] and continue freely using lands, pastures, and houses that do not belong to them."[86]

Like many hacendados, Landa clung vehemently to his land and his authority. In some ways, his stance matches that of landowners in another era of change, the eve of independence a century and a half earlier. In his era, hacendados wrote of workers who allegedly flaunted their "obligation" to work on the haciendas for "the sole purpose of mocking the hacienda owners." In both cases, hacendados reduced the problem to a personal conflict, refusing to recognize that

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[82] Petition to Minister of Labor and Indigenous Affairs, 5 October, 1954; Letter from Arnulfo Padilla, et. al, to Prefect of Ancash, February 12, 1951. Libro de Actas, CC San Lorenzo de Marca, DRA-Ancash.
[83] "Constancia," Nov. 23, 1955; Comunidad de El Tingo, 1956-1979, Binder 4, Unidad de Comunidades de Campesinas y Nativas, Dirección Regional de Agricultura (DRA)-Junín, Huancayo, Peru.
[84] "Informe relativo a la queja formulada por don Pablo Landa García, Dec. 6, 1955, El Tingo, Binder 4, DRA-Junín.
[85] Letter, Juan G. Freyre Ayllon to Office of Indigenous Affairs, Mar. 28, 1956, El Tingo, Binder 4, DRA-Junín.
[86] Letter, P. Landa García to Inspector de Asuntos Indígenas, Nov. 21, 1955, El Tingo, Binder 4, DRA-Junín.

larger social changes were unfolding. In both cases, they also invoked the need for economic output, arguing that if comuneros did not work, the nation would not eat.[87] The consistency in landowner complaints lends credence to historian José Luis Rénique's argument that, even in the 1950s, rural Peru remained "a world of haciendas and communities frozen in colonial times."[88]

While El Tingo declared that one hundred and fifty years of national growth had done nothing to improve its situation, it could have argued that its situation was even worse. In the 1950s, Landa García felt entitled to the community's labor, but in defiance of the colonial standard of reciprocity, he refused to recognize its right to the land. In another section of its letter to President Prado, El Tingo underscored this right. "In the year 1753," they recounted, "the King of Spain … granted the lands in question … to a Spanish captain named Juan López de Vera." However, they continued, we too "were recognized as joint owners of [certain] lands … which are independent of the sections that the hacendados, who act as our bosses, have title to and occupy." Presenting their case for legal recognition, community members added, "over the years, we have been able to build two cemeteries, one church, one school building in which Public Coed School 5173 operates, and one institutional building—all with our resources [*peculio*]."[89] They had met the state's requirements; did they not deserve its reciprocation?

Although El Tingo wanted to act within the law, it referred openly to its discontent with its situation. The refusal of eight individuals to work on Landa García's hacienda was just one manifestation of a long-running problem. "Relations with the hacendados have not always been cordial," they wrote. "Constant abuse has led to protest, particularly when they appropriate our animals on the pretense of damage [to their property.]" Moreover, "the forms of labor have

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[87] Juan Francisco Zumarán, "Sello Quatro," 1795, Doc. 2000005827, Sala de Manuscritos, Biblioteca Nacional.
[88] José Luis Rénique, "Violencia y democracia en la sierra sur del Perú: Puno en la era post-velasquista," En *Perú: El problema agrario en debate/ SEPIA IV*, eds. Carlos Iván Degregori, et. al. (Lima: SEPIA, 1992), 441.
[89] Letter from C.C. El Tingo to Dr. Manuel Prado Ugarteche, Aug. 10, 1956, El Tingo, Binder 4, DRA-Junín.

caused, at times, conflicts in court. Inasmuch as the system in which we live is loathsome for us," they continued, "there is a struggle to break it." For all these reasons, they had sought legal recognition, yet regional authorities, "without making a careful examination of our condition [and in light of Landa's insistence] assumed we were not telling the truth."[90]

According to the community, Landa García and his creditor, the National Agricultural Bank, were even planning to auction off part of the contested land, which had forced community members to pool their resources to pay for litigation to halt this plan. In short, they stated, "we are facing a social problem in which the litigants seek to jerk us [*arrancharnos*] from the lands from which we are native residents and which we make prosper through our vocation to farming. Facing this bleak perspective," they concluded, "and representing more than 400 residents, we appeal to you, Mr. President … to address our petition with equity."[91]

El Tingo's persistence soon generated opposition from two additional landowners, the sisters Rosa Loyola and Rosa Amelia Oviedo, who denounced the efforts of the "nonexistent Indigenous community" to seek recognition.[92] In response, the local government not only reiterated its denial of the community's petition but charged that one comunero, Lucio Hilario Ingaroca, had failed to comply with his obligation to give fifty percent of his onion harvest to the sisters. Ingaroca and others, the subprefect wrote, have been unruly because "they remain convinced that they belong to a pseudo-Indigenous community of their own naming and, as such, [they erroneously believe that] they are the owners of these lands"[93] In the end, Ingaroca humbly promised to repay the sisters for the onions, and the case, for the time being, was closed.[94]

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[90] Letter from C.C. El Tingo to Dr. Manuel Prado Ugarteche, Aug. 10, 1956, El Tingo, Binder 4, DRA-Junín.
[91] Letter from C.C. El Tingo to Dr. Manuel Prado Ugarteche, Aug. 10, 1956, El Tingo, Binder 4, DRA-Junín.
[92] Letter from Rosa Loyola Oviedo de Hurtado and Rosa Amelia Loyola Oviedo to the Director of Indigenous Affairs, Dec. 22, 1956, El Tingo, Binder 4, DRA-Junín.
[93] Letter from Subprefect Alberto Pilares Polo to the Prefect, June 13, 1957, El Tingo, Binder 4, DRA-Junín.
[94] Acta: Subprefecto, Olinda Loyola de Hurtado y Lucío Hilario Ingaroca, June 7, 1957, El Tingo, Binder 4.

Conflicts over land and onions in the Andes would have mattered little to most authorities down in Lima were it not for one additional factor: migration. As communities grew, migration to urban centers, especially Lima, became an escape valve. From the late 1940s onward, *barriadas,* settlements of ad-hoc shelters, began to spring up in and around the city.[95] As geographer Bill Chambers notes, Peruvians initially used the term *urbanización clandestina* (clandestine housing sector). Later, authorities tried to use less stigmatizing options such as *pueblo joven* (young neighborhood). Yet *barriada* has remained the most common term.[96]

By 1956, twenty-one barriadas with a total population of over 56,000 flanked the Rimac River, which cuts through Lima en route to the Pacific Ocean. Nineteen more, home to 26,000 people, covered the sandy, desert hills around the city. Eleven others, home to 21,500 people, had emerged within the city. And five more, with 5,500 migrants, existed outside the city limits. These residents soon began to demand running water, electricity, and other services from the government. In time, as migrants continued pouring into Lima, "megabarriadas" such as Villa El Salvador (1971), San Juan de Lurigancho (1976), and Huaycán (1984) became integral parts of the city.[97] In the words of José Matos Mar, "the odyssey of thousands of families, which [by the 1980s] accounted for the majority of the [Limeño] population," made the city "increasingly representative of the cultural plurality of the country—in short, more Peruvian."[98]

In this pluralizing process, some political parties gradually began to cater to barriada residents. At the same time, many urbanites looked at migrants with discomfort and racism. As one journalist in 1959 wrote of Arequipa, the largest city in southern Peru, many residents feel

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[95] See César Franco, *Informales: Nuevos rostros en la vieja Lima* (Lima: CEDEP, 1989).
[96] Bill Chambers, "The Barriadas of Lima: Slums of Hope or Despair? Problems or Solutions," *Geography* 90, no. 3 (2005), 202; see also Paul A. Peters and Emily H. Skop, "Socio-spatial Segregation in Metropolitan Lima, Peru," *Journal of Latin American Geography* 6, no. 1 (2007), 149-171.
[97] See. Matos Mar, *Perú: Estado desbordado*, 132-141, 186-206.
[98] José Matos Mar, *Taquile en Lima: Siete familias cuentan* (Paris: UNESCO, 1984), 13.

that the city now "bears a deadweight made up of an indigenous campesino mass that threatens to overwhelm it…. [The] indians, hungry and lacking resources, who arrive in the city are nothing more than consumers, and their assimilation … is debatable." A tour through the city, it continued, "confirms … the extraordinary quantity of indigenous people who live in … precarious housing and in the same [family structure] as the 'ayllu' from whence they came." Some sell sundries (*baratijas*) in local markets; others have no employment. "Not even the Arequipeños have come up with a solution to the serious problem of indigenous migration to the city," the report concluded. However, lest some readers forget, the author added, "as Peruvians, the indians are at liberty to move throughout national territory according to their will."[99]

Prior to the 1950s, most of the Limeño elite had only ever considered the nation's "Indian question"—i.e. the role of the Peru's Indigenous population in the modernizing nation—in the abstract. Legal recognition made communities more visible, but migration forced authorities to do something. As scholar Alexandra Délano notes, emigration of rural groups (for example, from Mexico to the United States) can often "muffle problems related to unemployment and social tension in the country."[100] Migration to urban centers, on the other hand, places these problems on policy makers' doorstep. By drastically increasing the need for jobs, food, housing, and other services, mass migration to cities obligates civic and intellectual leaders to examine the problems in rural society that drive people to move. In the mid-twentieth century, scholarly studies, mostly anthropological, of Peru's Indigenous communities began to proliferate.[101] Scholarly work on

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[99] "Aumenta Población Indígena Que se Avecina a Arequipa," *La Prensa*, 8 de abril de 1959. Biblioteca Nacional.
[100] See Alexandra Délano, *Mexico and its Diaspora in the United States: Policies of Emigration since 1848* (New York: Cambridge University, 2011), 98.
[101] See, for example: Harry Tschopik, Jr., "The Aymara of Chucuito, Peru," Vol. 1, *Anthropological Papers of the American Museum of Natural History*, 44, No. 2 (1951); Julio Cotler, *Los cambios en la propiedad, la comunidad y la familia en San Lorenzo de Quinti* (Lima: UNMSM, 1959); William W. Stein, *Hualcán: Life in the Highland of Peru* (Ithaca: Cornell University, 1961); Dobyns, *Comunidades Campesinas*; Gabriel Escobar, *Sicaya: Cambios culturales en una comunidad mestiza andina* (Lima: IEP, 1973); Billy Jean Isbell, *To Defend Ourselves: Ecology and Ritual in an Andean Village* (Austin: University of Texas, 1978).

urbanization followed suit.[102] In one study from the late 1950s, Matos Mar noted that two of the main causes of migration to Lima were "the form of land tenure" and "the limited technological progress in Peru."[103] To curb migration, Andean families would need more land and technology.

President Manuel Prado, whom the community of El Tingo had written in 1956, was aware of the situation. In the fall of this year, possibly influenced by the letter, he formed the Commission on Agrarian Reform and Housing to address the twin challenges of rural land and urban housing shortages. A third challenge involved urban food supply, but in this case, greater expenditure on food imports attenuated the problem. To chair the commission, Prado appointed his premier, a prominent banker, newspaper director, and landowner named Pedro Beltrán. The other eight commission members were business, agricultural, and academic leaders.[104] This creation of this body marks the most significant effort of the federal government to understand and address problems in rural Peru since the Investigatory Commission of the 1920s.

In this case, however, the interests of Peruvian authorities overlapped with those of the hemisphere's largest foreign power: the U.S government. Studies of U.S. foreign policy during the mid-twentieth century generally treat Peru as only a "mid-level Latin American country."[105] They also dwell on high-level, Cold War diplomacy and intrigue that seldom featured Peru. Yet

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[102] Studies of rural communities and urban barriadas do not overlap as much as one may expect because the latter usually begin once migrants have already arrived in Lima. See: Frank M. Andrews and George W. Phillips, "The Squatters of Lima: Who They Are and What They Want," *The Journal of Developing Areas* 4, no. 2 (1970), 211-224; Henry A. Dietz, "Land Invasion and Consolidation: A Study of Working Poor/Governmental Relations in Lima, Peru," *Urban Anthropology* 6, no. 4 (1977), 371-385; Hildegardo Córdova Aguilar, "La ciudad de Lima: Su evolución y desarrollo metropolitano," *Revista Geográfica* 110 (1989), 231-265.
[103] José Matos Mar, "Migration and Urbanization: The 'Barriadas' of Lima," Paper Prepared for the Seminar on Urbanization Problems in Latin America, Santiago, Chile, July 6-18, 1959.
[104] See Grant for Commission on Agrarian Reform and Housing, October 24, 1958, Folder 49, Box 5, Record Group 1.2, Peru 331, RAC.
[105] See Richard J. Walter, *Peru and the United States, 1960-1975: How Their Ambassadors Managed Foreign Relations in a Turbulent Era* (University Park: Pennsylvania State University, 2010), 2.

in a less studied but closely related "strategy of containment," namely that of rural development, Peru was clearly a priority, almost at the same level as Mexico and Colombia.[106]

Demographic growth in the Andes worried U.S. leaders almost as much as it worried the Limeño elite—but for different reasons. The latter had to grapple with the myriad consequences of mass migration. The former fretted about how widespread hunger could affect world politics. Theories of overpopulation, of course, were not new. In the late 1700s, the English economist Thomas Malthus had postulated that if demographic growth outstripped food production, it would keep poor people poor.[107] During the Cold War, however, many U.S. leaders believed, in essence, that if they did not intervene, "the Communist menace" would recruit the "population monster." As the administration of President Harry S. Truman wrote in 1948, "several conditions which play into the hands of the Communists exist in many of the American Republics," especially "poverty that is so widespread that it means a bare subsistence level for large masses of people."[108] In 1953, Secretary of State John Foster Dulles further warned that "if we don't look out, we will wake up some morning and read in the newspapers that there happened in South America the same kind of thing that happened in China in 1949."[109] Population growth in Peru seemed to pave the way for this outcome. In the Andes, the plaintiffs who had accused leaders of San Lorenzo de Marca of having a "communist mindset" were clearly abreast of U.S. hysteria.

For the U.S. government, a short-term solution to alleged communist recruitment of poor Latin Americans was to install and support right-ring dictators. A long-term solution, however,

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[106] John Lewis Gaddis, *Strategies of Containment: A Critical Appraisal of American National Security Policy during the Cold War* (New York: Oxford University, 1982), 206-207; although I borrow Gaddis's term, Gaddis and other foreign policy scholars generally focus on diplomatic and military strategies, not rural development.
[107] See Elbert V. Bowden, *Economic Evolution: Principles, Issues, Ideas…. Through the Looking Glass of Time*, 2nd Edition (Cincinnati: South-Western Publishing, 1985), 81-82.
[108] See Lars Schoultz, *Beneath the United States: A History of U.S. Policy Toward Latin America* (Cambridge: Harvard University, 1998), 345.
[109] Peter H. Smith, *Talons of the Eagle: Latin America, the United States, and the World*, 3rd Ed. (New York: Oxford, 2008), 113.

was an expanded aid program for rural development.[110] This program had roots in rural policies of the New Deal.[111] During World War II, the Rockefeller Foundation began sponsoring the Mexican Agricultural Program (MAP), in which agronomists searched for hybrid, blight-resistant grain varieties and agrochemical combinations that could boost crop productivity. Although Peru did not garner as much attention as Mexico, the U.S. government's Interamerican Cooperative Service for Food Production (SCIPA) opened its first office in Lima in 1943. In this program, U.S. advisors worked with the Peruvian Ministry of Agriculture on land rehabilitation projects, and they provided loans and extension services to small farmers, mostly on the coast.[112]

The following decade, rural development became even more central in U.S. foreign policy. In 1950, the Truman administration began implementing his Point IV Program, which sought to provide economic aid to "free peoples" around the world.[113] While heavy-handed solutions also remained common, their outcomes often underscored the importance of economic aid. In June of 1954 the CIA under Allan Dulles (John Foster's younger brother) used propaganda and covert military action to oust the democratically elected Guatemalan president, Jacobo Arbenz, whose serious pursuit of economic and social reform, in the view of some U.S. leaders, had crossed a line into socialism. After the coup, President Dwight D. Eisenhower congratulated CIA officials for "avert[ing] a Soviet beachhead in our hemisphere." Latin Americans, however, forcefully protested U.S. bullying and mischaracterization of Guatemala's

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[110] Schoultz, *Beneath the United States*, 344-348; see also Stephen G. Rabe, *Eisenhower and Latin America: The Foreign Policy of Anticommunism* (Chapel Hill: University of North Carolina, 1988), 64-99.
[111] See Jess Gilbert, *Planning Democracy: Agrarian Intellectuals and the Intended New Deal* (New Haven: Yale University, 2015); Tore C. Olsson, *Agrarian Crossings: Reformers and the Remaking of the US and Mexican Countryside* (Princeton: Princeton University, 2017).
[112] Raúl Asencio, *Breve historia del desarrollo rural en el Perú*, *1900-2020* (Lima: IEP, 2023), 82-88.
[113] See *Ideas and American Foreign Policy: A Reader*, ed. Andrew Bacevich (New York: Oxford University, 2018), 247-250.

reforms.[114] Although, as historian Stephen Rabe argues, the U.S. "imbroglio" in Guatemala became "the mother" of much of U.S. activity in Latin America during the Cold War and a "training ground for subsequent U.S. interventions in [other] countries," the Guatemala experience also prompted U.S. leaders to renew rural development efforts.[115]

To help reduce the need for future CIA interventions, Eisenhower appointed Nelson Rockefeller as a special assistant to put in practice the idea that "American capital and technical aid are vital to the development of backward areas where the cold war eventually may be won or lost." The time had come, one newspaper wrote, to shift "cold war policies from armaments and military alliances to economics."[116] On a panel that Rockefeller convened in 1955, one analyst reiterated that, "a much expanded program of American participation in the economic development of the so-called underdeveloped areas" is essential to "expanding the dynamism and stability of the Free World and increasing its resistance to the appeals of Communism."[117]

This policy also responded to a perceived change in USSR policy following the death of Joseph Stalin in 1953. As William H. Jackson, Rockefeller's successor and former deputy director of the CIA, declared in 1956, "there have … been changes in the Soviet Union…. From a policy of threat and intimidation, [the Soviets] have changed to a line of ostensible cooperation and encouragement of popular fronts." These new tactics, he added, "are more cleverly designed

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[114] See Smith, *Talons*, 150-152; George Black, *The Good Neighbor: How the United States Wrote the History of Central America and the Caribbean* (New York: Pantheon Books, 1988), 96-101; Luis Cardoza y Aragón, "Terminating a Revolution in Guatemala—A View from Guatemala," in *Latin America and the United States: A Documentary History*, 2nd Ed., eds. Robert H. Holden and Eric Zolov (New York: Oxford University, 2011), 194-96.
[115] Stephen G. Rabe, *The Killing Zone: The United States Wages Cold War in Latin America*, 2nd Ed. (New York: Oxford University, 2016[2012]), 36 (36-58).
[116] "Rockefeller: A Good Choice," *The Kansas City Star*, December 17, 1954, Folder 502, Box 59, Nelson A. Rockefeller Files, Rockefeller Archive Center (RAC), New York.
[117] Max F. Millikan, "Economic Policy as an Instrument of Political and Psychological Policy," in *Psychological Aspects of United States Strategy*, 1955, Folder 503, Box 59, Nelson A. Rockefeller Files, RAC.

to destroy [the West]."[118] In early 1956, Soviet Premier Nikolai Bulganin had expressed a desire to offer technical and economic assistance to Latin America.[119] Overall, however, Jackson based his analysis on USSR propaganda.[120] As one intelligence report stated, "The dominant note of Communist propaganda is the … condition of the smiling peoples of the Soviet orbit. Pictures of healthy, happy peasant girls in grain fields … appear everywhere in Red publications…. Unchallenged, [these images] have a powerful appeal, particularly in uncommitted areas."[121]

The arms race was well underway. The space race was about to begin. While less noted, the United States was also waging a grains race, a contest against both the J-curve of population growth and the appeal of Soviet wheat fields in the Global South. This grains race, of course, was not just about grain but about many aspects of food production. In 1952, for example, the U.S. Bureau of Reclamation, which specialized in water management, reiterated its commitment to "cooperate and contribute knowledge to the free world's warfare against want."[122] Nevertheless, grain production was an ongoing priority.

Peru figured prominently in the grains race not only because of its demographic growth but also because the Andes were home to several potent varieties of stem rust, a parasitic fungus that affected wheat and barley crops. In 1952, officers of the Rockefeller Foundation described Peru's Race 189 of stem rust as "*the* most virulent known…. From what we know," they wrote,

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[118] William H. Jackson, SHAPE Command Post Exercise Six, April 27, 1956, "Psychological Warfare in Peace Time," Folder 501, Box 59, Nelson Rockefeller Files, RAC; see also "William H. Jackson Dead at 70; Former C.I.A. Deputy Directory," *New York Times*, September 29, 1971.
[119] See magazine *Visión* summary of Nicolai Bulganin's comments regarding Soviet policy in Latin America, Folder 501, Box 59, Nelson Rockefeller Files, RAC; see also "The Americas: Thin Red Line," *Time*, January 30, 1956, https://time.com/archive/6826700/the-americas-thin-red-line/ (accessed October 31, 2024).
[120] In his study, Raúl Asensio notes that the USSR did support biodiversity expeditions to Peru and other nations of Latin America, but these took place mainly in the early 1930s and the 1970s. See Asensio, *Breve historia*, 66-67.
[121] "American Book Program," c. December 12, 1955, Folder 501, Box 59, Nelson Rockefeller Files, RAC.
[122] See Richard H. Ives and Robert M. Bochar, "From the Colorado River to the Nile and Beyond: A Century of Reclamation's International Activities," in *The Bureau of Reclamation: History Essays from the Centennial Symposium*, Vol. 2 (Denver: U.S. Department of the Interior, 2008), 669.

"it probably is capable of attacking any wheat now grown commercially in this hemisphere."[123] Its Peruvian origin, they added, "makes that country of particular interest in the study of the control of this important cereal disease."[124] In this race against nature, the Rockefeller officers' sense of urgency matched, in many ways, that of U.S. intelligence agents. Communism would move outward from the Soviet Union; wheat rust would move outward from Peru. Both needed to be contained.

Throughout the 1950s, several institutions collaborated on rust research in Peru, including the U.S. Department of Agriculture, the University of Minnesota, the Rockefeller Foundation (RF), and Peru's National Agrarian University La Molina. This research, as RF officers explained, involved "sending world wheat collections to Peru which are planted and then inoculated with rust collections from several wheat-growing areas of Peru. Reaction notes are taken," they continued, "and subsequently the races of rust involved are identified." These results, it concluded, are "of great value to wheat breeders in every part of this hemisphere."[125]

The policy of containment by rural development continued for years. In a 1965 message to soil scientists regarding research abroad, Matthew Drosdoff of the U.S. Department of Agriculture stated, "Our objective has been the same since the end of World War II," namely, "to strengthen the forces of freedom and progress" and allay "the false appeal of communism or other freedom suppressing dogmas." In "less-developed countries," he stated, "the threat of communist subversion shows no sign of letting up. With the Russian and Chinese communists

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[123] Memorandum, J. George Harrar to W.W., June 23, 1952, Folder 34, Box 4, Record Group 1.1, 331 Peru, RAC; emphasis added.
[124] See "Grant in Aid to National College of Agriculture, La Molina, Peru," December 19, 1952, Folder 34, Box 4, Record Group 1.1, 331 Peru, RAC.
[125] See "Grant in Aid to National College of Agriculture, La Molina, Peru," December 19, 1952.

battling for leadership of the communist parties around the world, there is much evidence of increasing vigor in the communist effort to seize control in underdeveloped countries."[126]

In recent years, scholars have challenged traditional Green Revolution studies, which examine, in a mostly negative light, the exportation of U.S. farming technology and political ideologies.[127] As these scholars point out, U.S. policy makers did not suddenly bring modern agriculture to regions such as Latin America; modernization projects were often well under way. Moreover, not all technology flowed outward from the United States; significant exchange occurred beyond the purview of U.S. policy makers. Socialist China was an international leader in agricultural research, but that history does not fit in the U.S.-centered, Cold War narrative.[128] While these new narratives are vital, the role of the United States in agricultural research in Latin America remains an important part of many countries' unique histories of green revolution.

In Peru, U.S. scientists and their sponsors, to borrow the words of historians Andra B. Chastain and Timothy Lorek, "made material the political ideologies of the era."[129] Alongside the RF, several universities carried out long-term development projects. In 1954, likely in the wake of the Guatemalan coup, the Department of Soil Sciences at North Carolina State University

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[126] Matthew Drosdoff, "Our Stake in World Wide Agricultural Development," Soil Science Society of North Carolina, Eight Annual Meeting, 1965, 36-37, NC-State Department of Crop and Soil Sciences, Raleigh, NC.
[127] See, for example, Norman Norman Borlaug, et. al., "A Green Revolution Yields a Golden Harvest," *Columbia Journal of World Business*, Sep.-Oct. 1969, 9-19; Clifton R. Wharton Jr., "The Green Revolution: Cornucopia or Pandora's Box," *Foreign Affairs*, 47 (April, 1969) 464-476; Deborah Fitzgerald, "Exporting American Agriculture: The Rockefeller Foundation in Mexico, 1943-53," *Social Studies of Science* 16, no. 3 (Aug. 1986), 457-483; Angus Wright, *The Death of Ramón González: The Modern Agricultural Dilemma* (Austin: University of Texas, 1990); John H. Perkins, *Geopolitics and the Green Revolution: Wheat, Genes, and the Cold War* (New York: Oxford University, 1997); Vandana Shiva, *The Violence of the Green Revolution: Third World Agriculture, Ecology, and Politics* (Louisville: University of Kentucky, 2016); Douglas R. Hurt, *The Green Revolution in the Global South: Science, Politics, and Unintended Consequences* (Tuscaloosa: University of Alabama, 2020).
[128] See Prakash Kumar, et. al., "Roundtable: New Narratives of the Green Revolution," *Agricultural History* 81, no. 3 (2017): 397-422; Tore Olsson, *Agrarian Crossings: Reformers and the Remaking of the US and Mexican Countryside* (Princeton: Princeton University, 2017); *Itineraries of Expertise: Science, Technology, and the Environment in Latin America*, eds. Andra Chastain and Timothy Lorek (Pittsburg: University of Pittsburg, 2020); Gabriela Soto Laveaga, "The Socialist Origins of the Green Revolution: Pandurang Khankhoje and Domestic 'Technical Assistance,'" *History and Technology 36*, no. 3-4 (2020); Lorek, *Making the Green Revolution.*
[129] *Itineraries of Expertise*, 3.

received federal funding to launch a "mission to Peru" that would seek to boost soil fertility and crop yields.[130] This project lasted until the late 1980s. Several faculty members spent large portions of their careers there.[131] Also in the 1950s, scholars from Cornell University launched an applied anthropology project in the state of Ancash. After renting the Hacienda Vicos, they worked to turn former tenants into successful small farm owners.[132] This project received significant press coverage, including a visit in 1962 from soon-to-be U.S. Senator Edward Kennedy. Raúl Asencio argues that such visits helped keep hacendados from shutting down the project because they perceived it as a threat to their control in rural Peru.[133]

Most projects, however, strengthened, not threatened, hacienda agriculture, which, in turn, explains why significant investments in agricultural science neither stemmed migration to Lima nor forestalled land conflicts and community mobilization in the Andes. The goal of U.S. institutions was simply to boost agricultural productivity. Embracing a faith in technology as a force in itself, most foreign agronomists worried little about the social dynamics in Peru. Naturally, this attitude favored haciendas. The Commission on Agrarian Reform and Housing, which the RF helped sponsor, further exemplifies hacienda control in Peruvian farming. After taking stock of the barriadas in Lima, the commission in 1958 shifted its focus to the question of

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[130] Although the month that the project began is unclear, records indicate that the agreement was signed in 1954, but NC-State faculty did not arrive until 1955. See Ralph J. McCracken, "The History of Soil Science at North Carolina State University, 1989," 47-49, 57-60. NC-State Department of Crop and Soil Science Library, Raleigh, NC.
[131] George Nadermann, in conversation with author, December 8, 2024; Stanley Buol, in conversation with author, December 7, 2024; both individuals are faculty emeriti of the NC-State Department of Crop and Soil Science.
[132] See "Vicos: Democracia Social en Acción," *La Prensa*, February 15, 1959; "Constatan en Vicos la Miseria de los Indígenas," *La Prensa*, February 4, 1959, Hemeroteca, Biblioteca Nacional; *Peasants, Power, and Applied Social Change: Vicos as a Model*, eds. Henry F. Dobyns, et. al. (Beverly Hills: Sage, 1964); Jason Pribilsky, "Development and the 'Indian Problem' in the Cold War Andes: 'Indigenismo,' Science, and Modernization in the Making of the Cornell-Peru Project at Vicos," *Diplomatic History* 33, no. 3 (June 2009), 405-426; *Vicos and Beyond: A Half Century of Applying Anthropology in Peru*, eds. Tom Greaves, et. al. (Lanham, MD: Rowman Altamira, 2010).
[133] Asencio, *Breve historia*, 98-103, 123.

rural land tenure. In September, Pedro Beltrán wrote to the RF to request funding for a tour of land tenure systems in Latin America and Europe.

Beltrán embodied the Limeño elite. He was a friend of David Rockefeller, the New York investment banker (and younger brother of Nelson), which explains his confidence in making the request.[134] The two had met at the London School of Economics in 1937. During World War II, Beltrán served as ambassador to the United States. Later, he became the head of Peru's Central Bank where, in the opinion of David Rockefeller, he "almost single-handed[ly]" revived the Peruvian economy. Near the end of the right-wing regime of General Manuel Odría (1948-1956), the Peruvian government imprisoned Beltrán because of his political opposition. David Rockefeller, along with Orvil E. Dryfoos of the New York Times, helped secure his release.[135]

In 1958, David Rockefeller endorsed Beltrán as one of the most "outstanding and able Latin Americans" that he knew.[136] The foundation, in turn, warmly considered Beltrán's idea of a world tour. Upcoming president J. George Harrar wrote that, "Peru, by reason of its topography, has a minimum of farm land [sic] most of which lies in the Sierras. The landholding pattern is archaic and traditional rather than economic and effective." Again, the emphasis was on economics and production. "There is currently a growing desire on the part of thinking Peruvians," Harrar continued, "to reform the situation in a rational fashion."[137] The question, of course, was what kinds of reforms thinkers (and landholders) like Beltrán would pursue.

One option was land redistribution. Throughout the twentieth century, many Latin American nations experimented with this agrarian reform.[138] In the Bolivian Revolution of 1952,

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[134] Excerpt from Diary of J.G. Harrar, September 18, 1958, Folder 49, Box 5, Record Group 1.2, Peru 331, RAC.
[135] Inter-Office Correspondence, DR to JGH, September 19, 1958, Folder 49, Box 5, Record Group 1.2 Projects, Peru 331, RAC.
[136] Inter-Office Correspondence, DR to JGH, September 19, 1958.
[137] Diary Excerpt, J.G. Harrar, September 18, 1958, Folder 49, Box 5, Record Group 1.2, Projects, Peru 331, RAC.
[138] See Victor Bulmer-Thomas, *The Economic History of Latin America since Independence*, 2nd Edition (New York: Cambridge University, 2003), 310-312.

which took place next door to Peru, reformers redistributed approximately one-fourth of Bolivia's farmland.[139] In Peru during the late 1950s, authorities debated possible applications of land reform extensively.[140] Yet this option, if seriously implemented, meant that landowners like Beltrán and other members of the commission could lose their large holdings as well as their status in Peruvian society. In a way, the commission faced a tremendous conflict of interest.

Yet the commission never seriously contemplated land redistribution. From the outset, Beltrán believed landless comuneros should continue migrating—but not to Lima (where he lived); rather, he looked for places where they would be out of the way. "The rate of growth … among the indians [sic] in the mountains is one of the highest in the world," he wrote to the RF. "The standard of living therefore cannot rise…. Conditions at an altitude of eleven thousand feet and more are not propitious to the development of a prosperous agriculture[;] the future is very black unless something is done." One promising solution, he continued, emerged during a severe drought of 1955 and 1956 when "the indians … starting moving east towards the lowland in the direction of the Amazon basin." A second option, in Beltrán's view, would be to provide irrigation in the coastal deserts so that people from the Andes could resettle.[141]

To make a case for funding, Beltrán knew which buttons to push. Resettlement, he wrote, "is perhaps the best solution to the indians' population problem up in the hills where the communists are most active and are really meeting with success." Referring to the idea of land for everyone, Beltrán continued, "as is well known the communists [use] that [promise] more than anything else with great success." In short, he concluded, "land hunger" had created a

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[139] See Carmen Soliz, *Fields of Revolution: Agrarian Reform and Rural State Formation in Bolivia, 1935-1964* (Pittsburgh: University of Pittsburgh, 2021).
[140] See "Sobre la Comisión para la Reforma Agraria," Intervenciones de Senadores Miguel Dammert Muelle, Alberto Arca Parró, and Julio Ernesto Portugal, *La Prensa*, January 3, 1959, Hemeroteca, National Library, Lima.
[141] Letter from Pedro Beltrán to the Rockefeller Foundation, September 8, 1958, Folder 49, Box 5, Record Group 1.2, Projects, Peru, 331.

situation in which "any agitator will thrive," and "many people think that [such agitators] are developing in the highlands of Peru and Bolivia what can properly be called a powder keg."[142]

This image was enough, even if Beltrán had not substantiated his claims. One senior RF officer wrote that his letter was "thoughtful, realistic, and seems to have a grasp of the complex problems involved in land reform. If [Beltrán has] competent and reasonably honest men to work on [the project]," he concluded, "I would be in favor of going ahead."[143] The next month, the foundation allocated $22,000 for the commission's tour. Soon thereafter, four members and three advisors began traveling.[144] Sometimes they travelled together; other times, they split up. In total, they conducted interviews and observed land tenure patterns in Portugal, Spain, Holland, Italy, Israel, India, Bolivia, Brazil, Argentina, Uruguay, and Mexico.[145] Although Beltrán had no intension of adopting the radical redistribution models of Mexico and Bolivia, he justified travel to these nations in order to study what *not* to do. Rockefeller officers deferred to his judgment. With Scrooge-like indifference, they parroted Beltrán's reasoning: "the orderly settlement of the *surplus* high-altitude population in the more productive middle altitudes is … the best solution to a social problem that is rapidly developing into 'powder keg' proportions."[146]

What Beltrán and the Rockefeller officers did not understand is that governments generally have far less control over migration than they think they do. Even disadvantaged groups cannot be moved around like checkers. In Peru, freedom of movement had long been a pillar of Andean communities' autonomy. In the colonial era, it had foiled Viceroy Toledo's idea

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[142] Letter, Pedro Beltrán to the Rockefeller Foundation, September 8, 1958.
[143] Memo from DR to JGH, September 18, 1958, Box 5, Folder 49, Record Group 1.2, Peru 331, RAC
[144] See Letter, Pedro Beltrán to Rockefeller Foundation, February 19, 1959, Folder 49, Box 5, Folder 49, Record Group 1.2 Projects, Peru 331, RAC.
[145] See Letter, Pedro Beltrán to Rockefeller Foundation, October 15, 1958; see also Letter from Ernesto Alayza Grundy to Rockefeller Foundation, March 15, 1960, Folder 49, Box 5 Group 1.2 Projects, Peru 331, RAC.
[146] Grant for Commission on Agrarian Reform and Housing, October 24, 1958, Box 5, Folder 49, Record Group 1.2, Peru 331, RAC; emphasis added. In Charles Dickens' 1843 *A Christmas Carol*, Ebenezer Scrooge famously proposes that some of England's poor should die in order to "remove the surplus population."

of controlled resettlement. In the republican era, as Florencia Mallon argues, seasonal migration served as a defense mechanism against mining and agricultural capitalists who sought to organize campesinos into a permanent labor force. "Since [seasonal migration] served both to channel surplus labor out of the village and to bring extra income in," she writes, "it was an extremely adaptable safety valve."[147] In the late 1950s, neither the Peruvian government nor the Rockefeller Foundation had given Andean communities any reason to choose to migrate to the edge of the Amazon or to coastal deserts. Lima, of course, remained the main destination.

Throughout 1959, while the commission was conducting its interviews abroad, the situation in Lima bore out this reality. Growing barriadas appeared increasingly in the news for their environmental problems, such as rats, raw sewage, and fires.[148] On at least one occasion, firefighters had to use wastewater to put out a blaze.[149] On another, a rat ventured into Lima's electricity control board and caused a city-wide blackout and considerable chaos in the streets.[150] Meanwhile, thousands of impoverished families sustained themselves by working in *El Montón* (the mountain), an enormous and ever-growing trash heap, which journalists called "perhaps the largest deposit of waste, garbage, rotten material, and hive of infection in all South America."[151]

The Rimac River provides other examples. At the start of 1959, heavy rains in the central Andes caused the river to flood at multiple points on its way to Lima. By the time it reached the city, it carried several tons of mud and rock that turned some of the city's water supply tanks into

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[147] Mallon, *Defense of Community*, 248.
[148] See "Llevarían a Otras Barriadas a Moradores de Uchumayo," "Las Aguas Negras Inundaron Una Arteria de El Porvenir," *La Prensa*, July 29, 1959, Hemeroteca, Biblioteca Nacional.
[149] "Un Incendio Destruye Parte de Vieja Finca; Parece que 2 Niños Jugaban con Fósforos," *La Prensa*, December 22, 1959, Biblioteca Nacional.
[150] "Rata Provocó Gran Apagón Ayer en Lima," *La Prensa*, June 10, 1959, Biblioteca Nacional.
[151] "En el Corazón de Lima: Un Infierno de Basura," *La Prensa*, March 1, 1959; "Sin la Oposición de Pobladores Arrojan Basura en El Montón," *La Prensa*, March 16, 1959; "Eliminar la Basura de Lima Costaría 4 Mil Soles al Día," *La Prensa*, March 17, 1959. Biblioteca Nacional.

"veritable swamps."[152] Around this time, a six-year-old boy from a hut in the barriada Jardín Huascarán, located on the banks of the river, drowned when he fell into the rushing water as he played with his friends.[153] The boy's young father was a migrant from Cuzco.[154] Thirteen days later, a neighbor saw the body rise to the water's surface some two hundred and fifty meters down river, just beyond a man-made waterfall. When he tried to recover it, the flowing river pulled him under and smashed his chest against sharp rocks, killing him too.[155]

To be fair, the Commission on Agrarian Reform and Housing could not have resolved all the problems related to migration and urbanization, but its work came to nothing. Following the tour, the Commission prepared a long final report that offered no concrete recommendations except: "[Our] human and financial effort be focused … on resolving the urgent problems that require immediate action, namely increasing cropland and elevating productivity through technical, economic, and social assistance."[156] In essence, the commission had taken over one year and $22,000 to say, "Let's *try* to help communities, but let's not bother the haciendas."

Events abroad may have contributed to this decision. Although the commissioners did not stop in Cuba, their trip coincided with the military triumph and initial statecraft of Fidel Castro in early 1959. In fact, during the first week of March, a Cuban delegation of one woman and eight men visited Lima as part of a goodwill tour of Latin America. As they deboarded their plane, they received a warm welcome. The Peruvian newspaper *La Prensa*, of which Pedro Beltrán was director, reported happily that the "beautiful artist and former guerrilla Violeta Casals," along

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[152] "Si Sigue la Creciente, Faltaría Agua Potable," *La Prensa*, 27 de febrero de 1959; "Aguas Entran en Matucana … El Agua Potable Fue Racionada en la Capital," *La Prensa*, 8 de marzo de 1959. Biblioteca Nacional.
[153] "Padre Hace Patético Llamado…," *La Prensa*, 1 de mayo de 1959. Biblioteca Nacional.
[154] "Alejando García, padre del año, pide ocupación estable," *El Comercio*, 6 de mayo de 1959. Biblioteca Nacional.
[155] "Lágrimas y Honda Desolación Hubo Ayer en los Entierros…" *La Prensa*, 6 de mayo de 1959; Mario Gómez L., "La Venganza del Rimac," *La Prensa*, 10 de mayo de 1959. Biblioteca Nacional.
[156] Comisión para la Reforma Agraria y la Vivienda, *La Reforma Agraria en el Perú: Exposición de Motivos y Proyecto de Ley* (Lima: 1960), 117. Instituto de Estudios Peruanos, Lima.

with "Fidel Castro's bearded revolutionaries" were met with applause by members of APRA and others who cheered for Cuba, Castro, and Haya de la Torre. In his remarks to this crowd, delegation leader Jorge Enrique Mendoza declared that "economic independence and social justice are the two great bastions that we have won with our rifles in hand."[157]

Over the next few days, many residents, including journalists at *La Prensa*, did not hide their excitement that the individuals who had "fought against tyranny" in the Sierra Maestra were now touring Lima in their "elegant olive-green uniforms." While Casals had a magnetic effect on many cameras, one photo showed the delegation in an open car making its way to its hotel, as if in in a parade, while bystanders cheered.[158] The next evening, a group of enthusiastic students from the National University of San Marcos gathered in a public plaza to meet the delegation. The students ended up carrying the Cubans back to their hotel on their shoulders.[159] As the Cubans gave speeches at public monuments and even once when they stopped at a fruit stand, "the public," according to *La Prensa*, "manifested its fondness and admiration by applauding warmly."[160] Outside the group's hotel, a rigid, on-duty security guard broke ranks and asked delegate Francisco Lago Viera what kinds of weapons they had used in the revolution. "We used automatic rifles," Lago responded, "but I would like to have had pistols like yours."[161]

The Cuban visitors were gifted diplomats. When fielding "thorny questions" at press conferences, they deftly took turns speaking, as if they were passing a soccer ball, *La Prensa* reported. Regarding Cuba's political position, Mendoza declared emphatically that "we are

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[157] "Rebeldes Cubanos en Lima: Llegaron los Barbudos," *La Prensa,* 3 de marzo de 1959; "11 Fidelistas y Una ex Guerrillera Arribarán Hoy para Exponer Plan," *La Prensa*, 2 de marzo de 1959. Biblioteca Nacional.
[158] See "Rebeldes Cubanos en Lima," "No Luchó el Jefe de la Delegación Rebelde; Fue el Locutor de la Radio de '26 de Julio,'" "Elegantes Uniformes Visten los Barbudos," La Prensa, 3 de marzo de 1959. Biblioteca Nacional.
[159] "Sanmarquinos Recibieron a los Fidelistas: Barbudos Visitaron la Cámara de Diputados." *La Prensa*, 5 de marzo de 1959, Biblioteca Nacional.
[160] Los Barbudos de Fidel Fueron Muy Aplaudidos: Colocaron Aparatos Florales en Monumentos y Revelaron Ser Expertos en Publicidad," *La Prensa*, 4 de marzo de 1959. Biblioteca Nacional.
[161] "El Rebelde y El Policía," *La Prensa*, 4 de marzo de 1959. Biblioteca Nacional.

neither anti-Yankee nor anti-communist, and we're not Yankees or communists either. The 26th of July Movement is eminently democratic."[162] Not all Limeños, however, agreed with this statement. On March 5th, the Nicaraguan refugee and dissident Fabio Gallo invited the Cuban delegation to join him for lunch in the Waikiki, an exclusive club near the beach in the wealthy district of Miraflores. When the Cubans entered, several club members began to heckle them, shouting things such as "Communists, get out!" The president of the club quickly picked up a microphone and asked the Cubans to leave.[163] His wealthy patrons were his priority.

Although the Cubans enjoyed a nice lunch at a different restaurant, difficulties continued. At a press conference that evening, a reporter from *La Prensa* began the session with a loaded question about what legal provisions in Cuba allowed Fidel Castro to ignore the ruling of a judge. The reporter referred to Castro's differences with a judge who had absolved forty-three Cuban air pilots accused of bombing cities during the revolution. After groping for some justification for Casto's unilateral action, *La Prensa* reported, "Mendoza declared that he was not well informed on the matter and that surely the matter had been distorted by news agencies … to undermine the … revolution."[164] It is unclear why this journalist at *La Prensa* took a harder line with the Cuban delegation than his colleagues. His question may reveal some pressure from above. Pedro Beltrán and other senior staff members at *La Prensa* could have been leery about some aspects of the Cuban revolution, or its popularity among Peruvians, and they could have wanted their reporters to stop lionizing the revolutionaries.

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[162] Alfonso Reyes M., "'No Somos Anti ni Procomunistas,' Dicen los Barbudos," *La Prensa*, 4 de marzo 1959. Biblioteca Nacional.
[163] "Los Barbudos Tuvieron un Día Infortunado: Los Sacan de Waikiki y Pasan Apuros en TV," *La Prensa*, 6 de marzo de 1959. Biblioteca Nacional.
[164] Los Barbudos Tuvieron un Día Infortunado."

One aspect that certainly caught their attention was land reform. As early as February, *La Prensa* reported on Castro's plans to give farms to campesinos.[165] While in Lima, the delegates answered many questions about how land reform would take place. They explained that Castro would not do away with private property, but he would place limits on the private landholdings and nationalize the sugar estates. This latter policy, they continued, would be the first step toward industrialization in Cuba, and it would help end the tradition of monoculture.[166] Even after the delegation moved on in its goodwill tour, *La Prensa* continued to cover the topic of land reform in Cuba. In May it reported that, "agrarian reform in Cuba will be real within one year."[167]

In their final report of 1960, members of Peru's Commission on Agrarian Reform and Housing did not say that observations of Cuban policy led them to decide against land reform. However, Pedro Beltrán was clearly abreast of reform in Cuba and of attitudes among U.S. leaders. Also in May, for example, *La Prensa* noted journalist Stuart Novins' affirmation, in the predictable language of U.S Cold Warriors, that Cuba was becoming a "Communist beachhead in the Caribbean."[168] It is possible that the Commission on Agrarian Reform and Housing recommended only perfunctory government action because, among other motivations, it did not want Peru to be like Cuba. At any rate, it put its faith in the continuance of the hacienda system.

This approach aligned, in many ways, with over two decades of Rockefeller projects in Peru. As a foreign entity, the foundation, had less prerogative than the Peruvian government to pursue political and social change, yet both entities ultimately conducted research that reinforced internal colonialism. The foundation's involvement in the Peruvian Andes began in the 1930s,

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[165] "Fidel Castro Inaugurará Reforma Agraria en Cuba," *La Prensa*, 25 de febrero de 1959; "Hoy Comenzará Fidel Castro Ruz Entrega de Tierras a Campesinos," *La Prensa*, 1 de marzo de 1959. Biblioteca Nacional.
[166] Reyes, "No Somos Anti ni Procomunistas."
[167] "La Reforma Agraria en Cuba Sería Real Dentro de Un Año," *La Prensa*, 5 de mayo de 1959, Biblioteca Nacional.
[168] "La Reforma Agraria en Cuba …Dentro de un Año"; "Cuban Envoys Denounce 'Red Beachhead' Charge," *Miami Herald*, May 18, 1959. https://www.newspapers.com/newspage/618973747/ (accessed March 5, 2025).

before population growth and the Cold War began shaping research agendas. During this decade, it sponsored the National Institute of Andean Biology, which studied human and, to a lesser extent, livestock reproduction at high altitudes. With Rockefeller funding, the directors organized laboratories in Lima; Morococha, Junín (4540 meters above sea level); and La Oroya, Junín (3700 meters). In the latter two cases, mining companies, including the U.S. Cerro de Pasco Copper Corporation in La Oroya, provided running water, electricity, and heat, as well as lodging for Rockefeller researchers.[169] The companies were interested in the research because they needed workers who could adapt to hard labor at high altitudes.

In its findings, the institute promoted a kind of environmental determinism that portrayed comuneros as ideal laborers. As Carlos Monge, Dean of the College of Medicine at San Marcos University, summarized in 1942: "The men of the Andes may be considered as belonging to a climate-physiological variety of the human race. In fact, they are closely related to their geographical surroundings: altitude, radiation, humidity, ionization, and so on." He continued, "the sociological behavior of such men and the telluric environment appear as one biological system which cannot be divided, as a climate-physiological unit." When Andean residents move down to the coast for work, he added, "these persons are like migratory birds; they have the urge to return home."[170] Mass migration to Lima, of course, soon rendered this conclusion absurd.

Another leading scientist, Alberto Hurtado, emphasized the "astonishing ability of high-altitude man to scrimp on oxygen use, to depress his production of lactic acid, and to get along with less oxygen debt…. The biological processes of respiration," he further explained "are conditioned at every turn by a purely physical phenomenon—the behavior of gases—and we

[169] See letter, Dr. Alberto Hurtado to Dr. Robert A. Lambert, September 26, 1938, Folder 6, Box 1, Institute of Andean Biology, 331 Peru, RAC.
[170] Carlos Monge, "Life in the Andes and Chronic Mountain Sickness," January 1942, Folder 8, Box 1, Institute of Andean Biology, 331 Peru, RAC.

want to know how it is that … the Morococha native is apparently better able than his sea-level cousin to accommodate himself to the gas laws."[171]

In its research on livestock reproduction, the institute also favored hacendados. In 1945, Carlos Monge lamented that "the sheep wool industry produces such a high profit that the [hacienda] farmers do not need, yet, to apply … scientific techniques for fear of changing methods." However, he continued, for the institute's upcoming plan to send "semen from the coast to the high altitude and to develop a complete study of the physiology of reproduction," Emilio Guimoye, a wealthy coastal hacendado, had agreed to help with expenses.[172] To the Rockefeller Foundation, hacendados, even if they did not fully recognize it, were the logical collaborators on research projects, the only ones capable of applying science to agriculture.

By 1954, the Rockefeller Foundation had provided over $160,000 for the Institute of Andean Biology.[173] This amount, however, represents a tiny fraction of its investments. From the 1940s onward, as U.S. policy makers promoted rural development, the foundation generously sponsored two main institutions in Lima: 1) the Graduate School of the National Agrarian University La Molina and 2) the College of Veterinary Medicine at the National University of San Marcos. The archival record includes folder after folder on buildings erected, laboratory equipment purchased, training and travel scholarships disbursed, and thesis research funded.[174] Thanks to this funding, foundation officers reported in 1961, "both [institutions] are now among the top two or three schools in their respective fields in all of Latin America."[175]

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[171] Alberto Hurtado, in "Excerpt from Trustees' Confidential Report," October 1, 1954, Folder 8, Box 1, Institute of Andean Biology, 331 Peru, RAC.
[172] Letter, Dr. Carlos Monge to Dr. Harry M. Miller, June 1, 1945, Folder 10, Box 2, Institute of Andean Biology, Record Group 1.1, 331 Peru, RAC.
[173] See "Excerpt from Trustees' Confidential Report," October 1, 1954.
[174] See, for example, Boxes 4-8, Record Groups 1.1 and 1.2, Projects, Series 331 Peru, RAC.
[175] "Grant in Aid to the Agrarian University, La Molina … for … Support of a National Scientific Symposium on Animal Husbandry," Folder 36, Box 5, Record Group 1.2 Projects, 331 Peru, RAC.

While these rankings mattered, the foundation worried surprisingly little about *how* new technology would move from the coast to the Andes—how, in other words, it would improve the situation in Peru's alleged hive of poverty and communist agitation. As philanthropists, the Rockefeller officers mainly considered which institutions were most prepared to make use of their grants. In such evaluations, the Andean region could not usually compete with the coast. In the 1940s, for example, one officer expressed his opinion of the University of San Antonio Abad in Cusco, one of the main universities in the southern Peruvian Andes. This institution "is small and dreadfully poor," he wrote, "housed in the old Jesuit convent on the main plaza. Its library is pathetic … [and] the salary of a professor runs about $50 a month."[176] Rather than inspiring interest from the Rockefeller Foundation, such conditions suggested that an investment here would be tantamount to throwing money away. Most funding, therefore, stayed in Lima.

The foundation also spent its energy selecting Peruvian scientists that showed potential and could collaborate with affiliates from U.S. institutions. In its correspondence, the foundation often noted the potential of these individuals by highlighting the inadequate support of their home institutions. Of Carlos Vargas at the University of Cusco, one officer noted in 1946 that he "is one of two science professors … who are attempting, against considerable handicaps, to do scientific work."[177] Another officer later wrote, "I tend to have little faith that the University of Cuzco takes advantage of the capabilities of its best scientists."[178]

Despite their favored status, San Marcos and La Molina were not exempt from regular criticism. In 1955, E.C. Stakman of the University of Wisconsin lamented that some faculty members at La Molina wanted to "clip [the] wings" of the Rockefeller grantee. "It is

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[176] Letter from Carl Sauer, March 24, 1942, recipient unclear, Folder 64, Box 7, Record Group 1.2, 331 Peru, RAC.
[177] "Grant … National University of Cuzco," August 2, 1946, Folder 64, Box 7, Record Group 1.2, 331 Peru, RAC.
[178] Memo, J.G. Harrar to Lewis M. Roberts, June 27, 1969, Folder 62, Box 7, Record Group 1.2, 331 Peru, RAC.

unfortunate," he wrote, "that in so many Latin American countries the primary objective seems to be the advancement or retardation of individuals rather than the advancement of science."[179] In 1958, Rockefeller officers spoke of a professor at the University of San Marcos in similar terms. "Professor Ramon Ferreyra … is one of the few capable and active investigators at the Faculty of Sciences … and almost certainly holds a better record than any of his colleagues for regular publication as well as for effective and generous cooperation with investigators in … institutions outside of Peru."[180] As another example, the foundation bemoaned an internal research rivalry between the La Molina Experiment Station and the Agrarian University itself.[181] Anyone with experience at a university can appreciate the frustration of challenges such as these, yet it is also clear that the foundation remained largely detached from the rural Andes.

This detachment occasionally manifested itself in racial terms. From 1955 to 1957, as part of the grains race in Peru, Rosendo Postigo, an agronomist at La Molina, experimented with stem rust in experimental wheat fields. The Rockefeller Foundation had pledged to sponsor the research, but Postigo failed to request the necessary approvals for some expenditures. To the foundation, the oversight was heresy. Dr. Stakman attributed the error to race. "Sometimes Postigo is really all Indian," he wrote, "and when he makes up his mind, he goes ahead regardless of the consequences. One must admire his dedication and zeal, although not his judgment."[182] To at least some Rockefeller officers and scientists, being "Indian" meant working harder but not smarter. While this comment is isolated, it helps explain why the foundation

[179] Letter, E.C. Stakman to J.G. Harrar, December 30, 1955, Folder 55, Box 6, Record Group 1.2, 331 Peru, RAC.
[180] "Grant in Aid to University of San Marcos … for research and teaching in taxonomic botany and plant geography," August 12, 1958, Folder 66, Box 7, Record Group 1.2, 331 Peru, RAC.
[181] Letter, J.A. Rigney to Lewis M. Roberts, April 25, 1957, Folder 47, Box 5, Record Group 1.2, 331 Peru, RAC.
[182] Letter, E.C. Stakman to J.G. Harrar, June 24, 1957, Folder 56, Box 6, Record Group 1.2, 331 Peru, RAC.

favored urban institutions and scientists. Time and again, it invested in the coastal sliver of Peru with only the vaguest of hopes that new technology would somehow trickle up to Andean farms.

Even if technology did trickle up, two factors undermined its effectiveness. The first was the environment. Promising results with stem rust on the coast mattered little in the Andes because black rust thrived at sea level, while yellow rust, a different fungus variety, thrived in the highlands. As another example, in early 1958, Dr. J.E. Wille of the Entomology Department of the La Molina Experimental Station reported on pest control experimentation. "The investigations of many insects of the Andes, living over 3000 mts., have failed," he wrote, "because these insects brought down to our laboratory in La Molina could not be reared successfully for the climatic and environmental differences." He continued, "We have specially [sic] the problem of the Andean potato weevil … of high economic importance for the potato culture of Peru."[183] This weevil only lived at high altitudes. Although Rockefeller officers presumably read this report, like Pizarro, they still preferred to operate on the coast.

Even as the need to boost national food production became increasingly obvious, many authorities remained reluctant to invest in Andean agriculture. In the late 1950s, the Minister of Agriculture repeated a stereotype that crops such as sweet potatoes, yuca, beans, lima beans, citrus fruit, and others simply "do not prosper in the sierra," but only on the coast. In a response that reveals politicians' growing awareness of the Andes, Senator Miguel Dammert Muelle, who had been educated in Germany and previously served as mayor in an upper-class sector of Lima, stated edgily on the Senate floor: "I invite Mr. Minister [to accompany me to the Andes] and will strive to take care of him so that he does not catch a cold or come down with *soroche* (altitude sickness) if that is what holds him back." There, he continued, "I shall have the privilege, the

[183] Letter from Dr. J.E. Wille T. to D. John McKelvey Jr., February 25, 1958, Folder 53, Box 5, Record Group 1.2, Peru 331, RAC.

very special privilege, of showing him that [these crops] do indeed prosper … in those mountains that are so scorned, ignored, and unknown. These crops can be and are grown at 2500 meters."[184]

In some cases, the RF did sponsor crop experimentation in the highlands, most notably in the Mantaro Valley of Junín, on the *altiplano* (high plains) of Puno, and in the northern state of Cajamarca.[185] In these cases, however, a second factor limited the extension of technology: gamonalismo. The foundation liked to work with hacendados, and hacendados, as the letter from El Tingo indicates, had no habit of sharing technology with communities. In Cajamarca, the Rockefeller Foundation conducted experiments on Hacienda Edelmira.[186] In the Mantaro Valley, it worked with the Hacienda Casablanca (see Figure 2).[187] In neither case is there any evidence that the foundation took into consideration the interests of neighboring communities.

In fact, on a 1953 visit to the Mantaro Valley, one officer took a photo (Figure 3) of two boys, who appeared no older than ten, working in the vast potato field of a hacienda. They were probably from a local community. In the caption, he wrote, "Boys picking off potato blossoms. Some growers believe that removing the blossoms will increase yield. (There is no good basis for this belief)."[188] This foreign expert cared about yields, not labor. His reference to the hacendado as a "grower" also reveals a positive impression that hacienda farming was akin to U.S. agribusiness. Finally, with his dismissal of the topping practice, he demonstrated his own scientific self-righteousness, which may have been misplaced. After all, Andean civilizations had domesticated, diversified, and cultivated potato species for thousands of years before European

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[184] "Dammert Criticó al Ministro de Agricultura Por la Política que Sigue Sobre Café y Arroz," *La Prensa*, February 4, 1959, Hemeroteca, Biblioteca Nacional, Lima.
[185] See Rosendo Postigo, "Informe de los trabajos de investigación de royas, en el período abril-noviembre de 1957," Folder 56, Box 6, Record Group 1.2, Peru 331, RAC.
[186] See Rosendo Postigo, "Información sobre los experimentos de trigo y avena, colecciones internacionales, en la sierra del Perú, Octubre 1955-Junio 1956," Folder 56, Box 6, Record Group 1.2, Peru 331, RAC.
[187] Folder 2009, "Photograph's Received with JSN's Report on Peru," March 9, 1953, Box 103, 331 Peru, RAC.
[188] Photo, March 11, 1953, Folder 2009: "Photograph's Received with JSN's Report on Peru," Box 103, 331 Peru, RAC.

contact.[189] Moreover, some modern sources indicate that removing blossoms can, in fact, favor potato growth because it prevents nutrients from being diverted to the flowers.[190]

Figure 2. At the Hacienda Casablanca in the state of Junín, the Rockefeller Foundation worked with the large landowners.

[189] See John Reader, *Potato: A History of the Propitious Esculent* (New Haven: Yale University Press, 2009).
[190] "Cultural Tips for Growing Potato," University of California Agriculture and Natural Resources, https://ipm.ucanr.edu/home-and-landscape/potato/cultural-tips/index.html?src=307-pageViewHLS#PRUNING (accessed March 27, 2025).

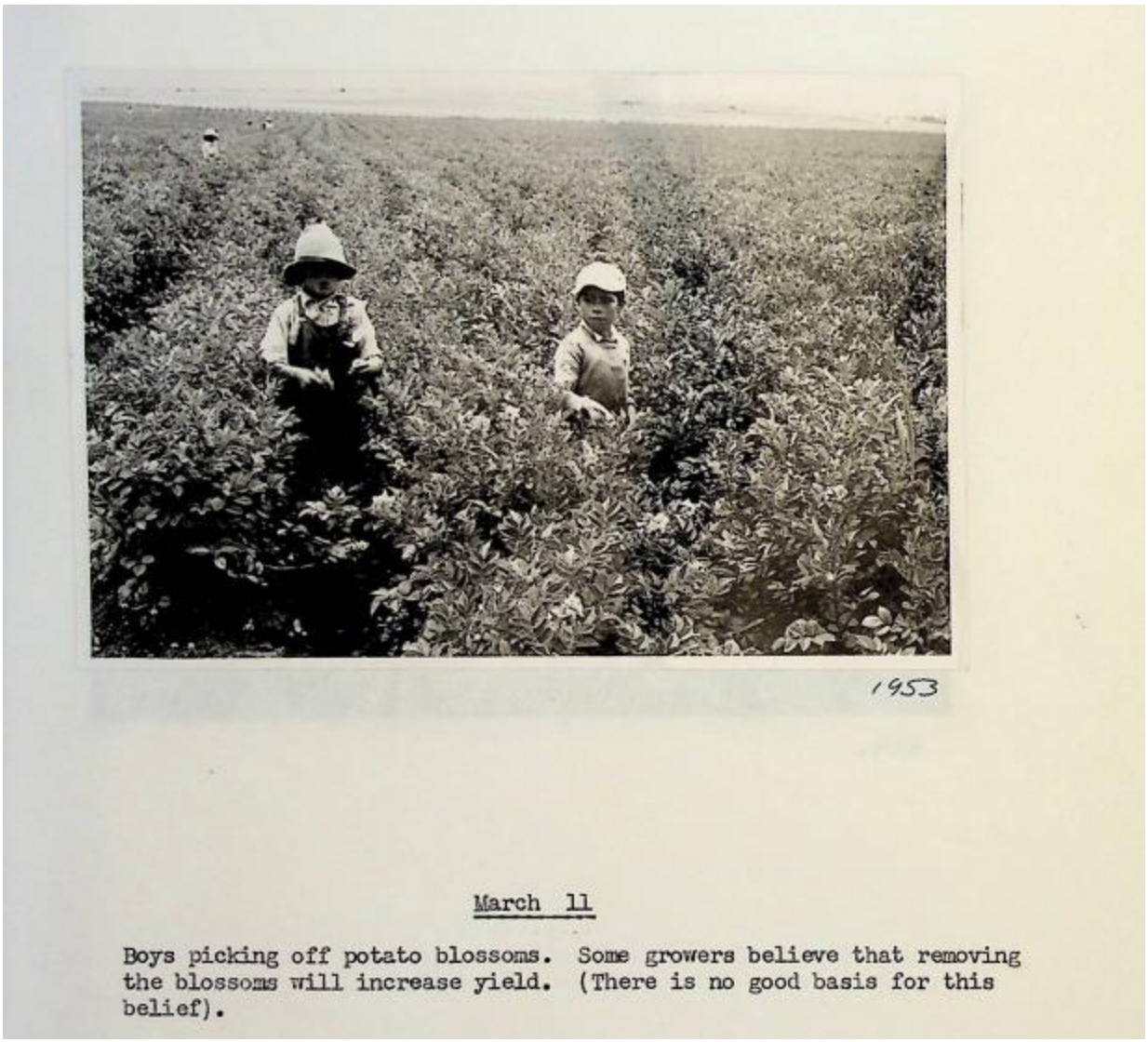

Figure 3. In the 1950s, U.S. scientists in Peru who were funded by the Rockefeller Foundation worried about potato science, not Peruvian society. Thus, their work did not mitigate social unrest during this era.

Throughout the 1950s and 1960s, U.S.-funded agricultural research in Peru consistently excluded Andean communities. The so-called "decade of development" under Presidents John F. Kennedy and Lyndon B. Johnson, hardly reached rural Peru.[191] Even urban projects were not

[191] John F. Kennedy, Special Message on Foreign Aid to the Congress of the United States, March 22, 1961, quoted in "A Report on the Eighth National Conference on International Economic and Social Development," June 15-16, Washington D.C., https://pdf.usaid.gov/pdf_docs/Pcaaa615.pdf (accessed December 3, 2024); see also Mark Atwood Lawrence, *The End of Ambition: The United States and the Third World in the Vietnam Era* (Princeton: University of Princeton, 2021), 1-14.

very effective. In the mid-1960s, the Ford and Rockefeller Foundations, along with US AID, sponsored several national seminars on population control, as well as a new Center for the Study of Population and Development in Lima.[192] Despite generous funding, the center floundered. As one U.S. official observed in 1968, "there has been sharp political and religious opposition to family planning in Peru. This opposition has very likely contributed to the failure of the [Center for Population and Development] to flourish and … to the lack of vigor in [its] activities."[193]

Meanwhile, Andean communities began to take action. The late 1950s and early 1960s saw a wave of nonviolent "invasions," in which communities would move their livestock onto hacienda lands. A ubiquitous term in modern Peru, *invasion* also referred to migrants' occupation or squatting on unpurchased urban land. In 1961, in a land conflict with Cerro de Pasco, the community of Yerusyacán in Junín questioned the accuracy of the term in the Andes. "Community members [have merely] restored the immemorial possession of the rest of their land of which they had been deprived. But the Cerro de Pasco Corporation calls this an 'invasion.'"[194]

In areas that were notorious for gamonalismo, campesino organizers emerged and led collective movements against the old rural order. In 1962, leaders of the Community Movement of Peru declared, "It is a fact that the current political parties of the nation have never taken notice of the tragic situation of communities and that in these parties neither comuneros nor campesinos will find expression or defense of their historic hope for land and liberty." But now, they continued, "It is the campesinos, it is the comuneros, not just the workers or the middle classes, who are called to transform Peru. The transformation will begin in the countryside, not

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[192] See William J. Moore, "Field Trip Report, Peru: March 4-15, 1968," p. 3, Ford Foundation Grants C-D, Microfilm R3472; "Project Agreement Between AID and Centro de Estudios de Población y Desarrollo," December 1, 1967, Ford Foundation Grants C-D, Microfilm R3472, RAC.
[193] William J. Moore, "Field Trip Report, Peru: March 4-15, 1968," p. 1, 7.
[194] "Informe de los comuneros de Yerusyacán," *Periódico Libertad*, December 20, 1961, in Guzmán and Vargas, *Cronología de Movimientos Campesinos,* 73.

the city."[195] Scholar Howard Handelman describes Peru's campesino movement of the early 1960s as "unquestionably one of the largest peasant movements in Latin American history."[196] Virginia Vargas and Virginia Guzmán further observe that this "vast campesino mobilization" did indeed "stretch … the limits of national politics" beyond "urban settings."[197]

In fact, in the presidential election of 1962, Víctor Raúl Haya de la Torre, who had tried to unite urban workers and rural communities, won a plurality of votes. Despite this partial victory, the Peruvian military in the name of stability seized control and organized new elections one year later.[198] This time, Fernando Belaúnde Terry (1963-1968, 1980-1985), a mainstream candidate who had campaigned on a promised of land reform, won. In response, dozens of communities invaded hacienda lands to stake their claims in an anticipatory way. Although Belaúnde did promulgate an agrarian reform law, his administration applied it slowly and hesitated to take on the nation's class of hacienda families.[199]

Communities, on the other hand, did not hesitate. To return to the community of Huasicancha in Junín, which had received recognition in the late 1930s, leaders in 1964 began to protest the encroachment on their lands by the haciendas Tucle and Río de la Virgen, both of which belonged the Tucle Livestock Society. To assert their rights, members moved their sheep onto the hacienda Tucle. The hacendados then filed a complaint with the Ministry of Labor and Indigenous Affairs, which declared the matter "a social problem that merits investigation and study in order to reach a resolution and reestablish public order."[200] To this end, it assigned a

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[195] "Manifiesto del Movimiento Comunal del Perú," January 22, 1962, in Guzmán and Vargas, *Cronología* 112.
[196] Howard Handelman, *Struggle in the Andes: Peasant Political Mobilization in Peru* (Austin: University of Texas, 1975), 121.
[197] Guzmán and Vargas, *Cronología*, 8-9.
[198] See García Bryce, *Haya de la Torre*, 86-88.
[199] Mayer, *Ugly Stories*, 17-19, 185-187; see also Susana Lastarria-Cornhiel, "Agrarian Reforms of the 1960s and 1970s in Peru," In *Searching for agrarian Reform in Latin America*, ed. W. Thiesenhusen (Boston: Allen and Unwin, 1989), 127-155.
[200] Resolución Suprema No. 209, June 16, 1964, Huasicancha, Binder 3, DRA-Junín.

commission of officials from different regional ministries to investigate. The record book of Huasicancha includes a rare handful of photos from the incident.[201]

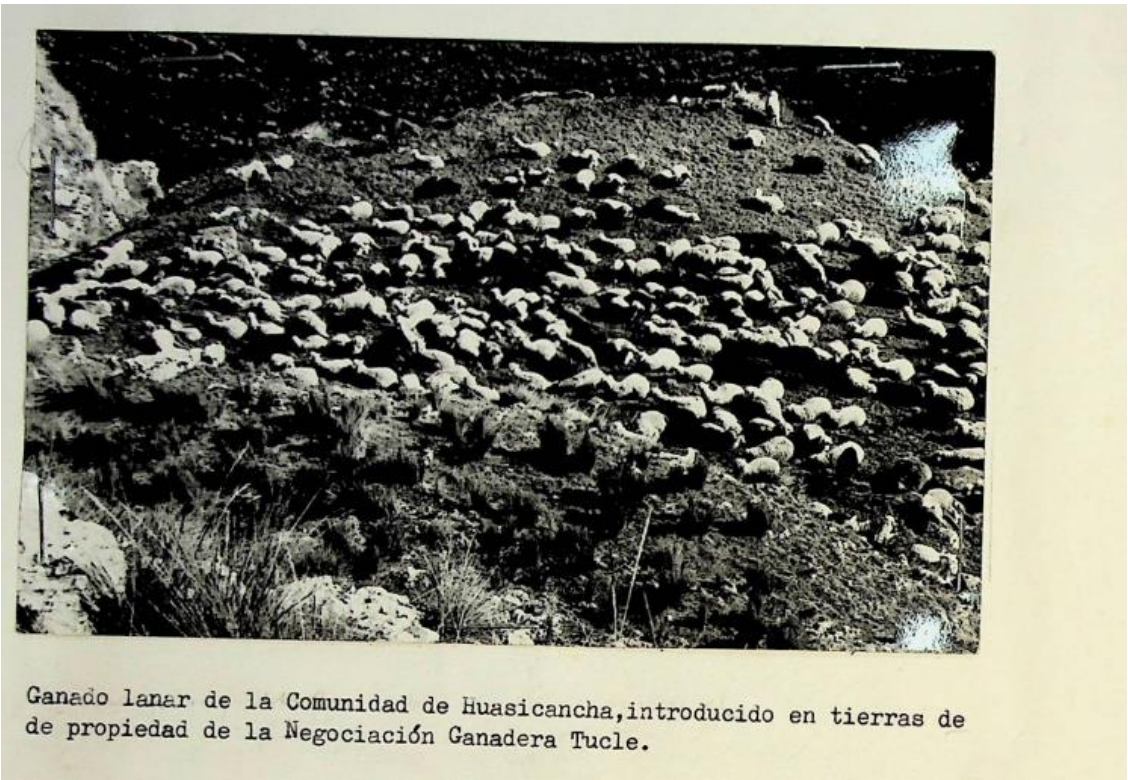

Figure 4. In an act of nonviolent protest over land, the Community of Huasicancha released its sheep onto hacienda property.

[201] Comisión Interministerial: Investigación y Estudio del Diferendo Entre la Negociación Ganadera 'Tucle' y la Comunidad de Huasicancha," 1964, Huasicancha, Binder 3, DRA-Junín.

Figure 5. Sheepherders from the community also occupied the hacienda lands in protest. As the photo indicates, women are the primary sheepherders in many communities. For more on gender roles, see Chapter 4.

Figure 6. In this photo, the Inter-Ministerial Commission poses in from of most of the community. This image provides an idea of the size of the community as well as the collective interest in the work of the commission.

Delegacion Comunal designada en Asamblea,para hacer entrega a la Comisión de un Memorandum formulado por el Abogado de la Comunidad,en el que desconocen el nombramiento de la Comisión.-

Figure 7. Ultimately, a delegation chosen by the General Assembly of the community delivered a document that rejected the Inter-Ministerial Commission. This photo provides an example of community autonomy and boldness.

os miembros de la Comisión,explicando,i exortando a recapacitar de la conducta irregular adoptada.-

Figure 8. Members of the commission exhorted community delegates to be more cooperative. The community did not give in.

Photos 4-8 used with permission. Courtesy of: Oficina de Comunidades Campesinas y Nativas, Dirección Regional de Agricultura-Junín (Huancayo, Peru)

While Pedro Beltrán had believed that "surplus" Andean populations should simply move away, regional officials demonstrated a greater grasp of reality. Even though the community had been uncooperative, this commission still appreciated its position. In its final report, it wrote, "Given the frequency … of campesino unrest in our country, we have no choice but to reflect seriously on the causes," particularly "the clash of interests between private property [haciendas] and Indigenous communities." Using the analogy of a potted plant, the commission argued that change in rural Peru was inevitable. "Let's imagine a seed in a small pot," it began. "The seed sprouts, takes roots, [and] these roots grow, while the pot remains the same. The moment comes when the [growing] roots no longer fit in the pot; they break it…. Does not the same thing occur in human societies that are rapidly growing?" The report then noted that the "social system" in rural Peru remained the same, while the "social group" of communities was growing. Without prescribing specific changes, the commission concluded that the imminent break of the system "proves the need for concrete reforms in one way or another."[202]

This same year, violence in the state of Cusco confirmed that the social system had indeed broken. In early April, some 100 members of a campesino syndicate met in Soltera, an area near the town of Sicuani, to discuss the construction of a new school. Local authorities accused them of planning an invasion. According to the syndicate's public statement, police officers, "ever at the beck and call of the hacendados," showed up with a "hostile attitude." When asked to leave, the officers began breaking up the meeting by force, firing tear gas and sending children running in every direction. In response, syndicate members began throwing rocks at the police. More officers arrived immediately and began firing into the crowd, killing seventeen individuals. In some of these cases, the statement added, as victims lay wounded and

[202] "Comisión Interministerial: Investigación y Estudio."

bleeding, the officers "finished them off" with another shot. "These murders," the syndicate declared, "occurred because of the ineptitude of the prefect of Sicuani" who gave in "to pressure from the large landowners [*latifundistas*] of the region, who falsely informed him that an invasion was going to take place."[203] Violent repression of this nature continued.

Although nonviolent invasions and protests accounted for the vast majority of campesino mobilization, two guerrilla organizations, the Revolutionary Left Movement (MIR) and the Army of National Liberation (ELN), tried in the years leading up to 1965 to recruit campesinos and their allies in the mountains of Cuzco and Ayacucho and begin a movement similar to that of Fidel Castro in the Sierra Maestra. Because of ideological divisions within their ranks as well as linguistic and cultural barriers with Andean communities, both organizations failed to achieve their goals.[204] In 1965, the Peruvian military quelled the movements. In the process, however, it witnessed first-hand the inequality in the Andean countryside and the tremendous numeric advantage of campesino communities if they were to unite and rebel.

In early 1968, journalist Hugo Neira reflected on the significant campesino organization and protest of the decade as well as the recent changes in Andean society. "Twenty years ago, a community was content with a few hectares, ceded by the neighboring hacienda," he wrote. "Not today. It's impossible. Twenty years ago, there were three hundred people in a community. Now, there are two thousand. That's the way it is throughout the Andes. Meanwhile, the lands of the neighboring hacienda are often unworked." This situation explained the land invasions, he reasoned, and given the demographic growth, communities would maintain an advantage. "If the

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[203] See Guzmán and Vargas, *Cronología de Movimientos Campesinos,* 192.
[204] See Leon G. Campbell, "The Historiography of the Peruvian Guerrilla Movement, 1960-1965," *Latin American Research Review* 9, no. 1 (1973), 45-47.

police drive them off [invaded] land," he concluded, "they will invade again."[205] Communities understood this advantage. "Remember," declared the Campesino Syndicate of Sicuani, "the police are few and we campesinos are many more; remember, the gamonales are few, and our numbers are in the thousands."[206]

If community mobilization proved one thing, it was, as historian William Stein wrote in the early 1970s, that "any effort at reforming an exploitative system is a contradiction: the hacienda system must be eliminated, not reformed."[207] Mariátegui, according to this conclusion, had been right. No reform effort in rural Peru, including scientific investments of the Rockefeller Foundation and the work of foreign scientists, could reach the nation's growing Andean population so long as the land tenure system remained the same, and for this system to change, the nation would need more than Belaúnde's passive efforts. It would need a more forceful leader and one who was more committed to changing the agrarian order.

As the presidential election of 1968 approached, Belaúnde's administration, to borrow Enrique Mayer's words, "was in severe trouble" because of "fractious disputes in Parliament, an indecisive weak president, a slew of scandals, and the mishandling of a dispute with … the [U.S.-owned] International Petroleum Company."[208] A victory of Haya de la Torre seemed likely, and campesino coalitions seemed prepared to take even more drastic action if the next president did not take their grievances against gamonales seriously. Again, the Peruvian military intervened in the name of stability. Only this time, its policy regarding the land, technology, and interests of Andean communities was, in its own words, "revolutionary."

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[205] Hugo Neira, *Los Andes, Tierra o muerte* (Madrid, ZYX, 1969), 137; see also Gúzman and Vargas, *Movimientos*, 149.
[206] "Comunicado de El Sindicato de Campesino de Kqehuar-Onockora y Pampa Calasaya," in Gúzman and Vargas, *Movimientos*, 183, 192.
[207] William W. Stein, "El peón que se negaba," *Allpanchis* no. VI (abril 1974), 129.
[208] Mayer, *Ugly Stories*, 19.

Under General Juan Velasco Alvarado, the military quickly began expropriating hacienda lands and exalting Andean communities as quintessential Peruvians. In this favorable context, the community of El Tingo, whose letter appears in the epigraph, submitted a new petition for formal recognition. This time it was granted.[209] For the Velasco administration and its successor, however, the work was just beginning. Throughout the decade, they would have to grapple with the questions of how to redistribute the land when so many communities wanted it, how to preserve hacienda farming technology, how to engage with the Green Revolution in a way that would favor community agriculture, and how to continue producing food for national consumption and exportation.

[209] "Resolución Apoyo Externo, ORAMS VI," Huancayo, August 10, 1977, Comunidad de El Tingo, Binder 4, Oficina de Comunidades Campesinas y Nativas, DRA-Huancayo.

Chapter 2

Agrarian Reform in the Andes: Autocracy, Technology, Ecology, and Conflict

As in many Latin American nations, the military in Peru gained a reputation in the twentieth century for being "the most organized [institution] in the country."[1] When civilian institutions appeared especially weak or unstable, the military grew accustomed to stepping in and ruling directly to ensure stability and continuity.[2] In Peru, such interventions had occurred for decades (1931, 1936, 1939, 1948, and 1962), and, initially, the 1968 coup of General Juan Velasco Alvarado appeared to simply continue that tradition. In its aftermath, Peruvian journalist Hugo Neira explained that the Velasco and his colleagues wanted to prevent a victory of Víctor Raúl Haya de la Torre, whom they regarded as the antithesis of national stability. The shift of Haya's party, APRA, over the past three decades from radical to mainstream policies mattered little to them.[3] Moreover, Neira argued, the military feared the increasing political involvement of large sectors of the Peruvian population, including rural activists. This "awakening worried the generals," he reasoned, who assumed that such political involvement would bring chaos.[4]

Neira spoke too soon. Like other military governments, the Velasco administration eschewed chaotic, bottom-up revolutions, which, in its mind, Haya de la Torre embodied. Yet unlike the repressive regimes that controlled or soon came to control countries such as Brazil, Chile, or Argentina, the Velasco administration, in the words of political scientist Samuel Fitch,

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[1] See Fernando Eguren, "Reforma Agraria y Desarrollo Rural en el Perú," CEPES, https://centroderecursos.cultura.pe (accessed November 7, 2023).
[2] See John Samuel Fitch, *The Armed Forces and Democracy in Latin America* (Baltimore: Johns Hopkins University, 1998), 1-35.
[3] See Iñigo García-Bryce, *Haya de la Torre and the Pursuit of Power in Twentieth-Century Peru and Latin America* (Chapel Hill: University of North Carolina, 2018).
[4] Hugo Neira Samanez, *El golpe de estado: Perú 68* (Madrid: Editorial ZYX, 1969), 7.

"sought to eliminate potential threats to internal security by reducing socioeconomic inequality and increasing state control over the economy." Although part of the Peruvian military maintained the old priority of stability, Velasco surrounded himself with a coterie of colonels and generals who shared his interest in radical social reform.[5] These officers saw themselves as the nation's one and only hope of stability *and* much-needed reform—the first wave of what has become a robust political tradition of "Andean messiahs," to use scholar Gilberto Aranda's term.[6]

This military administration took its role seriously. "We do not speak of revolution," Velasco declared on the one-year anniversary of the coup; "we do it." Yet unlike revolutions in other nations, he explained, ours is a "modern revolution … without violence and without blood," designed to "overcome our underdevelopment and conquer the economic independence of Peru," as well as "radically modify the traditional order of our society."[7] As this last phrase suggests, Velasco and his fellow officers had no regard for the old alliances of hacendados and government officials, which they referred to disdainfully as an "oligarchy."[8] In their speeches and propaganda, they vilified hacendados and exalted campesinos, especially campesinos' Indigenous heritage. They even turned Tupac Amaru, the Andean cacique from southern Peru who led the largest rebellion in the history of colonial Latin America, into an icon of their top-down revolution.[9] Regarding the nation's economy, they sought to strengthen industry and agriculture by substituting imports with national production, reducing Peru's dependence on outside markets, and turning rural residents into consumers for domestic products.[10]

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[5] Fitch, *Armed Forces*, 24-26.
[6] See Gilberto Cristián Aranda Bustamante, *Mesías Andinos: Continuidad y discontinuidad entre Velasco Alvarado, Fujimori y Ollanta Humala* (Santiago de Chile: Editorial Universitaria, 2010).
[7] "Mensaje del Presidente," October 3, 1969, in Ministerio de Agricultura, Zona Agraria V, "COMACRA," Curso de Capacitación a Nivel Profesional, 6 al 11 de julio de 1970. CEDEP Library, Lima.
[8] See Mensaje del Presidente de la República en el Primer Aniversario de la Revolución, October 3, 1969.
[9] Mayer, *Ugly Stories*, 43.
[10] Raúl Asencio*, Breve historia del desarrollo rural en el Perú, 1900-2020* (Lima: IEP, 2023), 170-171.

Many of these goals culminated in speedy and bold land reform. Throughout Latin America, many governments attempted agrarian reform in the 1960s. However, as Victor Bulmer-Thomas argues, in most cases such reform was merely "a cosmetic exercise designed to ensure compliance with the Alliance for Progress," a U.S. program of the Kennedy era designed to support peaceful reform and, in theory, preclude revolutions like that of Cuba.[11] "Those who make peaceful revolutions impossible make violent revolution inevitable," Kennedy declared in 1962.[12] (Almost simultaneously, Kennedy, like other U.S. presidents, also justified support for repressive dictators in a parallel strategy of containment.)[13] While many Latin American governments were interested, at least initially, in the Alliance for Progress, they were less interested in real land reform because, as Bulmer-Thomas explains, they faced opposition from the landowning class and feared "that redistribution would undermine export earnings, for agricultural exports came disproportionately from large estates."[14]

Such fears did not dissuade Peru's military government. As scholars Rosemary Thorp and Geoffrey Bertram wrote in 1978, "What was most striking about [Velasco's] reforms, and what quickly attracted attention throughout Latin America, was not so much the content of the legislation (embodying as it did ideas and proposals which had been widely canvassed and occasionally legislated during the 1960s), but the fact that the Military Government proceeded to

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[11] Victor Bulmer-Thomas, *The Economic History of Latin America since Independence*, 2nd Edition (New York: Cambridge University, 2003), 310.
[12] President John F. Kennedy, "Address on the first Anniversary of the Alliance for Progress," March 13, 1962, https://www.presidency.ucsb.edu/documents/address-the-first-anniversary-the-alliance-for-progress (accessed February 22, 2024).
[13] Speaking of the dictator Rafael Trujillo in the Dominican Republic, Kennedy declared, "There are three possibilities in descending order of preference: a decent democratic regime, a continuation of the Trujillo regime, or a Castro regime. We ought to aim at the first, but we really can't renounce the second until we are sure that we can avoid the third." See Arthur M. Schlesinger, Jr., *A Thousand Days: John F. Kennedy in the White House*, (Boston: Houghton Mifflin, 1965) 769.
[14] Bulmer-Thomas, *Economic History of Latin America*, 310; Bulmer-Thomas identifies Peru and Chile as regional exceptions, countries in which left-leaning governments implemented serious land reform programs.

apply the new measures with a determination previously unknown in Peru."[15] In less than five months, Velasco did what Belaúnde had not done in five years, namely expropriate and adjudicate the lands of Cerro de Pasco. With the power of a dictator, he expelled these landowners in hopes of avoiding more invasions. Soon thereafter, his administration passed what it called the "most revolutionary agrarian law in all America."[16] This law, Velasco stated, would "break the back of an oligarchy that until recently was overpowering."[17]

Invoking this law, the administration summarily took over the agro-industrial complexes of Peru's northern coast. They also moved against the other haciendas of the Andes. In their place, they formed cooperatives of different kinds. In Velasco's vision, these steps would pave the way for prosperity in rural Peru. As one cabinet member declared at the expropriation of the hacienda Chucarapi in Arequipa, "Agrarian reform, the first and great structural change in the Peruvian revolution … is the cornerstone of our new society. By establishing that the land is for those who work it, [we] stamp out, once and for all, injustice in Peruvian agriculture and lay the foundation for [our nation's] future development."[18]

Despite the popularity of the assertation that the Velasco administration cared only about giving away land, the archive reveals an acute awareness of the parallel need for technology, training, water, and other aid. Indeed, the case of land reform in Peru stands out not only because it was radical, but also because Velasco and his ministers turned Peru into a great laboratory in which agrarian reform would stimulate agricultural innovation. As the Minister of Agriculture, General Jorge Barandiarán Pagador (1969-1971), declared, "to address our agrarian problem …

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[15] Rosemary Thorp and Geoffrey Bertram, *Peru 1890-1977: Growth and Policy in an Open Economy* (New York: Columbia University, 1978), 301; emphasis added.
[16] Ministerio de Agricultura, "Reforma Agraria, Cooperativismo: ¡Tuman! ¡Cayalti!," Lambayeque, junio de 1970, INIA Library, Illpa, Puno.
[17] Mensaje del Presidente de la República en el Primer Aniversario de la Revolución, October 3, 1969.
[18] Speech of the Minister of Aeronautics Gen. Rolando Gilardi Rodriguez (Hacienda Chucarapi), no date listed, 3, Legajo 10, Folder 7, Archivo Agrario, Archivo General de la Nación, Lima.

on one hand, [we have] agrarian reform, which is in essence social justice. On the other, [we will] introduce modern technology to achieve what some have called the 'Green Revolution.'"[19] This latter term, which had recently been coined in the United States, referred to agricultural intensification through high-yielding seeds, mechanization, agrochemicals, and irrigation.[20]

In both cases, the military government failed to achieve its goals. The question is why—and the answer, despite what critics often imply, is not simply that Velasco and his ministers were demagogues and dumbbells. Samuel Fernández Gómez, scholar, activist, and member of the community of Huanchos in Huancavelica, has described agrarian reform as "in practice, a kind of miscarriage [*aborto*]."[21] This metaphor provides a more accurate idea of what occurred. The Velasco administration tried to transform Peru through land reform and green revolution, but the product of its policies did not live up to its promises and propaganda.

During the agrarian reform years, agricultural production and productivity per capita dropped significantly, and practically nobody—not even the recipients of expropriated lands—were pleased with the final product of Velasco's policies. As Enrique Mayer summarizes, "there is hardly a single positive statistic one can show until the mid-1980s, other than that about one-third of Peru's [farm]land got expropriated and cooperativized."[22] In scholarship, such statistics, as important as they are, overshadow the on-the-ground efforts of the government to provide training and technology. Yet a look at these efforts is necessary to understand what the generals tried to do and why they fell short of their goals. Despite their interest in agricultural technology, the generals' autocratic leadership proved more conducive to land expropriation and

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[19] Speech by the Minister of Agriculture to directors of CIMMYT, UNALM, and Institute of Agro-Industrial Research, c. 1970, Legajo 10, Folder 7, Archivo Agrario, Archivo General de la Nación, Lima.
[20] Timothy Lorek, *Making the Green Revolution: Agriculture and Conflict in Colombia* (Chapel Hill: University of North Carolina, 2023), 21-22.
[21] Samuel Fernández Gómez, in conversation with author, June 24, 2024.
[22] Mayer, *Ugly Stories*, 24.

redistribution than to meaningful training and technology adaptation for small farmers. Hence many farmers and members of the agrarian cooperatives initially had high hopes for land reform but soon became disillusioned. Moreover, the policies of Velasco's successors as well as the nation's internal armed conflict greatly undermined the success of the cooperatives.

When a government sets out to transform a nation, it is easy in hindsight to point out all the shortcomings. In this case, Velasco and his generals nursed a Messiah complex that set themselves up for criticism. "For this cause, came [we] into the [government]," they liked to say as they discussed their revolution.[23] As one publication from 1969 stated, "For this hope and this cause [of land reform], the campesinos of Peru, especially those of the *sierra*, had [prior to our coup] sustained a long and bitter fight…. More than one campesino leader," it continued, "died in the dungeons of successive oligarchic dictatorships and many, many more were mowed down throughout our colonial and republican history in the fight for the return of their lands, which had been usurped by feudal and [land-grabbing] gamonalismo. From Túpac Amaru until now," it concluded, "the history for the fight for land in Peru repeated itself."[24]

Not surprisingly, many citizens now scoff at such ideas because, for all its zeal, the Velasco administration failed to replace haciendas with a productive alternative. Nevertheless, nearly all Peruvians recognize Velasco's tenure as a pivotal moment in national history. Agronomists have called land reform "Peru's most important change of the twentieth century."[25] Hugo Neira, in the 1990s, wrote that Velasco and his policies divide "the before and after in

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[23] See John 18:37, Bible, King James Version.
[24] "Editorial," in Ministerio de Agricultura, Zona Agraria V, "COMACRA," Curso de Capacitación a Nivel Profesional, 6 al 11 de julio de 1970, CEDEP Library, Lima.
[25] "Reforma Agraria: El Futuro," *Agronoticias: Revista para el Desarrollo*, junio 20, 1979, Biblioteca Nacional; see also Mayer, *Ugly Stories*, 2, 13-15, 23.

Peruvian life."[26] As Orlando Plaza adds, other scholars mark the Velasco regime as the first time the Peruvian government "presented a model to construct a [true] nation-state."[27] Even Enrique Mayer, whose work emphasizes the "ugly stories" of land reform, concedes that such reform helped Indigenous and mixed-race Andean residents take a step toward full citizenship.[28] Indeed, while Andean community members may not agree with all of Velasco's policies, at least some affirm that "Velasco is the only president who took a sincere interest in us."[29]

This interest involved more than just land. Shortly after passing its agrarian reform law, the Velasco administration passed a General Water Law to nationalize water. [30] In Velasco's words, this law would allow the government to "finally fulfill the dreams of hundreds of thousands of farmers whose rights [to water] were [in the past] always trampled upon for the gain of large landowners."[31] This same year, the military government published a new national development plan, which emphasized technology and training. "Since agriculture and livestock are the most important economic activities of the campesino population in the *sierra* and highlands of Peru," it declared, "it is indispensable that we provide appropriate technical assistance … through instruction of improved … methods, the use of improved seeds, fertilizers, insecticides, fungicides … etc."[32] In another setting, it stated: "Raising the income level of campesinos is not the only goal of agrarian reform." Rather, the process "seeks to return [to

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[26] Hugo Neira, *Hacia la tercera mitad: Perú XVI-XX* (Lima Fondo Editorial SIDEA, 1996), 421; emphasis added.
[27] Orlando Plaza, "La Problemática de la Comunidad Campesina," en *Realidad del campo peruano después de la Reforma Agraria: 10 Ensayos Críticos*, editado por Francisco Moncloa (Lima: Centro de investigación y Capacitacion, 1980), 166.
[28] Mayer, *Ugly Stories*, 232.
[29] Eloy Barrero (President of the Community of Sicaya, Junín), in conversation with author, September 4, 2023.
[30] See Astrid B. Stensrud, "Dreams of Growth and Fear of Water Crisis: The Ambivalence of 'Progress' in the Majes-Siguas Irrigation Project, Peru," *History and Anthropology 27*, no. 5, 574.
[31] Mensaje del Presidente de la República en el Primer Aniversario de la Revolución, October 3, 1969.
[32] "Programa 10-11: Extensión Agrícola," Proyecto de Desarrollo e Integración de la Población en 7 Zonas de Acción: Plan Anual, 1969," INIA Library, Illpa.

campesinos] their dignity [after] more than 400 years of cruel exploitation. This is why training campesinos is just as important as giving them land."[33]

To achieve these goals, the Velasco administration often looked abroad for help. For the 1969 development plan, it sought and received funding from the Interamerican Development Bank (IDB). A precursor to the Alliance for Progress, this institution funded reform efforts in Latin America and constituted a soft strategy of containment. For Peruvian reformers, however, it was an important source of money. As Susan Fitzpatrick-Behrens has demonstrated, Peru was among the first Latin American nations to avail itself of IDB funds and other U.S. aid programs, thanks to the proactive administrators of the Maryknoll Catholic Mission. From the mid-1950s onward, these missionaries moved money through "established Catholic Church channels" for credit and housing programs. "Between 1961 and 1967," she adds, "U.S. investment in Peru increased by 38 percent."[34] In 1969, General Velasco also tapped into these funds. Among other uses, his administration sought IDB funding to import pure-bread sheep for the new highland cooperatives (see Chapter 3), to control foot and mouth disease among dairy cows, and to finance construction on highways, ports, and urban neighborhoods.[35]

This was only one step. In 1970, Velasco sent J. Roger Arroyo, head of the Office of Agricultural Research, on a two-month transnational tour to study agriculture in Colombia, Venezuela, Costa Rica, Mexico, and the United States. The latter visit, the longest of them all, included stops in Washington D.C., California, Florida, and North Carolina. In his final report, Arroyo recommended "choosing certain characteristics from different [national] models and

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[33] Ministerio de Agricultura, Zona Agraria V, "COMACRA," Curso de Capacitación a Nivel Profesional, 6 al 11 de julio de 1970, CEDEP Library, Lima.
[34] Susan Fitzpatrick-Behrens, *The Maryknoll Catholic Mission in Peru: Transnational Faith and Transformation, 1943-1989* (Notre Dame: University of Notre Dame, 2012), 12-13, 84-86.
[35] See: 'Un Gran Impulso para la Ganadería Ovina," "Adelantos en la Producción Lechera," "Obras Ejecutadas Con Financiamiento," "Obras de la Dirección General de Transporte Acuático," "El Perú y su Desarrollo Urbano," in *5 Años de Revolución* (Lima: Prospera, 1973).

forming a system that will be most appropriate for our conditions." For example, he liked the "teaching, research, and extension" approach of land grant institutions in the United States. He recommended the creation of the Peruvian Institute of Agricultural Research, modeled after a similar institution in Mexico, and he encouraged the government to strengthen ties with transnational institutions, such as the International Center for Tropical Agriculture (CIAT) in Colombia and the International Maize and Wheat Improvement Center (CIMMYT) in Mexico.[36]

Velasco and his ministers tried to act on these recommendations. They reorganized the Ministry of Agriculture, creating a new General Office of Agricultural Research, as well as a General Office of Agrarian Promotion, which would manage the government's extension efforts.[37] The Ministry also signed an agreement with CIMMYT in which this institution pledged to help Peruvian agronomists improve grain varieties and increase production. It then invited Norman Borlaug, recent Nobel laureate and "father" of the Green Revolution, to visit Peru and provide recommendations for a national wheat production program. Borlaug did so in 1974 (see Chapter 6).[38] In further pursuit of green revolution, in 1971 the military government issued a decree and signed an agreement with NC-State University, US AID, and other sponsors to create the International Potato Center (CIP) in Lima. Designed to develop high-yielding, blight-resistant potatoes and tubers for different environments throughout the global south, this institution became an important node in the growing transnational network of institutions, which included CIMMYT and CIAT, dedicated to increasing agricultural productivity.[39] In many ways,

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[36] J. Roger Arroyo V., "Aspectos de la Organización y Funcionamiento de la Investigación Agropecuaria en Algunos Países de América," Ministerio de Agricultura: Dirección General de Investigaciones Agropecuarias, 1972, 285-290, INIA Library, Illpa.
[37] *Rol del INIA en el proceso histórico de la investigación agraria en el Perú* (La Molina: INIA, 2018).
[38] See Ministerio de Alimentación, "Trigo: Producción en el Perú y en el Mundo Durante los Últimos Años," junio 1976, p. 7; see also Rafael Villanueva Novoa y Albino Narrea Retamozo, "Trigo Participación: Origen y Cultivo," setiembre 1978, p. 8-11, CIMMYT Library, Texcoco, Mexico.
[39] See "Centro International de la Papa," (Lima: CIP, 1988), CIMMYT Library; International Potato Center Annual Reports, 1972 and 1979, CGSpace, https://cgspace.cgiar.org/handle/10568/88229 (accessed April 10, 2024);

this network of institutions, known as the Consultative Group on International Agricultural Research (CGIAR) sought to win the grains race in the Global South, the contest against the J-curve of demographic growth as well as the appeal of Soviet- or Cuban-inspired political alternatives. Under Velasco, Peru engaged more fully in this network.

By the early 1970s, the concept of green revolution had come to mean much more than just "golden harvests"—the term Norman Borlaug used to describe massive wheat production that changed nations such as Mexico and Pakistan from wheat importers into wheat exporters.[40] Rather, scholar Clifton Wharton described it as a "Pandora's Box." The success of the Green Revolution, he wrote, "will produce a number of new problems which are far more subtle and difficult than those faced during the development of the new technology."[41] Some of these problems stemmed from the expansion of agribusiness, such as the displacement of small farmers, the growth of racialized labor regimes, and the exposure of countless workers and consumers to toxic agrochemicals.[42] In Peru, however, the vision of Velasco and his ministers stands out because, in their plan, technology would not strengthen agribusiness but community agriculture. "Acting alongside those who work the land, we will rapidly, drastically, and massively transform the agrarian structure of the nation," they stated.[43]

Agricultural Science as International Development: Historical Perspectives on the CGIAR Era, eds. Helen Anne Curry and Timothy W. Lorek (New York: Cambridge University, 2024), 1-14.

[40] Norman Borlaug, et. al., "A Green Revolution Yields a Golden Harvest," *Columbia Journal of World Business*, 4 (Sep.-Oct., 1969), 9-19.

[41] Clifton R. Wharton Jr., "The Green Revolution: Cornucopia or Pandora's Box," *Foreign Affairs*, 47 (April, 1969) 464-476.

[42] See Angus Wright, *The Death of Ramón González: The Modern Agricultural Dilemma* (Austin: University of Texas, 1990); Germán Vergara*, Fueling Mexico: Energy and Environment, 1850-1950* (New York: Cambridge University, 2021); Douglas R. Hurt, *The Green Revolution in the Global South: Science, Politics, and Unintended Consequences* (Tuscaloosa: University of Alabama, 2020).

[43] "Editorial," Ministerio de Agricultura, Zona Agraria V, "COMACRA," Curso de Capacitación a Nivel Profesional, 6 al 11 de julio de 1970, CEDEP Library, Lima.

But how would they make this happen? How exactly would they share technology with small farmers *and* ensure that land reform did not undermine export earnings? The generals' solution was cooperatives, state-supervised companies that would lead agricultural production and innovation. To be clear, the Velasco administration, in most cases, did not simply give land to communities who wanted it. Rather, it organized expropriated land into cooperatives, modeled after the old haciendas, and gave some communities a share of the ownership. It assigned other communities to be "partners" of the cooperatives. Other communities saw hardly any change at all. In the large southern state of Puno, the military government expropriated nearly 2 million hectares of land from a total of 1,103 haciendas. From these, as historian José Luis Rénique notes, it created 42 "gigantic associative businesses. Meanwhile, only 89 haciendas (49,192 hectares) were distributed among the officially recognized campesino communities … benefiting 67 of the 583 in existence."[44] While some of the remaining 516 communities were assigned to be partners, the rest remained unchanged.

Critics from urban areas accuse Velasco of giving land to campesinos who did not know how to use it, yet campesinos justifiably ask, "what land?" The former group unwittingly buys into the military government's propaganda. To lampoon Velasco, it accepts the idea of "land for those who work it" at face value. Yet this phrase was an aspiration, not a fact. Campesinos, by contrast, liked the idea but became disillusioned when they realized that it was not literal. Instead of getting their own land, they got reformed haciendas to keep working on or living beside.

It seems that Velasco's policies did not please anybody. But in the early 1970s, the military government had reasons for setting up cooperatives. First, there was not enough

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[44] José Luis Rénique, "Violencia y democracia en la sierra sur del Perú: Puno en la era post-velasquista," En *Perú: El problema agrario en debate/ SEPIA IV*, eds. Carlos Iván Degregori, Javier Escobal, Benjamín Marticorena (Lima: SEPIA, 1992), 443.

farmland to satisfy the demands of every farmer and community whose property had been taken or reduced during four centuries of hacienda expansion. Moreover, over the past few decades, the rural population had increased drastically, yet Andean environments prevented the easy expansion of farmland. As economist José María Caballero pointed out in the early 1980s, highland haciendas did not have as much farmland as some reformers thought, and rough pastures for sheep farming accounted for much of the large landholdings.[45] Citing this study, Mayer concludes that "although a landowner [in the Andes] could socially strut around as a hacendado, the actual amount of land he controlled was far less than his legal title would suggest. The highlands faced an absolute shortage of land. The redistribution of land would therefore not solve many problems, since there was not that much of it to expropriate."[46]

Second, the government formed cooperatives to preserve the technology and scale of the haciendas. Through expropriation, the government became the owner not just of lands but also of infrastructure, machinery, and improved livestock. It compensated landowners with near-useless bonds, which led to their sarcastic memory of getting "one *sol* [money unit] for a tractor."[47] Some hacendados tried to sell all they could before agrarian reform officials arrived, yet these officials were often faster, and despite their glorification of Andean culture, they hesitated to turn technology directly over to campesinos. Widely circulated were stories—some true, many false—of communities who ignorantly cooked and ate high-pedigree livestock. In one such story, which Mayer verified during his field research, a hacendado in Cusco recalled an invasion of

[45] José María Caballero, *Economía agraria de la sierra peruana antes de la reforma agraria de 1969* (Lima: IEP, 1981).
[46] Mayer, *Ugly Stories*, 16.
[47] Mayer, *Ugly Stories*, 93, 105.

contested land by neighboring communities. “The first thing these brutish Indians did,” he stated, “was to slaughter my breeding bull. They killed it…. They ate it! Just like that.”[48]

While it is possible that communities would kill prize-winning livestock to avenge past hacendado abuses, not just because they did not understand a breeder’s genetic value, the military government gave more credence to the second reason. Ironically, it demonstrated the same prejudice regarding campesino ignorance as that of its urban critics, yet the critics erroneously accuse the government of *not* tempering its actions with such prejudice. The government’s decision, however, underscores its interest in hacienda technology, which it tried to preserve by creating cooperatives. In total, it formed 360 of these associative businesses on the coast and 203 in the interior of the nation. In the Andes, the large livestock-oriented cooperatives were supposed to follow in the scientific footsteps of the haciendas by using the same pedigree animals and, in many cases, the very same managers.[49] Only now, workers, herders, and their communities would, in theory, have a voice in the management and reap some of the profits.

Across Latin America, the cooperatives in Peru mark an important effort—another level of experimentation—to extend technology to small farmers and open a new phase of the Green Revolution. Many of this movement’s leading scientists supported the idea. In a 1972 message delivered in Lima, E.J. Wellhausen, former director of the Mexican Agricultural Program, noted that in the Sixth Meeting of Ministers of Agriculture, which took place in Lima the previous year under the auspices of the Organization of American States, regional officials had complained that their nations had yet to see the benefits of agricultural research. The problem in his view was that so far transnational agricultural centers and projects had “concentrated on the production of agronomic varieties and practices that are best adapted to the most favorable conditions, even

[48] Mayer, *Ugly Stories*, 97-98.
[49] See Mayer, *Ugly Stories*, 113, 192.

when most agriculture is practiced and most of the rural sector resides in areas that are moderately favorable or unfavorable." This trend, he admitted, had contributed in many countries to "income inequality between different regions and between different farmers within the same region."[50] Prior to Velasco, research agreements between the Rockefeller Foundation and Peruvian haciendas had exemplified this situation (see Chapter 1).

Yet according to Wellhausen, the region was ready for change. "When trying to … increase food production," he declared, "it is perfectly logical, in the initial phase, to concentrate our research and extension efforts … on areas [that] will pay the highest dividends. However, if that is all we do we will find ourselves enmeshed in socioeconomic difficulties." The solution, he continued, is to now adapt technology to the economic capacity of small farmers. This step "is urgent," Wellhausen explained, "because approximately three-fourths of the rural population [of Latin America] fall within this category," and "many young people are already migrating to cities in search of better opportunities … but only to be disillusioned." Furthermore, "if the population keeps growing at the current rate, no country will be self-sufficient in food production if only a part of its good cropland is technified, and no country can reach a high level of social and economic development if [a large part] of its population is not participating."[51]

Velasco acted on this recommendation more than most Latin American presidents. In his view, the new cooperatives would share technology with small farmers and thus provide an "example to the world." In 1973, his administration further explained that, "In each of these [cooperatives], we have tried to bring together technical, economic, and social insights" with the goal of "taking the most advantage of resources, especially water and existing infrastructure such

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[50] E.J. Wellhausen, "Investigación y la Reforma Agraria," Paper Presented at the Sixth Meeting of Ministers of [illegible] in Latin America, Lima, Peru, 1972, CIMMYT Library, Texcoco.
[51] Wellhausen, "Investigación y Reforma Agraria."

as installations, machinery, roads, etc." These steps are vital, the administration continued, because "change in land tenure must be geared towards elevating production volumes" and ensuring that "the country has the modern agriculture that it requires." Ever the propagandist, it added that "[in] these new businesses … the shared enjoyment of assets and the associative form of work constitute an incentive for the highest values of human solidarity" and will lead to "the formation of an egalitarian and humanistic society … focused on the happiness of mankind."[52]

The Velasco administration set the bar high. One of its first challenges was the general confusion about how the cooperatives were supposed to operate. The variety of models formed an alphabet soup that only government technocrats liked to swim in. One was the CAP: *Cooperativa Agraria de Production* (Production-Focused Agrarian Cooperative). Another was the EPS: *Empresa de Propiedad Social* (Shared Property Company). Smaller models included "reformed" campesino communities and communal farms of different kinds. In highlands areas where livestock was the main venture, the government created the largest model, the SAIS: *Sociedad Agrícola de Interés Social* (Shared Interest Agrarian Society). The sixty "supercooperatives," as Mayer calls them, usually bore Inca names and held enormous tracts of land that included pastures and "production units." [53] Confusion, however, was constant. In 1980 Orlando Plaza observed that "even now we still do not know exactly what [a SAIS] is."[54]

In his work, Enrique Mayer takes an even harder line. "Those were revolutionary years," he writes of the early 1970s, "when all sorts of models were imposed on Peruvian society, the people of which then became subjects of experiments in social engineering." The Ministry of Agriculture, he continues, "fell in love with variants of its cooperative models; it invented a

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[52] "Nuestra Reforma Agraria … Ejemplo en el Mundo: Los Cambios en la Estructura Agraria y el Desarrollo del País," in *5 Años de revolución* (Lima: Propersa, 1973).
[53] Mayer, *Ugly Stories*, 20, 30, 149, 151-152, 167, 180.
[54] Orlando Plaza, "La Problemática de la Comunidad Campesina," 162.

whole series of institutional organizations and imagined how prosperity, equality, and development would be generated from their implementation."[55] As Mayer indicates, for all the government's talk of working alongside campesinos, small farmers had no say in the formation of the cooperatives. In fact, they did not really want them. Through their scores of hacienda invasions in previous decades, communities had demonstrated that what they wanted and needed most was their land and the chance to farm it for themselves. The cooperatives did not satisfy this need. At first, many communities were willing to go along with the government's plan, yet problems of land shortages or disagreements, poverty, and social problems persisted.[56]

A look at one supercooperative on the Junín-Lima border helps illustrate adjudication in practice. In 1971, the Velasco administration formed the SAIS Pachacutec out of one livestock business (Sociedad Ganadera Corpacancha) and three haciendas (Santa Ana, Oxamachay, and Capillayoc). The livestock business had operated like a specialized hacienda and held the most valuable animals. In the administration's plan, the roughly 1000 families that had previously lived and worked on the haciendas would now be part of the cooperative. In the case of a fourth hacienda, Conocancha, officials gave the expropriated land directly to 28 families and to the community of Santa Barbara de Carhuacayán with the plan of incorporating them later into the cooperative. In other words, some direct adjudication did occur; however, in this case it accounted for approximately 16,000 hectares, while the cooperative received 90,000. Additionally, officials assigned ten neighboring communities to work with the cooperatives as partners.[57] These partner communities would share the cooperative's technology, such as tractors

[55] Mayer, *Ugly Stories*, 112-113.
[56] See Mayer, *Ugly Stories*, 192.
[57] Ministerio de Agricultura, Dirección de Comunidades Campesinas, Prog. 01: Investigación y Evaluación, SAIS Pachacutec, Lima, 1971, 3-5, CEDEP Library, Lima.

for planting and genetically improved livestock for breeding. Two delegates from each community would have a voice in the management of the cooperative.[58]

A variety of officials participated in the establishment of the cooperative, including over half a dozen "agrarian technicians" from the regional land reform office in Huancayo, as well as six other professionals from the Division of Social Studies of the Office of Campesino Communities in Lima. Ten other employees worked on data processing.[59] As these positions indicate, the Velasco administration employed sizable groups of agronomists, sociologists, and statisticians to study the land and the people involved in adjudication. While these individuals took their roles seriously, their collective strength lay in numbers, maps, graphs, and reports, not in working with farmers. They excelled at surveying communities from their offices—numbers of men, women, and children, their properties, their professions, etc.—but their work contributed little to the crops communities planted, the livestock they bred, or the products they sold. To

Consequently, community enthusiasm for Velasco's policies quickly waned. After just one year of land expropriations and adjudications, Dr. Efraín Ruiz Caro, an advisor to the military government, observed that, "it seems that there has been a downswing [*enfriamiento*] in campesino attitudes." Last year, he continued, "when the only thing that existed were promises, we saw a certain popular warmth and fervor." But today, we must ask ourselves: "Even though the timeline we established has been strictly observed … and the lands have been turned over to workers organized in … cooperative[s], [why] has the enthusiasm of several months ago disappeared or diminished?" The problem, he explained, "is the lack of communication between the government and the campesino…. It seems like … a deep, radical, [and] irreversible

[58] Máximo Samaneo Casas (Production Manager of the SAIS Tupac Amaru), in conversation with author, June 7, 2023.
[59] Ministerio de Agricultura, Dirección de Comunidades Campesinas, Prog. 01: Investigación y Evaluación, SAIS Pachacutec, Lima, 1971, 1-7, CEDEP Library, Lima.

revolution has been taking place in the country, but on a legislative level—a revolution that stays at the top but does not reach the masses."[60]

To counter this problem, the Velasco administration constantly emphasized the participation of campesinos "Remember," it told its employees, "the protagonist of the agrarian reform is the CAMPESINO." It further stated that "paternalism is the traditional enemy of campesinos," designed to keep them "submissive…. We will counter paternalism with real training, which will be a mutual training between campesinos and government workers." Our trainers in the countryside, the administration added, should feel like *they* are ones in school.[61] Despite these good intentions, Velasco and his ministers were, after all, high-ranking military officers, used to giving orders and seeing them followed. No matter how much they harped on campesino participation, what they led was an autocracy, and they never changed that.

A brief look at federal decrees related to plant health illustrates the autocracy of the Velasco administration and its military successor. In the three decades prior to the coup, the Peruvian government issued fifteen decrees and resolutions that sought to regulate the sale of seeds, control pests, and inspect agricultural imports. During the two military governments, authorities issued over forty decrees of this kind. Several of these "supreme resolutions" mandated the "obligatory control" of fruit flies and boll weevils.[62] On one hand, this series of decrees underscores the generals' interest in agriculture. On the other, it indicates their faith in the power of a commandant's word to control food production, people, and pests. Although they tried to match words with action, they never had as much control as they assumed.

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[60] Dr. Efraín Ruiz Caro, "Política General del Gobierno en el Proceso de Transformación Nacional," Ministerio de Agricultura, Zona Agraria V, COMACRA, Curso de Capacitación, 6 al 11 de julio de 1970, CEDEP Library, Lima.
[61] Ministerio de Agricultura, Zona Agraria V, "COMACRA," Curso de Capacitación a Nivel Profesional, 6 al 11 de julio de 1970, CEDEP Library, Lima.
[62] Cecilia Dávila de Subauste, Ramón Montoya Hanao y César A. Wandemberg, *Legislación Fitosanitaria de los Países Andinos: Análisis y Síntesis* (Lima: Instituto Interamericano de Cooperación para la Agricultura, 1986), 21-29, 55-61, CIMMYT Library, Texcoco, México.

Throughout the 1970s and 1980s, the autocratic nature of Velasco's revolution fascinated scholars, particularly those outside Peru. Eric Hobsbawm coined the phrase "the peculiar 'revolution'" to describe Velasco's authoritarian model of reform.[63] David Scott Palmer characterized the model as "revolution from above."[64] Abraham Lowenthal called it an "ambiguous revolution."[65] Dirk Kruijt aptly called it a "revolution by decrees."[66] Other intellectuals argued that it was not a revolution at all given the lack of authentic participation.[67] While this scholarship from the halls of academia downplayed the questions that mattered most to Peruvians, such as how land reform would affect food production or prices, it did tease out one of the fundamental problems of Velasco's policies.[68] Through decrees, a military government could expropriate and adjudicate land, but it could not kill fruit flies and weevils or help communities produce more food or fiber and operate as rural businesses.

In his study of "why so many well-intended schemes to improve the human condition have gone so tragically awry," James C. Scott argues that a "pernicious combination of four elements" usually spells disaster: first, a state's oversimplification and superficial standardization of complex societies; second, a high-modernist ideology that ignores local knowledge and perspectives; third, authoritarian tendencies; and fourth, a prostrate civil society.[69] In Peru, civil

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[63] E.J. Hobsbawm, "Peru: The Peculiar 'Revolution,'" *The New York Review*. Dec. 16, 1971. https://www.nybooks.com/articles/1971/12/16/peru-the-peculiar-revolution/ (accessed Oct. 18, 2021).
[64] David Scott Palmer, *'Revolution from Above': Military Government and Popular Participation in Peru, 1968-1972.* PhD Dissertation, Cornell University, 1973.
[65] Abraham Lowenthal, *The Peruvian Experiment: Continuity and Change Under Military Rule* (Princeton: Princeton University, 1975).
[66] Dirk Kruijt, *La revolución por decreto* (Lima: Mosa Azul Editores, 1989).
[67] See George D.E. Philip, *The Rise and Fall of the Peruvian Military Radicals* (London: University of London, 1978); David Guillet*, Agrarian Reform and Peasant Economy in Southern Peru* (Columbia: University of Missouri, 1979); *The Peruvian Experiment Reconsidered*, eds. Cynthia McClintock and Abraham F. Lowenthal (Princeton: Princeton University, 1983); *The Peculiar Revolution: Rethinking the Peruvian Experiment under Military Rule*, eds. Carlos Aguirre and Paulo Drinot (Austin: University of Texas, 2017).
[68] For an example of how Peruvian scholars and agronomists measured agrarian reform by agricultural production, see See Jorge Jelicic*, La reforma agraria y la ganadería lechera en el Perú* (Lima: Minerva, 1978).
[69] Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University, 1998), 1-8.

society was hardly prostrate, but unfortunately the other three elements of Scott's analysis were present in Velasco's agrarian reform program. Although the administration employed trainers who were supposed provide practical instruction for the new cooperatives, the government clearly spent most of its energy expropriating land and setting up the cooperatives, and it largely it failed to tailor training to the needs of cooperative members. As a spokesperson of the CAP Lauramarca in Cusco declared in 1974, "Our record books are all blank because we do not know how to write … we need training. We don't understand what a cooperative is, nor do we understand its functions. In this condition, how are we supposed to operate?"[70]

Ultimately, productivity in the cooperatives depended greatly on the ability and desire of the managers and members to adjust to and make use of what the Velasco administration had given them. While many struggled, others did get off the ground. Not everything, in other words, went tragically awry. One illustrative case is that of the SAIS Tupac Amaru, the first of the supercooperatives. In 1969, after expropriating the lands of the Cerro de Pasco Copper Corporation, the Velasco administration gave the SAIS Tupac Amaru some 216,500 hectares of land, of which eighty-five percent were pastures at altitudes of 3,600 to 4,800 meters above sea level.[71] To achieve the goal of sharing technology, the military government assigned the SAIS eighteen partner communities. The first of its kind, this SAIS became a kind of poster child for Velasco's land reform program. Training materials in early 1970 not only included operation instructions but also local patriotic reflections, even amateur poetry. One poet wrote:

Hoy el día amanece con la nueva	Today the morning breaks to a new
Era de la vida, con el sol	era of life, with the sun
Radiante, vislumbrando	radiante, shining

[70] "Cooperativa Agraria de Producción Lauramarca, LTDA. No. 57, Lima, 1974, 13, CEDEP Library, Lima.
[71] Baudilio Santiago Urbano, *Producción de Ovinos Raza Junín* (Huancayo: Curisinche, 2011), 12-13.

con el fresco matutino.	with the morning freshness.
Así también la Reforma Agraria	In this way, too, the Agrarian Reform
refleja a todos los campesinos	reflects all campesinos;
que venimos de diferentes	we come from different
comunidades a hacerse hombres	communities to become the men
de mañana.[72]	of tomorrow.

Notably, several poems spoke of campesino gratitude for government technicians and trainers. For example:

Qué simpático es sentir progreso	How nice it is to feel progress
Una vez que se asimila la educación	Once we start to understand the education
Implantada por técnicos peruanos	Sown by Peruvian technicians.
Nos ausentaremos a nuestros lares	We'll leave here and return to our lands
Ungidos de nuevas aspiraciones	Anointed with new aspirations
Augurando el progreso Nacional.[73]	Taking steps toward national progress.

In one poem, the writer's tone bordered on that of a prayer to holy government trainers:

¡Oh professor amigo mío!	O professor, my friend!
Que está a mi lado,	Who is at my side,
Guíame por la vida	Guide me through life
Eres mi buen hermano.	Thou art my good brother.
Colma este inagotable	Quench this unsatiable
Sed del saber,	Thirst for knowledge;

[72] Máximo Hurtado V., "Poesía del Mañana," in Boletín Tupac Amaru: Informativo de los alumnos del Curso para promotores campesinos, January 12-17, 1970, Packet: Documentación sobre la SAIS Tupac Amaru y la Reforma Agraria en Junín, 1970, Legajo 9, Folder 2, Tribunal Agrario, AGN, Lima.
[73] Barlow Reyes, "La Quinua" in Boletín Tupac Amaru."

De tu fuente de luz	From thy fountain of light
Dame de beber.	Give me a drink.
La agricultura ya la hago bien	Crops I now manage well
La ganadería también,	Livestock, too,
A cada paso que aprendiendo voy	Learning with every step
Su justo sentido de paso le doy.[74]	I give agriculture its just purpose.

Although the archival record is skewed toward the supportive material, since that is what the military government wanted to publicize, such verses reiterate the interest of at least some cooperative members in the training that the military government had promised. That training was often inadequate or, as the experience of the CAP Lauramarca indicated, nonexistent. Overall, the government's training efforts petered out after a couple of years, and Velasco's untimely illness and deposition in 1975 doused any hope of reviving them.

As time passed, too, many cooperative members started to chafe under the hierarchy that developed because of the military government's emphasis on technical expertise. "So far, the SAIS [Tupac Amaru] has not fulfilled its objectives," stated a delegate from the community of Llocllapampa in a 1971 survey. "There is always a barrier; just as before [on the haciendas], there is a deep inequality, the bosses on one side, the employees on the other…. Workers and shepherds … are the fifth wheel of the car."[75] As the comment suggests, agronomists, veterinarians, and others had a higher status (and salary) than other employees. They ran the show, which alienated many workers and partner communities. In some cases, the hard feelings were mutual. As a career veterinarian of the SAIS Tupac Amaru stated, "the [community]

[74] Policarpio Inga D., "Himno al Profesor," in "Boletín Tupac Amaru."
[75] Sr. Sergio Ticce, Delegado de la Comunidad de Llocllapampa, March 3, 1971, Entrevistas Personales, Packet: Documentación sobre la SAIS Tupac Amaru y la Reforma Agraria en Junín, 1970, Legajo 9, Folder 2, Tribunal Agrario, AGN, Lima.

delegates are like senators; they get paid for just sitting around."[76] Besides revealing an opinion of Peruvian politicians, this comment reflected a belief that the system of delegates forced the "experts" to pause and listen to non-experts, which only slowed down the business.

Again, ambiguity constantly plagued the administration of the cooperatives. Were they supposed to operate like businesses, run by hierarchies in pursuit of profits? Or were they supposed to operate like little republics, run by delegates in pursuit of social equality? Velasco wanted both, but in practice this combination proved elusive. In some cases, the cooperatives forged ahead on their own but earned resentment from their partner communities.[77] Their vast landholdings, which some communities still laid claim to, added insult to injury, since, as Orlando Plaza observed in 1980, many of the supercooperatives could only make use of about a third of all this land.[78] As time passed, the situation grew ripe for a new wave of land invasions.

Importantly, however, partner communities were not dependent upon the SAIS or even upon the federal government. Communities had been around for far longer and were used to managing on their own. In his recent study of the community of San Juan de Ondores near the mining center in Junín, historian Javier Puente portrays Velasco's agrarian reform as just one more chapter in the relentless history of capitalist penetration in Andean communities.[79] While this portrayal downplays the pivotal nature of agrarian reform in national history, it underscores community longevity and resilience vis-à-vis ever-changing political and economic policies that powerholders in Lima and the nearby mining center tried to impose decade after decade.

The community of Llocllapampa, which operated livestock, mining and sparking water (*aguas gaseosas*) businesses, demonstrates this longevity. In this case, the military government

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[76] Baudilio Santiago, in conversation with author, June 15, 2023, Huancayo.
[77] Mayer, *Ugly Stories*, 192, 134.
[78] Orlando Plaza, "La Problemática de la Comunidad Campesina," 176.
[79] Puente, *The Rural State.*

had not just assigned it to be a partner of the SAIS Tupac Amaru, but it had also reorganized it as a "Production-focused Communal Cooperative." In December of 1975, not long after Velasco left office, community members elected a "Liquidation Committee" to dissolve the cooperative. They shared their decision with the regional agrarian reform office which gave it a stamp of approval. Liquidation involved making an inventory of all assets, debts, and property and formally transferring these from the cooperative back to the community. In the committee's words, "with the delivery and receipt of all the property of the Ex Cooperative, we hope the new self-managed [community] business has everything it needs [and] we request the collaboration of community members for the good of our dear Llocllapampa."[80] For five years, the community had given Velasco's vision a try. Finally, it decided to pursue innovation on its own terms.

Meanwhile, the SAIS Tupac Amaru forged ahead and became a national leader in sheep husbandry. As in other supercooperatives, the role of the administrators was crucial. In this case, the chief executive, Máximo Gamarra Rojas, who had previously worked for the Cerro de Pasco's livestock division, helped keep the SAIS alive and productive. As Enrique Mayer explains, Gamarra "was very popular, frequently visiting the partner communities, participating in their fiestas, and getting drunk with *comuneros*. He spoke Quechua with them and he personally resolved their private problems…. He was a master entrepreneur," Mayer continues. "Each year he invented something new to get everyone excited about: a new trout hatchery here, yet another anniversary to commemorate there, the completion of an electrification project," etc. Moreover, Gamarra would invite community delegates to accompany him to Lima to sell wool. There, he would take them to fine restaurants and bargain with foreign brokers in English.[81]

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[80] See Ex - Cooperativa Comunal de Producción "Llocllapampa" Ltda. No. 50, "Informe-Memoria," 1976, Community Archive of Llocllapampa, Junín.

[81] Mayer, *Ugly Stories*, 196-197; one of Mayer's interviewees claims that Gamarra was calculating and power hungry. Overall, however, Mayer's study suggests that Gamarra was quite effective as a SAIS president.

Thanks to Gamarra's experience with Cerro de Pasco and his own talents, the SAIS Tupac Amaru came a little closer to achieving what Velasco had envisioned. In his work, Absalón Vásquez, whose perspective exemplifies that of many agronomists, excoriates the managers of the cooperatives for "inefficiency, total chaos, and generalized corruption" in their businesses. However, he includes the SAIS Tupac Amaru in a list of "very limited but honorable exceptions" that demonstrated sound financial administration and effective use of technology.[82] Years later, Gamarra became a professor of veterinary medicine at National University of San Marcos in Lima where he earned the admiration of many students.[83]

In the SAIS, the main example of innovation was the Junín breed of sheep, which experts bred specifically for the highlands. A look at this breeding process answers historian John Soluri's recent call for scholars to focus less on killing and habitat destruction of animals and more on reproduction, genetics, and veterinary science.[84] In the 1920s, the Cerro de Pasco Corporation began acquiring haciendas in the Vally of Mantaro to raise sheep.[85] This process, of course, contributed to the marginalization of local communities.[86] As Javier Puente notes, the corporation's initial objective was to provide meat, milk, and other resources to its mining centers. It also sought to protect profits by diversifying its business ventures "in the event of severe contractions of mineral prices in global markets."[87] In the 1940s and 1950s, however, the corporation began investing seriously in sheep improvement by importing specialized breeds, such as Merino and Corriedale, from Argentina and Chile.

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[82] Vásquez, *Desarrollo Agrario*, 347.
[83] See Baudilio Santiago Urbano, *Producción de Ovinos Raza Junín* (Huancayo: Curisinche, 2011), Prólogo.
[84] John Soluri, "Reproducing Animals in Latin America," *Historia Ambiental Latinoamericana y Caribeña (HALAC) Revista de SOLCHA* 14, no. 3 (2024), 118-119.
[85] Juan Villarroel León y Máximo Gamarra Rojas, *El ovino raza Junín* (Pachacayo: SAIS Tupac Amaru Limitada No. 1, 1978), 5; booklet in personal records of Baudilio Santiago Urbano.
[86] See Plaza, "La Problemática de la Comunidad Campesina," 161-162.
[87] Puente, *The Rural State*, 118-119.

In a 1978 publication, Gamarra reported proudly that from 1945 to 1954, the number of sheep on Cerro de Pasco haciendas increased from 150,000 to 190,000, and average wool production per head had increased from 1.84 kg (4.00 lbs.) to 2.40 kg (6.60 lbs.).[88] As specialization continued, managers of the corporation's Livestock Division, particularly William K. Snyder, noted that Andean environments posed challenges for the traditional improvement method of bringing in pedigree studs. Such breeders could win blue ribbons at competitions, yet their adaptability to open pastures at altitudes of 4000 meters above sea level was doubtful, especially given the dryness, scarcity of oxygen, extreme brightness, and ultraviolet radiation.

Thus, Snyder and his assistants turned to the new breeding method of Professor P.E. Neale of New Mexico State University. The Neale method involved classifying sheep herds and pairing the best males with the best females to produce a second-generation with above-average characteristics. In the central Andes, this method of selective and corrective breeding reduced concerns about environmental adaptability since the breeders were already accustomed to the highlands. While Snyder embraced this method, he continued to import some pure-bred rams, mainly from the U.S. states of Wyoming, Colorado, Utah, and Idaho, to have a strong first generation; however, he avoided the pampered studs of livestock exhibitions and instead looked for sheep that had been raised in open pastures and met additional requirements of size, wool quality, reliable pedigree, and age (eight months to one year "to achieve better adaptation").[89]

In 1956, using the Neale system, Snyder and his assistants reclassified all sheep into multiple categories, including Stud, Super++, Super+, Super, Super-, A+, A, A-, B+, all the way down to C, *Rechazo* (Reject), and, finally, *Camal* (slaughterhouse). Given the many factors that determined classification, such as weight of clean wool, length of wool strand, density of the

[88] Villarroel León and Gamarra Rojas, *El Ovino Junín*, 6.
[89] Villarroel León and Gamarra Rojas, *El Ovino Junín*, 13 (11-14).

fleece, and rate of sheep growth, many sheep were initially rejected. Yet, in Gamarra's narrative, Snyder in 1959 declared that despite adversity he would "establish a new breed … the first in Peru [and thereby] eliminate the need to continue importing breeders from abroad, which would, besides [strengthening the local] economy, have the advantage being adapted" to the region."[90]

By the mid-1960s, after three generations of selective breeding, Cerro de Pasco had developed herds of large, genetically improved sheep that they called the "Junín type." They sold these sheep to hacendados throughout the Andes, including, for example, to the livestock division of the hacienda Tucle, which the community of Huasicancha invaded in 1964 (see Chapter 1). They even exported a load of 100 sheep to Bolivia and took fleece from their sheep to international competitions in the United States.[91]

Peruvian animal scientists generally celebrate such achievements; anthropologist Enrique Mayer does not. "There is a kind of 'sheep racism' involved in this [history]," he writes, "whereby stock locally adapted since colonial times (*chusco*) is considered inferior to improved breeds." Zootechnicians do not worry about sheep racism. Obviously, they would say, selective breeding implies identifying superior and inferior traits and breeding sheep accordingly. The problem in the Andes, however, was that differences in sheep reflected social injustices. Improved stock, as Mayer points out, "required segregation from local breeds, more land, better-quality pastures, fencing, and so on," whereas local sheep herds had to adapt "to the very poor land conditions of the crowded communities."[92] Selective breeding in the Andes contributed to hacendados' scientific elitism and their desire for more land. Moreover, the displacement of community herds reinforced the displacement of Indigenous communities themselves. Through

[90] Villarroel León and Gamarra Rojas, *El Ovino Junín*, 7-10, 17.
[91] Villarroel León and Gamarra Rojas, *El Ovino Junín*, 16-18.
[92] Mayer, *Ugly Stories*, 267-268, note. 3.

this double displacement, hacendados remained the educated, scientific, white class of citizens, and their pure-bred sheep that fed on the best pastures reflected this status.

When the Velasco administration took over, highland sheep farming became a test case in which the new government had to reconcile two of its fundamental principles. First, it wanted to reorganize hacienda lands into cooperatives for communities; it did this efficiently. But second, it wanted to preserve the hacienda technology, which, in this case, meant keeping genetically improved sheep away from community herds or obligating comuneros to get rid of their poor stock. Comuneros did not cooperate. They had a long history of resisting hacendado and government efforts to control their sheep herds. Their reaction during land reform was similar. In fact, many cooperatives ended up with both genetically improved herds and members' mixed-race herds, sometimes called *waqchos*.[93] Zootechnicians lamented crossbreeding and overgrazing, while comuneros decried the elitism of some cooperative managers.

For the Velasco administration, one solution to this dilemma involved sharing the genetically improved rams of the cooperative with partner communities each year during mating season. Through this program, community sheep would have the benefit of genetic improvement, which meant more meat and better wool each year. In the SAIS Tupac Amaru this practice began in the early 1970s and continues to this day. In his 1978 narrative, Gamarra praises campesinos for coming to appreciate the genetic value of the SAIS sheep for themselves. In his words, after the formation of the supercooperative, "genetic development continued and became even more secure thanks to the work of a team of technicians that [followed] the example of past years and

[93] See Terry L. West, "Alpaca Production in Puno Peru," August 1981, 4-6, Department of Rural Sociology, University of Missouri, https://pdf.usaid.gov/pdf_docs/pnaaq671.pdf (accessed August 22, 2024).

relied on the support of campesinos, now landowners, who valued the importance of the program to form a new breed and offered their support."[94]

Because of this collaboration, Gamarra continues, the SAIS met its goal of forming a new breed. In late 1973, Dr. Helen Newton Turner of Australia, a world expert on sheep genetics, visited the Fourth National Congress on Veterinary Medicine and Animal Science in Huancayo. Following her visit, she wrote to Gamarra to express her belief that the sheep of Cerro de Pasco and now the SAIS constituted their own breed. "If there has been no introduction of outside animals for 19 years," she wrote, "and if during this time there has been continued selection toward a defined goal, then in my opinion the [Junín] sheep can certainly be considered as belonging to a definite breed." Turner added that she could make "no statement about the relative genetic merits" of the new breed, yet her affirmation led to the formal study of the United Nations Food and Agricultural Administration regarding the legitimacy of the breed.[95]

For the SAIS, this news strengthened its breeding program. By 1978, it owned 165,000 sheep of the Junín breed, which Gamarra touted as "the first breed developed in the Andean region of American continent and one of the few breeds developed in the Western Hemisphere during the twentieth century." He further noted that the breed was "adapted to the environmental conditions of the high sierra and puna but could adapt to regions of less altitude, such as the coast or the inter-Andean valleys." In meat and wool production, it exceeded that "of all ovine breeds whose breeding had been undertaken in Peru."[96] Regarding its social impact, he was equally upbeat. "The Junín sheep is the only adapted and hardy (*rústica*) breed that campesino sheepherders can acquire with confidence," he wrote, "free of risks and at prices within their

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[94] Villarroel León and Gamarra Rojas, *El Ovino Junín*, 16.
[95] Letter from Hellen Newton Turner to Máximo Gamarra Rojas, December 14, 1973, in Villarroel León and Gamarra Rojas, *El Ovino Junín*, Apéndice 2; see also Villarroel León and Gamarra Rojas, *El Ovino Junín*, 31.
[96] Villarroel León and Gamarra Rojas, *El Ovino Junín*, 3.

economic possibilities." Without this breed, he continued, campesinos "would have to continue the erroneous custom of buying or importing excessively expensive specimens of poorly adapted breeds or simply using mixed-breed sheep of limited genetic value."[97]

Unfortunately, however, the prices of pure-bred Junín sheep soon went up and out of the range of small farmers. Entire communities could, if they wished, invest in modest numbers of Junín sheep, yet even then they faced financial and technical challenges. In 1991, the community of Llocllapampa, which continued to be a partner of the SAIS, reported that, "with the goal of improving the breed and yield of our sheep, we purchased 25 breeding rams from the SAIS Tupac Amaru," yet they did not have the nutrient-rich silage that the pedigree rams required. After investing even more in the food, the price of the sheep's milk became too expensive for community members. Consequently, the leaders continued, we had to subsidize the milk.[98] In many cases, the pure-bred sheep of the SAIS were simply too expensive for communities. Ironically, too, as the Junín breed became more elite, successive Peruvian governments paid it more attention. In 2003, the federal government recognized the breed as "regional patrimony" of Junín.[99] By this time, however, local farmers all had mixed-race herds.

During these same years, many other cooperatives struggled. While Velasco had promised to increase agricultural production and reduce imports, the opposite occurred. Granted, some annual yields were already in decline when he took office, but in no case did his policies reverse the trends. Constant demographic growth contributed even more to the decreasing food production per capita.[100] The production of rice, a coastal crop, had increased during the 1960s but dropped from 30 to 24 kilograms person in the 1970s. Potatoes dropped rapidly from 143 to

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[97] Villarroel León and Gamarra Rojas, *El Ovino Junín*, 32.
[98] Empresa Comunal de Llocllapampa, "Balance General, 1991," Community Archive of Llocllapampa, Junín.
[99] "El Ovino Raza Junín," pamphlet published by the SAIS Tupac Amaru Ltda. No. 1, c. 2020.
[100] "Nos Vamos Acercando al Hambre," *Agronoticias*, junio 20, 1979, 5, Biblioteca Nacional, Lima.

104 kilos per person from 1970 to 1976. Production of quinua and cañihua, highland grains, had been steadily declining since mid-century, but the trend did not change with agrarian reform. The most drastic changes involved wheat. From 1948 to 1976, national wheat production dropped from 18 to 8 kilos per person, while imported wheat increased from 20 to 47 kilos per person.[101]

Critics often blame Velasco for these problems. While his policies contributed, those of his successors did not help. General Francisco Morales Bermúdez, a former minister, staged a coup in August of 1975 and forced an ailing Velasco into retirement. As Samuel Fitch notes, military governments like that of Velasco "possessed no mechanisms for conducting policy debates, organizing factional divisions, or mediating and resolving internal conflicts."[102] The main course of action for officers who disagreed with Velasco was to depose the commander in chief and halt all programs that they perceived as ineffective. This they did. While the Morales Bermúdez government allowed some land adjudication to continue, it left the cooperatives to fend for themselves. Samuel Fernández, who described agrarian reform under Velasco as a "miscarriage," describes the policies of Morales Bermudez as "a debacle."[103] Fernando Belaúnde Terry, reelected in 1980 as the first civilian president following the military regimes, distanced himself even more from Velasco's policies. Neither government boosted agricultural production.

During this time, as the nation reflected on the experience of land reform and returned to civilian rule, Peruvian agronomists and other agents of innovation led a kind of renaissance of agricultural ideas. In 1978, journalist Reynaldo Trinidad Ardiles founded the monthly magazine *Agronoticias* to report on farming in Peru and create "a professional organization" of experts.[104] A native of the highland department of Ancash, Trinidad described himself as "a campesino

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[101] "Nos Vamos Acercando al Hambre," *Agronoticias*, junio 20, 1979, 5.
[102] Fitch, *Armed Forces and Democracy in Latin America*, 28.
[103] Samuel Fernández Gómez, in conversation with author, June 24, 2023.
[104] Final notes in *Agronoticias*, agosto 1979, 67.

dressed up as a journalist," and his magazine often focused on the Andes. As one colleague recalled, *Agronoticias* was born from Trinidad's desire to "show the world the deep inequality between those on top and those on bottom" and to "find the way forward" for Peru's "wretched of the earth."[105] With this last phrase, Trinidad's colleague applied the 1961 work of the anti-colonialist writer Frantz Fanon to the small farmers of the Andes. Fanon, in turn, had borrowed the phrase from "The International," a poem that appeared after the Paris Commune of 1871 and that the Industrial Workers of the World (IWW) and other organizations later made into a song.[106]

While *Agronoticias* helped lead the renaissance of farming ideas, it was just one publication of several. In 1985 the magazine *Agroenfoque,* another forum for agronomists, entered the conversation. In 1977, the NGO CEDEP (see Chapter 4) founded the journal *Socialismo y Participación*, and in 1987, the NGO CEPES founded *Debate Agrario*, both of which became important forums for intellectuals. The thick volumes from the biannual SEPIA conferences (Permanent Seminar for Agrarian Research), which began in 1985 as a forum for social scientists, further contributed to the nationwide debate about agriculture and rural society in the wake of agrarian reform.[107]

The underlying message of *Agronoticias* was the need to boost food production. As one writer noted in 1979, "[farming] in Peru today is not exactly an attractive activity… Everyone wants to leave the [countryside] and try for better luck in the city, while, at the same time, the nation requires more and more bread at low prices." The result of these changes was crisis. "Agriculture is on the verse of collapse," the writer concluded, "and the people on the threshold

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[105] Julián Cortés Sánchez, "Razones por las que nació Agronoticias," en *Campesino Disfrazado de Periodista: Semblanza y Recuerdos de Reynaldo Trinidad Ardiles*, ed. Gabriel Ernesto Trinidad Inga (Lima: Ediciones Nova Print S.A.C, 2017), 95-96.
[106] See "The International," https://www.marxists.org/history/ussr/sounds/lyrics/international.htm (accessed July 7, 2025).
[107] See https://sepia.org.pe/ (accessed November 3, 2023).

of famine."[108] If the latter statement was hyperbolic, it was only slightly so. Throughout the late 1970s, the Peruvian people's caloric intake, which was already just 85 percent of the regional average, dropped even more, and the trend showed no signs of reversal.[109]

As agronomists looked for solutions, one term appeared almost ubiquitously in their conversations: *tecnificación.* Where agrarian reform had fallen short, according to most experts, was in training and transferring technology to the cooperatives. With technology, they argued, the cooperatives could still achieve the original goals of production and social wellbeing of the nation's rural population. "The social success of the Agrarian Reform depends on the economic yields of the collective businesses," observed one specialist. "Technification, diversification, and efficiency are three basic steps to reaching this objective."[110] Another editorial writer argued that authorities needed to "light a spark (technology) to spread a flame (progress)" and thereby allow "the light of science and technology" to illuminate the nation's way forward.[111]

In this discussion of technology, some agronomists embraced the idea of "green revolution." Dr. Jorge Jelicic Cavenago, economist, dairy expert, and former hacendado in the state of Lima, argued that "if the Agrarian Reform is supposed to mean social justice as well as an improvement in the level of [food] production, it must be complemented with the 'Green Revolution' to achieve integral development in the countryside." Elaborating on this statement, he added that, "scientific research can lead to truly prodigious increases in crop yields through soil improvement, fertilization that is administered in a technical way, seed selection, the

[108] "Editorial: Sr. Ministro," *Agronoticia*s, agosto 1979, 3.
[109] "¿Por qué no Pan de Yuca?: Producción de Alimentos y Problemática Rural," *Agronoticias*, agosto 1979, 9.
[110] "La Filosofía de Rural Alianza," *Agronoticias*, octubre, 1979, 31.
[111] "Editorial: La Conquista del Este," *Agronoticias*, septiembre, 1979, 3.

development of hybrids by crossing diverse varieties, using fast-growing species, etc. This is what is currently referred to as 'Green Revolution.'"[112]

Applying these ideas to Peru, Jelicic further argued that the most efficient solution to Peru's limited cropland was scientific research and the application of modern technology, as opposed to large and expensive irrigation projects, such as that of Majes-Siguas in Arequipa (see Chapter 5). He specifically called for research on improved pastures for livestock, such as the Puno Project (see Chapter 3), as well as "technical education" for campesino communities focused on agriculture. He likewise called on the federal government to better regulate the use of irrigation water and to expand and facilitate credit for farmers. Finally, regarding the cooperatives, Jelicic urged managers to develop "technical plans in direct proportion to the quantity and quality of lands that they received so that these lands produce well."[113]

The cooperatives themselves echoed many of these ideas. Dr. Juan de Dios Cayo Muñoz, president of the National Federation of Cooperatives argued that "the right technical and credit support will not only benefit men of the field but the entire country, since we will have more food." Cayo Muñoz also challenged an idea circulating among some citizens that the land should be returned to former hacienda owners. In their fears of food shortages, these citizens blamed campesino families for the nation's overall lack of productivity. In response, Cayo Muñoz declared that the beneficiaries of the agrarian reform have already demonstrated their ability to produce food. What we need to focus on is "giving campesinos the facilities they need to fulfil their noble role." The "New Peru," of the post-dictatorship period, he concluded, should be built upon an "agrarian revolution," which should include not just land reform but also "the Green

[112] Jorge Jelicic Cavenago, "Falta Complementar la Reforma Agraria con la Revolución Verde," *Agronoticas*, julio-agosto de 1983, 30-33, 40-43.
[113] Jelicic Cavenago, "Falta Complementar la Reforma Agraria con la Revolución Verde."

Revolution to make the land that we already have produce more," as well as a "water revolution" to open new lands through irrigation to large- and small-scale farming.[114]

Ironically, these ideas closely matched those of the Velasco administration in the early 1970s. Land, water, and technology were three of its priorities, which the Morales Bermúdez government had reversed. In popular memory, however, Velasco, the Andean messiah, became associated with ineffective technocracy, not useful technology. Referring mainly to Velasco, one livestock expert wrote, "Peru continues to be, and will remain for many more years, eminently agrarian…. What we must make our politicians understand is that demagoguery without intelligent and focused technical attention to agriculture will never allow us to rise out of underdevelopment."[115] Similarly, in the cities of Tingo María and Chanchamayo in the Andean departments of Huánuco and Junín respectively, coffee producers called for a "transfer [of technology] without paternalism."[116] Another writer requested government action that was "less pompous [than that of Velasco] but more coherent, practical, and lasting."[117]

Tellingly, several writers cited the lack of technology as an even greater problem than environmental challenges such as high altitude or fungi. Reporting on a meeting of over 200 coffee growers in Chanchamayo, in which the participants discussed ways to overcome the problem of yellow rust, *Agronoticias* wrote that the meeting demonstrated that "national coffee growers' worst enemy is not yellow rust but rather the rust of backwardness."[118] In a similar play with words, another article cited the government's "bureaucratic rust," alongside yellow rust as the dual problems facing farmers in the interior of the nation.[119] In a more upbeat tone, one

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[114] Dr. Juan de Dios Cayo Muñoz, "La Revolución del Agua," *Agronoticias*, noviembre 1979, 16.
[115] Dr. Eduardo Gómez Sánchez Boza, "Lo Político y lo Técnico," *Agronoticias*, noviembre 1979, 12.
[116] "Café: ¡Todos Contra la Roya del Atraso!" *Agronoticias*, septiembre 1979, 38-41.
[117] "Editorial: Sr. Ministro," *Agronoticias*, agosto 1979, 3.
[118] "Café: ¡Todos Contra la Roya del Atraso!" *Agronoticias*, septiembre 1979, 38-41.
[119] "Perspectivas del Agro," *Agronoticias*, agosto, 1979 6 (4-7).

journalist reported on irrigation and experimental wheat crops in the district of Asillo in Azángaro, Puno where approximately 1,500 families farmed at an altitude of 4,000 meters above sea level. "It has always been said that altitude is the worst enemy of agriculture," the article declared, but in Asillo campesino families working with technical advisors had successfully improved irrigation, sheep grazing, and wheat cultivation.[120] In other words, with the right technology in the right hands, environmental obstacles would no longer be insurmountable.

Again, this idea was not new. As the following chapters will demonstrate, Velasco and his advisors tried repeatedly to reform Andean environments with technology—and they usually underestimated these environments. In the late 1970s and early 1980s, however, agronomists and government officials found it easier to blame Velasco than to blame nature. Thus, they recycled many ideas from the Velasco administration but suggested that *they* would do it right. For example, in February of 1979, the Ministry of Agriculture renewed the National Institute of Agrarian Research (INIA) and reiterated its purpose to "transfer of most appropriate technology" to rural areas that had undergone land reform with the goal of "making food … production more efficient and utilizing our resources of water, soil, fauna, and forests."[121] As *Agronoticias* put it, INIA would help move technology "from the lab to the farm."[122] As another example, in 1969, the Velasco administration signed the Andean Pact along with Ecuador, Venezuela, Chile, and Bolivia to facilitate free trade. One decade later, Peruvians looked to the group's Department of Agricultural Development to help the nation along the path of technification and, in turn, to promote "the socio-economic improvement" of the region's "depressed rural population."[123]

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[120] Miguel Ángel Paredes, "La Irrigación más Alta del Mundo: Asillo, un vergel en la Puna," *Agronoticias*, septiembre 1979, 32-33.
[121] Dr. Federico Anavitarte Condemarin, "La Creación del INIA," *Agronoticias*, noviembre 1979, 12.
[122] "Fotosíntesis: Federico Anavitarte, una Lumberea para el INIA," *Agronoticias*, septiembre 1979, 66.
[123] "Pacto Andino: Agro, Preocupación Fundamental," *Agronoticias*, septiembre 1979, 16-17.

As they looked for inspiration abroad, Peruvians cared far more about technology than about Cold War politics. On one hand, they admired the large-scale, mechanized farming in the United States. At the same time, they held China and the Soviet Union up as examples of high productivity on small amounts of arable land. In a single issue of *Agronoticias*, the editors included examples of technology from each superpower: giant combines of the U.S. Midwest, which supposedly would be driven remotely by the year 2000; cobalt irradiation treatment of seeds in Shaanxi, China which had contributed to the production of over 200 new, high-yielding varieties of wheat, corn, cotton, soy, and other foods; and large irrigation projects in the USSR which would open 900,000 new hectares of the Karshin Steppe for cotton production.[124]

Of all the foreign models, China seemed to catch their attention the most because of its ratio of production per hectare. "With an arable land surface that amounts to less than seven percent of the world total," *Agronoticias* reported, "[China] produces grain to feed a population that represents one fifth of the world population." The key, wrote the editors, is the government's prioritization of agriculture. "Regardless of the questionable political option that China has chosen," they concluded, this focused government attention underpins "the Chinese miracle."[125] For reports such as this, Reynaldo Trinidad relied heavily on *China Reconstructs*, a magazine produced by the China Welfare Institute.[126] Although the institute had an agenda to make the country's policies more palatable to skeptical western audiences, agrarian journalists in Peru had no qualms about discarding political ideas that they considered radical while absorbing all they could about agricultural innovation and production.

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[124] "El Agro en el Año 2000"; "El Átomo en el Agro Chino"; "Ejemplo de un Agro Mejor: Una Irrigación Socialista, La URSS en la Conquista del Desierto," *Agronoticas*, agosto 1979, 24-27, 61.
[125] "Ejemplo para un Agro Mejor: Aprender de Tachai en la Agriculture, El Milagro Chino," *Agronoticias*, septiembre 1979, 22-23.
[126] See "China Reconstructs," https://www.marxists.org/subject/china/china-reconstructs/index.htm (accessed March 27, 2024).

Admiration for foreign technology rarely led to anything concrete in Peru. Overall, government efforts of the late 1970s and early 1980s were quite limited in comparison to the Velasco era. Nearly everyone agreed that Peru's agrarian reform had had serious shortcomings. Yet instead of trying to build on or improve the work of Velasco, the Morales Bermúdez and Belaúnde administrations largely abandoned it. A foreign debt crisis and economic recession, which became especially acute in the second half of the 1980s, also limited the government's power to provide meaningful aid to the Andes.[127] In *Agronoticias*, critiques of Velasco gradually gave way to criticism of current administrations for neglecting the Peruvian countryside.

The cooperatives felt more forgotten than ever. As twenty-nine delegates from six cooperatives in Ayacucho wrote in 1986, "When the government of General Velasco issued [agrarian reform] law 17716, we thought at the time that it was good because they expelled the *gamonales* and gave us technical support and credit. But that lasted only a short time. With the government of Morales Bermúdez everything changed; they withdrew the [agricultural] technicians and all the aid and left us in a state of complete abandonment. And with Belaunde things were even worse."[128] Communities often expressed similar sentiments. In 1985 the community of Llacto-Sayaña in Arequipa wrote to the recently elected president, Alan García Pérez (1985-1990), decrying the "anti-campesino government" of the past five years and calling for "technical and credit support."[129]

Around this time, another challenge began to grow in rural Peru. While agronomists looked to China for technological inspiration, radical professors and students looked to China for

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[127] For more on the debt crisis, see Bulmer Thomas, *Economic History of Latin America*, 353-391.
[128] "Encuentro de Cooperativas del Departamento de Ayacucho: Pronunciamiento," October 24-25, 1986, Folder VIII, Proyecto de Adjudicación, Archivo Regional de Ayachucho.
[129] Letter from Campesino Community Llacto Sayaña to Dr. Alan García Pérez, December 6, 1985, Libro de Actas de Llacto-Sayaña, Área Trámite Documentario y Archivo, Gerencia Regional de Agricultura, Arequipa.

political inspiration. In the 1970s, Abimael Guzmán, a professor from southern Peru, began a Maoist movement known as the *Sendero Luminoso* (Shining Path), which, as in the Chinese Revolution of the 1940s, would move from the countryside to the cities. In 1980 he and his followers declared that they would cross a "river of blood" on this path to revolution.[130] Throughout the decade, Shining Path cadres arrived in communities across the Andes to recruit, indoctrinate, demand goods, and intimidate. Soon thereafter, a smaller and slightly less dogmatic armed group known as the Tupac Amaru Revolutionary Movement (MRTA) began operating.

Both the Shining Path and the MRTA fixed their sights on the cooperatives as bastions of capitalism and hierarchy, as well as centers of food and resources. Mimicking the "black harvests" of the Chinese revolution, *Senderistas* plundered livestock, burned installations, and executed administrators, researchers, and veterinarians. Baudilio Santiago, a veterinarian for the SAIS Tupac Amaru and student of Máximo Gamarra, survived two attempts on his life.[131] Other professionals were not so fortunate. Upon its fifty-year anniversary in 2020, the SAIS paid tribute to the "[eleven] technicians, directors, and workers" that the terrorists "ruthlessly murdered … as they fulfilled their labors, shedding blood, tears, and pain among their families and communities." Likewise, the SAIS remembered the "7 million dollars of destruction."[132]

This was just one example of many. After an attack on the SAIS Cerro Grande in Hancané, Puno in 1988, *Agronoicias* reported that the business "has been virtually abandoned because its administrators and workers have [fled]." In this same issue, the editors also reported on the SAIS Cahuide in the Valley of Mantaro. "It is unspeakable what is happening in [this

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[130] Abimael Guzmán, "We are the Initiators," In *The Peru Reader: History, Culture, Politics*, 2nd Edition, eds. Orin Starn, Carlos Iván Degregori, and Robin Kirk (Durham: Duke University, 2005), 325-330
[131] Baudilio Santiago, in conversation with author, June 15, 2023, Huancayo.
[132] "El ataque Sedicioso a la SAIS Túpac Amaru" Asesinaron a Once Trabajadores y Destruyeron Bienes," in *SAIS Túpac Amaru*, 14.

SAIS]," they wrote. "Because of pressure from … the Shining Path, its partner communities agreed to deactivate the SAIS and turn it into small 'communal businesses.'" Yet these businesses, the editors continued, will get nowhere because "the Shining Path, which now controls the process entirely, has ordered campesinos to sell and kill all their improved livestock, keeping only the minimum amount of milk and meat necessary for their own consumption."[133]

Years later, the federal government's Truth and Reconciliation Commission examined the destruction of the SAIS in detail. Regarding the SAIS Cahuide, it noted, the problem was that "this SAIS owned 269,000 hectares of land on the left and right sides of the Valley of Mantaro, while its [twenty-nine] partner communities owned only 105,364 hectares." Such unequal land distribution made it a prime target for armed groups. However, the commission also noted that the SAIS Cahuide was "one of the most important agricultural businesses in central Peru" with seven production units and more than 800 workers. Given its prominence, the Shining Path set out to destroy it and "thereby isolate its campesino communities from the logic of the market."[134]

In addition to the death and destruction, the terrorists also pillaged campesino businesses. In Azángaro, Puno in 1989 a truckload of armed subversives visited the community of Muñani Chico, which had inherited some of the capital of a recently dissolved cooperative. They stole all the cheese, butter, and typewriters, set fire to the community's warehouse and offices, and killed the main administrator.[135] The following year, three Shining Path operatives visited Orurillo in Melgar, burned a home, and stole 26 cows, 20 sheep, and other belongings.[136] Most theft of livestock and food was for "redistribution" to campesino communities or for their own consumption. Yet in the Valley of Mantaro, armed groups also generated terror by burning cattle

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[133] "Puno," "Junín," *Agronoticias*, February 1989, 55, 58, Hemeroteca, Biblioteca Nacional, Lima.
[134] Comisión para la Verdad y Reconciliación, File 080403, "Cahuide," Defensoría del Pueblo, Lima.
[135] File 520045, Comisión para la Verdad y Reconciliación (CVR), Defensoría del Pueblo, Lima.
[136] File 520111, CVR, Defensoría del Pueblo, Lima.

alive or slitting their bellies and letting them bleed to death in the pastures.[137] In the town of Acopampa in the Callejón de Huaylas, attacks on animals also occurred when Senderistas fed all dogs poisoned meat so that they could carry out their nightly crimes without any barking.[138]

Sometimes the insurgents combined theft and intimidation with extortion. In Chongos Alto in the Valley of Mantaro, Senderistas killed twelve authorities, bombed the municipal building, and left a poorly written letter for members of the Laive production unit of the SAIS Cahuide demanding a large sum of money.[139] Similarly, in 1993 the director of the SAIS Kenamari in Azángaro, Puno, which had suffered bombings and threats since 1985, received a letter from the MTRA. "Up until now, you all have given no thought to your poor, exploited partners," it read. "You all continue drinking the blood of the company's workers. Perhaps you all think of yourselves as great *gamonales*. We know full well that some of you have large properties outside this state…. Soon we will wipe out all these evils with no respect for life." Yet for now, the letter concluded, we will leave the company alone in exchange for food and cash.[140]

The experience of Cayo Warthon Riveros, a fifty-year veterinarian and alpaca farmer in central Puno, further illustrates the effects of armed conflict on agriculture. In 1978, after working for the Ministry of Agriculture for five years, Warthon became the director of the SAIS Sollocota in Azángaro. In both positions, Warthon noted, he could do his job well for two main reasons besides his formal training: 1) he spoke Quechua; and 2) he could ride horses. When he assumed his position in the SAIS, he recalled seeing some corruption and poor management—factors that contributed to the demise of some SAIS—yet in his case, he earned the trust of his

[137] Levita Juana Cotera Velásquez, in conversation with author, San Juan de Pachacayo, Junín, June 7, 2023; see also *Agronoticias*, December 1988, 53.
[138] Eda Figueroa Nieto, in conversation with author, November 18, 2024, Mancos, Ancash.
[139] File 301365, CVR, Defensoría del Pueblo, Lima.
[140] File 520332, CVR Defensoría del Pueblo, Lima.

personnel by selling livestock in public auctions (the most transparent option), and by speaking their language. Then, the *Sendero* arrived. In a large company, people constantly came and went, Warthon recalled, and it was hard to know who was a *Senderista* and who was not. By 1984 and 1985, however, rumors and threats became common. "I slept with my pistol [at my side] and a machine gun at the head of my bed," he said. In 1985, for his own safety, Warthon left.[141] In this case, as in others, armed groups drove the agricultural talent out of rural Peru.

The involvement of communities in the armed movements is complex. Some individuals and communities, such as those who had had especially negative experiences with land reform, supported or sympathized with the insurgents.[142] Others were initially receptive then backed away.[143] Still others were forcibly recruited.[144] In some cases, communities did not accept the bloodiness and authoritarianism of Shining Path operatives, but they took advantage of the destruction of the cooperatives to recover the land that they wanted.[145] Regarding agricultural innovation, the armed conflict in many areas doused, at least for a time, the spark of technology that some agronomists and communities had been trying to light.

Although they started the violence, the Shining Path and MRTA were not the only participants. The Peruvian military and police were slow and poorly prepared to respond to armed groups in the Andes. When they did, they launched a brutal and often indiscriminate counter-terrorism campaign that accounted for nearly half of the 70,000 total deaths. They did not target agronomists and veterinarians like the Shining Path, yet they developed targets of their

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[141] Cayo Warthon Riveros, in conversation with author, November 4, 2023, Juliaca.
[142] Asensio, *Breve historia*, 191.
[143] See Renzo Aroni, "'Pacto de Alianza': The Indigenous Peasant Coalition against the Shining Path, 1983-86," Presentation at the American Historical Association Annual Meeting, San Francisco, January 3-7, 2024; see also *Una revolución precaria: Sendero Luminoso y la Guerra en el Perú, 1980-1992*, eds. Ponciano del Pino y Renzo Aroni Sulca (Lima: Instituto de Estudios Peruanos, 2023).
[144] Franco, *Cajatambo:* 51-58, 65-76.
[145] See Mayer, *Ugly Stories*, 222-223.

own, including students, teachers, and often entire campesino communities. In the dedication of one of his studies, Samuel Fernández Gómez pays homage to his son, Franciso Juan, "arrested and disappeared on October 5, 1990 … by the Peruvian Army when he was a third-year agronomy student at UNCP-Huancayo [National University of Central Peru]."[146] The military's conduct, as the NGO CEDEP noted, "instead of contributing to the safety and tranquility of the population, created, on the contrary, a feeling of unease and intense rejection."[147]

Indeed, in Azángaro, Puno in 1990, campesino leaders sent a fourteen-point petition to the prefect. While they requested agricultural aid of different kinds, their longest point called for "no more unjust entry of the National Army into campesino communities, no more arrests of campesino leaders … [and the] withdrawal of the army from Azángaro."[148] Similarly, in 1990 the vicars in Ayaviri and Juli protested the government's declaration of a "state of emergency" in several districts. "We know from experience," they wrote, "that wherever this category exists the terror of subversive groups is compounded by the terror of the State, carried out on many occasions by the Armed Forces and the Police against a defenseless population."[149]

While armed groups attacked and extorted the cooperatives, communities often turned to their tried-and-true solution to farming difficulties and governmental indifference: invasions. Facing the cooperatives' lack of productivity and, in some cases, their imminent destruction at the hands of the armed groups, many communities from the late 1970s through the early 1990s moved onto the cooperatives just as they had moved onto the haciendas in past decades.

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[146] Samuel Fernández Gómez, "El Perú Profunde Reconstruye: Proyecto de Reivindicación de los Derechos Comunales, Plan de Desarrollo Rural Integral Sostenible," 24 de junio de 2022, Dedicatoria, manuscript in author's posession.
[147] Franco, *Cajatambo*, 66-67.
[148] Petition to the Prefect of Puno from the Federación Distrital de Campesinos de Arapa, July 2, 1990, Caja 463, Año 1990, Fondo: Prefectura, Archivo General de Puno.
[149] "Pronunciamiento de las Vicarias de Solidaridad de las Prelaturas de Ayaviri y Juli y de la diócesis de Puno," February 25, 1991, Caja 467, Año 1991, Fondo: Prefectura, Archivo Regional de Puno.

Communities often accompanied such action with litigation designed to defend or formalize their takeover of certain lands. In March of 1987, for example, the community of Huasicancha in Junín sued what was left of the SAIS Cahuide for "damages" and demanded a section of land as repayment. The case dragged on for a decade, but it appears that Huasicancha was mainly using the court to legitimate its participation in the local scramble for the cooperative's land.[150]

By resorting to invasions and parallel litigation, many communities initiated messy legal processes of "restructuring" and "parcelization." In some cases, they also provoked physical fights over the best farmland.[151] In Puno in 1990, members of ten campesino communities invaded the land of the Manco Capac cooperative, provoking a fight with the members of this cooperative; thirty-two individuals sustained injuries.[152] In the end, most campesino families ended up with small individual plots. Parcelization removed economies of scale and made it harder for research institutions to share technology with farmers.

At the same time, many communities organized and resisted the encroachment of armed groups. They knew and cared about the land far more than poorly paid soldiers and, in this respect, were better prepared to defend it.[153] Importantly, too, they continued to farm. In 1990, the president of the community of Villapampa in Azángaro, Puno—a region ravished by the armed conflict—wrote the Prefect on behalf of his community. "Convinced that only production will save our dear Peru from the misery that we are living in," he wrote, "we approach the

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[150] See "Informe sobre situación procesal de expediente judicial de la CC.CC de Huasicancha," 3 de abril de 1996, Huasicancha, Binder 1, Oficina de Comunidades Campesinas y Nativas, DRA-Junín, Huancayo.
[151] See "Report for the Prefect of Puno," regarding the communities of Ticani and Santa Rosa de Uyuni, March 28, 1987, Caja 450, Año 1987, Fondo Prefectura, Archivo Regional de Puno; Petition to Prefect of Victor Ticona Coaquira and Aurelio Quispe Erquínique against Juan Sona Villas of the community of Ullagachi, September 11, 1989, Caja 459, Año 1989, Archivo Regional de Puno; boxes from these years contain many examples of conflicts over land that occurred between individuals and between communities as the cooperatives dissolved.
[152] Petition to the Prefect of Puno from the Cooperative Agraria de Trabajadores Manco Capac, July 20, 1990, Caja 463, Año 1990, Fondo: Prefectura, Archivo Regional de Puno.
[153] See Asensio, *Breve historia*, 216.

government through your worthy office to request the donation of a tractor for agriculture."[154] Requests for machinery and other aid continued into the twenty-first century.[155] Such requests illustrate many communities' abiding interests in both land and technology.

To make sense of armed conflict, conservative critics of the Peru's agrarian reform often blame the Velasco administration for creating a vacuum in the countryside that the Shining Path filled. Given the close chronology, scholars and citizens of all persuasions often search for some kind of correlation between Peru's agrarian reform and its internal armed conflict. Others, however, have concluded that agrarian reform ultimately limited the appeal of the Shining Path and MRTA in rural Peru. The editors of *Agronoticias*, who in the late 1970s had not minced words about the Velasco administration's shortcomings, sang a different tune in the late 1990s. Thanks to Velasco's reforms, they argued, armed conflict did not appeal to most communities.[156]

As Reynaldo Trinidad, declared, "without the destruction of the most archaic forms of exploitation of the [Peruvian] land and people [through agrarian reform], it is likely that senderista fundamentalism would have had a [ripe] breeding ground [in the Andes] for its genocidal adventure."[157] The magazine later reiterated this perspective. "Agrarian reform was … the product of an uncontainable social pressure," the editors wrote, "that, without the escape valve of [land reform], would have been, a few years later, the best strongarm of the terrorist fundamentalism [with the power] to sink the entire country in catastrophe [*hecatombe*]."[158]

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[154] Request from Félix Mamani Mamani to Prefect of Puno for Donation of an Agricultural Tractor for the Community of Villapampa, August 12, 1990, Caja 463, Año 1990, Fondo: Prefectura, Archivo Regional de Puno.
[155] For example, in the province of Melgar in Puno, campesino communities in the 1990s regularly asked to borrow tractors from the Ministry of Agriculture's Agrarian Agency in Ayaviri. As another example, in 2000 when the government launched a water management plan called Sierra Verde, many communities immediately requested to be included. See Folder "Sierra Verde," Folder "Solicitud Maquinaría Agrícola," and Folder "Documentos Recibidos, 1995-1997," Archivo, Agencia Agraria, Ayaviri.
[156] See Roger Rumrill, "La Reforma Agraria por Dentro," *Agronoticias*, June 1995, 16-21, Biblioteca Nacional.
[157] César Lévano, "Arból de Batallas: Una Nueva Frontera," *Agronoticias*, November 1998, 17, Biblioteca Nacional.
[158] "De la Reforma a la Frustración Agraria," *Agronoticias*, June 1999, 1, Biblioteca Nacional.

Agronoticias also lamented the destruction of the cooperatives. While these businesses clearly had problems, the editors did not believe the problems justified neglect from government authorities or attacks from armed groups. In some cases, the armed conflict simply finished off cooperatives that were already struggling. In others, however, it struck a hard blow to businesses that were operating efficiently, at least considering the government's lack of support. In 1994, *Agronoticias* honored several cooperatives for surviving both neglect and violence. "The … adversaries of agrarian reform and campesino self-management can say that one swallow does make spring, and they would be right," the editors wrote. "However, the success of [the cooperative] Rural Alianza [in Puno] is not unique. Its four sisters, Kolkeparque, Kunurana, Nuñoa, and Umachiri are on the same path, as are the SAIS Túpac Amaru and Pachacútec in Junín, the CAT Atahualpa-Jerusalen in Cajamarca and many other associative businesses … which, fortunately, hate and governmental irresponsibility could not kill."[159]

While this tribute did not apply to the majority of the cooperatives, it does call into question the pessimism of many scholars and the neoliberalism of many officials who each, in their own way, conclude that agrarian reform in Peru failed. *Failure*, in some cases, is an appropriate term, yet, as the next chapters demonstrate, it should not cloud the many efforts at innovation that stemmed from land reform and yielded results that deserve consideration.

[159] "No es Caso Unico," *Agronoticias*, junio de 1994, 76.

Chapter 3

El Altiplano de Puno: Livestock, Altitude, and Alternative Technology

In a press release of July 1970, the Pro-Electrification Committee and other leaders in the southern department (state) of Puno described their state as the "Cinderella of Peru."[1] With this metaphor, they suggested that Puno, which in the mid-twentieth century was the most rural, most Indigenous, and second-most populated state in Peru, was quintessentially Peruvian, yet the federal government continued to treat it as a backwater. In the words of historian José Luis Rénique, Puno during this time was "the great campesino region of a country governed by markedly centralist principles from a distant capital that had grown directly out of the [Spanish] conquest."[2] In the early 1970s, Puno had nearly 800,000 inhabitants, of which some 80 percent relied on agriculture for their livelihoods. In rural Puno, the illiteracy rate was also close to 80 percent, and the state experienced significant outward migration to cities such as Arequipa, Cusco, and Lima.[3] In their statement to federal authorities, however, regional leaders declared: "Puno is mobilizing; this people wants to achieve new things; this people asks with justice and legality for what has already been given [schools, roads, dams, etc.] to neighboring states."[4]

Not all Puneños shared a desire for government involvement. The following month, when two agrarian reform engineers arrived in Capachica, a peninsula on Lake Titicaca, to conduct a land survey, several residents immediately joined together to protest and possibly assault them.

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[1] Enrique López del Solar and Faustino Condori Ticona, Comunicado de Prensa del Comité Pro-Electrificación del Departamento de Puno," July 30, 1970, Caja 386, Año 1970, Fondo Prefectura, Archivo Regional de Puno.
[2] José Luis Rénique, *La Batalla por Puno: Conflicto Agrario y Nación en los Andes Peruanos*, 2nda Edición (Juliaca: Universidad Nacional de Juliaca, 2016[2004]," 33-34.
[3] "Factores Socio-Culturales de la Alimentación: Departamento de Puno, Marzo 1976," Oficina Nacional de Apoyo Alimentario, p. 1-5, INIA Library, Salcedo, Puno.
[4] Enrique López del Solar and Faustino Condori Ticona, Comunicado de Prensa del Comité Pro-Electrificación.

In a letter to the prefect of Puno, a local official denounced the individuals as "instigators" and "rioters" (*revoltosos*). Before police restrained them, he explained, these individuals accused local authorities of "selling the district of Capachica to the Ministry of Agriculture and its *yanqui* partners from North America…. We do not need agrarian reform," they cried, "for it is a government trick [*engaño*]." Looking ahead, the writer concluded, "I request support [*garantías*] for [agrarian reform] officials that work in [Puno] and punishment of the lawbreakers."[5]

Just over two years later, in October of 1972, members of the campesino community of Ajoyani in the province of Carabaya (northern Puno), wrote to the Minister of Agriculture, General Enrique Valdez Angulo, to protest the practices of the neighboring cooperative, Aurora. "Every day we endure the abuses … of the employee Lucas Lima García for negligible damages of our small herds [to the pastures] on the borders of [cooperative] lands." Lima García, the writers added, "used to be the manager [*mayordomo*] and close associate of the *gamonal* who owned the hacienda Aurora. Both were used to committing all kinds of abuses against us, taking our lands and herds, [and now], in the midst of the Revolution, [Lima García] wants to continue" in the same way. This situation, the writers concluded, "is a danger to the smooth progress of Agrarian Reform which is being carried out so efficiently in our dear country, and elements of this kind should not remain on the lands that have been affected by the Agrarian Reform."[6]

These accounts illustrate three distinct responses of Puneño residents to the work of the Velasco administration. First, regional leaders called for equitable treatment in the federal government's rural development projects. Second, a faction of residents vehemently opposed agrarian reform. A follow-up report on this incident revealed that local authorities in Capachica

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[5] Carta del Consejo Distrital de Capachica al Prefecto de Puno, 18 de agosto de 1970, Caja 386, Año 1970, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[6] Letter to General Enrique Valdez Angulo from Comunidad Campesina de Ajoyani, 13 de octubre de 1972, Folder: C.C. Ajoyani, Carabaya, Oficina de Comunidades Campesinas, Dirección Regional de Agricultura (DRA)-Puno.

had not explained to residents what the visiting engineers would be doing. Moreover, the protesters were upset with U.S. priests in the local parish, hence their accusations of *yanqui* meddling.[7] Third, some campesino communities had faith in Velasco's vision of agrarian reform, yet they called on the military government to address problems that the cooperatives had failed to solve. In this case, the government's idea of hiring former hacienda managers to run the new cooperatives may have preserved some expertise, but it also preserved elitism and resentment.[8]

The Velasco administration's overarching solution was to move forward with land adjudication and to develop technology on the cooperatives that, in turn, would benefit communities. In Puno, what caught the attention of the government's innovating agents was the potential of sheep farming and wool production. The vast *altiplano* (high plains) of Puno, which covers 68 percent of the state, begins at an altitude of 3800 meters above sea level and extends to over 5000.[9] This hilly rangeland is ill fit for most crops. In the 1980s, scientists described much of the altiplano as "an environment of intense sunlight, violent winds, and bone-chilling cold. This area is among the world's worst farmland with vast stretches of barren, rocky terrain … characterized by steppes, uncultivated fields, tundra, and … alpine and subalpine plains."[10]

Although the farmland was poor and the ecosystems fragile, resilient natural grasses did allow for animal husbandry. In fact, for over six thousand years, Andean communities had successfully raised llamas and alpacas.[11] As a more optimistic group of scientists explained, "the

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[7] Informaciones, Policía de Investigaciones del Perú, 21 de agosto de 1970, Caja 386, Año 1970, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[8] See Mayer, *Ugly Stories*, 113, 192.
[9] "INIAA (Instituto Nacional de Investigación Agraria y Agroindustrial): Plan de Desarrollo a Mediano Plazo (1990-95) de la Estación Experimental Illpa-Puno, 1990," p. 9, INIA Library, Illpa, Puno.
[10] *Lost Crops of the Incas: Little-Known Plants of the Andes with Promise for Worldwide Cultivation*, Report of an Ad Hoc Panel of the Advisory Committee on Technology Innovation Board on Science and Technology for International Development, National Research Council (Washington D.C.: National Academy Press, 1989), 57, 63, CIMMYT Library, Texcoco, Mexico.
[11] See Marcia Stevenson, *Llamas beyond the Andes: Untold Histories of Camelids in the Modern World* (Austin: University of Texas, 2023), 2.

pronounced shortage of cropland (0.14 hectares per person in 1981) and the severe climatic limitations … place [Puno] at a disadvantage compared [even] to other mountain zones…. The main comparative advantage of the department resides in the existence of widespread natural grasses … which make possible a large livestock industry."[12] According to one source, Puno in the 1970s had 4 million hectares of rangeland. At the time of Velasco's coup, these pastures supported approximately 470,000 cows, 3 million alpacas, and 7 million sheep.[13] Puneño sheep made up nearly fifty percent of all ovine herds in the country, and, among Andean nations, Peru relied the most on wool production.[14]

The Velasco administration thus set out to boost sheep farming in Puno through genetic improvement and pasture cultivation. In time, however, and thanks to the government's foreign consultants from New Zealand, livestock specialists in Puno began emphasizing the potential of alpacas and other camelids, which historically had borne the stigma of being "animals of the Indians." Innovation efforts challenged some colonial traditions. They also revealed the importance of community knowledge and interests in rural development projects.

Neither the Velasco administration nor other scientists achieved all their goals. In the cooperatives, the military government never fully reconciled its interests in segregating the high-

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[12] "Aprovechamiento del potencial eólico y uso racional de tecnologías para bombeo de agua en el altiplano de Puno," 20, Consejo Nacional de Ciencia y Tecnología (CONCYTEC), Cooperación de Fomento y Promoción Social y Económica de Puno (CORPUNO), Deutsche Gesellschalt für Technische Zusammenarbeit (GTZ), Eschborn, 1984, INIA Library, Salcedo.

[13] See Terry L. West, "Alpaca Production in Puno, Peru," August 1981, 1-3, Department of Rural Sociology, University of Missouri, https://pdf.usaid.gov/pdf_docs/pnaaq671.pdf (accessed August 22, 2024); see also "Campesinos Quieren Importar 62 Mil Ovinos Para Puno," *El Correo*, 4 de agosto de 1973, INIA Library, Illpa, Puno; "Linea de Productos Agropecuarios: Empresa Regional Puno, junio 1977," Ministerio de Alimentación, Zona XII-Puno, INIA Library, Salcedo, Puno; alpaca and llama numbers vary significantly from source to source, perhaps because they were not all domesticated and harder to count accurately.

[14] See Mario E. Tapia, "Conocimientos Actuales sobre Sistemas de Alimentación Animal en Zonas Áridas de América Latina (Altiplano de Puno)," 1977, 111; Lucio Rolando Casapia Ampuero, "Mortalidad en Corderos Corriedale en el Departamento de Puno, durante las Campañas de Parición de 1972 y 1973," Tesis presentada a la Universidad Nacional Técnica del Altiplano, 1975, 2; Roberto F. Gallegos Acero, "Diámetro y Longitud de Mecha en Corderos Corriedale de la Granja Chuquibambilla," Tesis presentada a la Universidad Nacional Técnica del Altiplano, 1975, 3; INIA Library, Illpa.

pedigree herds and helping communities boost the production of their mixed-race herds. Moreover, as the letter from Ajoyani suggests, the cooperatives, like haciendas before them, often maintained the elitism of haciendas. In addition to these problems, the internal armed conflict cut short most innovation efforts in Puno in the late 1980s and early 1990s. Scholarship on social strife and armed conflict, however, should not marginalize innovators' ongoing efforts to overcome ecological limitations and boost agricultural production in Puno—efforts that made the altiplano one of the main Andean laboratories of the agrarian reform era.

In March of 1970, Minister of Agriculture General Jorge Barandiarán Pagador (1969-1971) visited Puno to meet with regional officials, present property titles to new cooperatives, and "verify the normal progression of agrarian reform."[15] Four months later, just a few days before the pro-Electrification Committee released its statement, Barandiarán returned to Puno to observe the quality of sheep and current breeding practices on the new cooperatives and in haciendas and communities. To the press, he declared that agrarian reform in Puno and beyond was "highly regarded and admired throughout the entire world for its clear-sightedness [*tino*] and for the great strides it was taking."[16] Puno was clearly on the radar of the Velasco administration. The generals were conscious of its history of federal neglect and hacendado dominance. Moreover, they cultivated high hopes for innovation and livestock production on the altiplano.

For these hopes to materialize, the ministry first faced a simple question: Where could it find high-pedigree, high-yielding sheep for the new cooperatives? When land expropriations began, many hacendados in Puno summarily sold their pure-bred livestock, often to buyers in

[15] Informaciones, Policía de Investigaciones del Perú, 9 de marzo de 1970, Caja 386, Año 1970, Fondo Prefectura, Dirección del Archivo Histórico, Archivo Regional de Puno.
[16] Informaciones, Policía de Investigaciones del Perú.

Bolivia.[17] If they could not sell them, as sociologist Terry West noted, "they opted to slaughter them before they could be confiscated by the government." This practice reduced the department's livestock significantly. Sheep numbers, which saw the largest decline, dropped from around 7 million in the late 1960s to 5 million in the mid-1970s.[18] Hacendados' practice of selling or slaughtering their best sheep left the new cooperatives with only the members' mixed-race herds, which the military government, like hacendados, often scorned as unscientific. As in other cases, the Velasco administration looked beyond national borders for solutions.

For wool production, the countries of New Zealand and Australia seemed to hold the answers. In the late twentieth century, Australia boasted 161 million sheep, by far the most in the world, and a wool production rate of 4.5 kilograms per head. New Zealand had just over 32 million sheep, but it led the world in wool production with 5.4 kilograms per head; it also had the highest concentration of sheep per square kilometer. In South America, Argentina had the most sheep, 28 million, and an average production rate of 3.2 kilograms of wool per head. Uruguay had 25 million but led in wool production with 3.9 kilograms per head. Chile had a production rate of 3.7 kilograms per head; Brazil, 2.6 kilograms per head. Poor Peru had 12.5 million sheep—more than Chile and Brazil, even after the decline of the early 1970s—but its herds produced a mere 1.5 kilograms of wool per head.[19]

Ever ambitious, Velasco and his ministers in 1973 sent a commission to Australia for nearly two months to observe sheep farms in the states of Victoria, New South Wales, South Australia, and Tasmania.[20] In April, they sent another commission to New Zealand for twenty-

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[17] Mateo Pocco Pinto, in conversation with author, July 10, 2023.
[18] West, "Alpaca Production in Puno," 2-3.
[19] See Rolando G. Alencastre Delgado, *Producción de ovinos* (Arequipa: A&R Panamericana, 1997), 36; these numbers come from the late 1980s, but they still provide a useful idea of comparative wool production.
[20] "Mejorarán Ganadería del Sur con 7,500 Ovinos Australianos," *El Peruano*, 26 de marzo de 1973, INIA Library, Illpa.

five days to examine the herds and pastures.[21] The administration simultaneously purchased 7,500 sheep from Australia and New Zealand at a price of $357,000. In late March, Minister of Agriculture General Enrique Valdez Angulo (1971-1974) and other officials traveled to the port city of Matarani in Arequipa to receive the sheep and publicly dispatch them to Puno.[22]

The event garnered significant press coverage. One newspaper wrote that "these 7500 sheep are part of a fabulous importation [plan]" for around 40,000 total sheep, which "makes it the most ambitious [livestock] project carried in all the nation's history." We hope, it concluded, that "the results in genetic improvement in sheep in Puno will be the best possible."[23] Another paper reported that "four hundred of the [first wave of imported] sheep have been classified as 'super class,' which means livestock of the highest genetic quality." Among the four hundred, it continued, was "a ram worth $4,500. According to the technicians, this specimen would make up for his price in just one campaign of artificial insemination because he could serve anywhere from two thousand to four thousand females."[24] A third writer described the purchase as "the largest load of sheep [ever] exported out of Australia in a single shipment for the purpose of genetic improvement" and added optimistically that Corriedale sheep from Australia "adapt very well to the climate and altitude where the natural pastures in southern Peru are found."[25]

Ironically, at this same time, in the highlands of Junín, the livestock managers of the SAIS Tupac Amaru, like those of Cerro de Pasco Corporation before them, were breeding sheep according to the belief that imported high-pedigree sheep did *not* adapt well to the highlands (see Chapter 2). Sheep did, as veterinarian Baudilio Santiago has written, adapt better than other

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[21] *Agroextensión: Revista de INIPA*, diciembre 1982, 44, INIA Library, Illpa, Puno.
[22] "Carnero que Vale Casi 200 mil Soles Llega a Matarani," *La Crónica*, 28 de marzo de 1973, INIA Library, Illpa.
[23] "Desembarcan 7,500 ovinos en Matarani," *El Comercio*, March 28, 1973, INIA Library, Illpa, Puno.
[24] "Carnero que Vale Casi 200 mil Soles Llega a Matarani."
[25] "Mejorarán Ganadería del Sur con 7,500 Ovinos Australianos."

nonnative animals, but the altitude still affected them.[26] Nevertheless, the Velasco administration wholeheartedly embraced ovine importations as the quickest and most noticeable way to boost wool production in the new Puno cooperatives. It spared no expense in this endeavor. Besides the 7,500 breeders from Australia and New Zealand, it imported some 32,000 sheep from Argentina and Brazil. These animals, journalists reported, arrived by plane at the airport of Chacalluta, Arica, where they were then sent to Arequipa and on to Puno. "For the care and transport of these sheep," they added, regional officials "formed a commission of dignitaries … and a team of veterinarians and agronomists that moved the animals through each of the places indicated."[27]

In mid-April, General Valdez presided over a ceremony in the SAIS Buenaventura, 20 kilometers from the city of Puno, in which he officially turned over the nearly 40,000 imported sheep to the cooperatives of the altiplano, which included 23 SAISs, 15 CAPs, and 5 EPSs (see chapter 2).[28] Importantly, he also used the occasion to announce a new "Puno Development Plan" to be executed by personnel from each regional ministry. This body, he declared, would "carry out a labor like those undertaken in other regions of the country."[29] With this statement, he seemed to address regional leaders' 1970 petition for federal attention, and he suggested that high-pedigree sheep in this case would be the agents of development.

The focus on foreign sheep continued. In August, the Ministry of Agriculture announced plans to import 62,000 more for the Puno cooperatives. In further pursuit of modern, scientific sheep farming, it added complementary plans to purchase wire and other materials from

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[26] Baudilio Santiago Urbano, *Producción de Ovinos Raza Junín* (Huancayo: Curisinche, 2011), 21.
[27] "Llegan Ovinos Argentinos Para Puno," *El Correo*, 20 de marzo de 1973, INIA Library, Illpa.
[28] See Fernando Paredes, "Puno: Pobreza, Abandono y Encima … Sequía," 105, in La Sequía en Puno: Alternativas Institucionales, Tecnológicas y Populares," eds. Ricardo Claverías y Jorge Manrique , Dirección Universitaria de Proyección Social-UNTA, Puno, c. 1983.
[29] "40 Mil Ovinos Importados Entregaron a Cooperativas," *La Crónica*, 16 de abril de 1973, INIA Library, Illpa.

Australia to construct 3,700 kilometers of fence.[30] As one official explained, in September "a technical commission will travel to New Zealand and Australia, and, in November, to Argentina to carry out the importation of livestock … for the purpose of genetic improvement." Breeds would include Corriedale, Poll Dorset, and Hampshire Down. Officials proudly added that such an effort had "never before [been] undertaken in national history."[31] Many government administrators and local farmers believed, or at least hoped, that these investments marked the beginning of a new era in Puno. Not only would the expensive specimens sire generations of hardy, high-producing herds, but unlike previous eras, the new cooperatives and their partner communities, not haciendas, would reap the benefits.

As the project moved forward, sceptics seem to have voiced concerns that the cooperatives and communities would not appreciate the genetic value of these pure-bred sheep because the Ministry of Agriculture began facilitating and emphasizing the cooperatives' active participation. It first oversaw the formation of an Executive Committee for Sheep Importation that was made up of delegates from nearly all the cooperatives.[32] It then tried to deflect some of the limelight to this committee. In October of 1973, upon its five-year anniversary, the Velasco administration celebrated the acquisition so far of 41,523 pedigree sheep "*by* 43 campesino businesses in Puno with *aid* from the … Ministry of Agriculture." According to this statement, the cooperatives were the protagonists. To further boost credibility, the generals highlighted the involvement of foreign sponsors. This unprecedented importation of sheep, it explained, represented an investment of $3,257,000, funds that were available thanks to a loan from the

[30] "Campesinos de Puno Gestionan Importación de 62 Mil Ovinos," *La Prensa*, 3 de agosto de 1973, INIA Library, Illpa.
[31] "Campesinos de Puno Gestionan Importación"; "Alistan Importación de 62 Mil Ovinos y 230 Chinchillas," *La Prensa*, 22 de agosto de 1973, INIA Library, Illpa.
[32] See "Campesinos de Puno Gestionan Importación."

Interamerican Development Bank.[33] The U.S. government, it seemed, saw no red flags in Velasco's top-down revolution and technology transfer efforts on the altiplano of Puno.

Many officials and observers promoted the idea that the cooperatives had filled the shoes of the haciendas. As one official declared, "this action on the part of the campesino businesses, which are now the foundation of the new agrarian order … in the Peruvian countryside, is the most resounding rebuttal to the supposed inability of campesinos, an argument that [some] parties tried to use to halt the process of agrarian transformation.[34] One national newspaper called the effort "clear evidence of the success of the agrarian reform and of the capacity of campesinos to direct their businesses." This step, it continued, will "refute the warnings of traditional powerholders who long opposed any substantial change to land tenure, arguing that neither workers nor the state were prepared to substitute capitalist businesses in [national agriculture]."[35] Sheep importations, wrote another newspaper, were "a sign of the high level of management and efficiency that the associative businesses … have reached."[36]

Despite this enthusiasm, the new sheep did not produce meat and wool as expected. Critics of Velasco charge that the military government, in its zealousness and vanity, made a hasty purchase of sheep from Argentina and Brazil, for these imports were not as genetically improved as the government had promised. Critics also emphasize communities' naivete. Mateo Pocco Pinto, an agronomy professor who worked for the Ministry of Agriculture in Puno during the early 1970s, vigorously recalled one story of a community that cooked and ate its New Zealand stud for a local celebration.[37] While such stories have become legend, their veracity is

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[33] "Un Gran Impulso Para la Ganadería Ovina," in *5 Años de Revolución* (Lima: Propersa, 1973), CEDEP Library, Lima; emphasis added.
[34] "Estudian Propuestas de Licitación para la Importación de Ovinos," *El Peruano*, 22 de agosto de 1973, INIA Library, Illpa.
[35] "Ganadería," *La Crónica*, August 23, 1973, INIA Library, Illpa.
[36] "Campesinos Quieren Importar 62 Mil Ovinos Para Puno."
[37] Mateo Pocco Pinto, in conversation with author, July 10, 2023, Arequipa.

questionable. At the same time, Enrique Mayer's fieldwork suggests that every once in a while, communities may have slaughtered high-pedigree breeders.[38]

Ultimately, however, of forty thousand sheep, one isolated case involving a single ram does not explain what happened to the other 39,999. Critics love to extrapolate, but they miss the mark. The main hurdle to wool production on the altiplano was not poor decisions of the government, cooperatives, or communities; it was the environment. Although sheep could survive at high altitudes, one ecological factor greatly limited their productive capacity: grass. The scrubby tussock of the highlands lacked protein and other nutrients. The seasons also played a role. Puno experienced heavy rains at the start of year followed by prolonged drought. As one publication put it, "at the end of the eight-month dry season in the Altiplano, any greenness in the vegetation is as remarkable as a two-headed llama."[39] Sheep could usually subsist on this grass, but it would not help them produce meat and wool in abundance, regardless of their pedigree.

In the early years of their administration, Velasco and his generals had such confidence in their ability to transform agrarian landscapes that they grossly underestimated the ecology of the highlands. Aside from livestock, they assumed they could boost crop production. In a separate project, the administration tried to transplant rapeseed to the altiplano and thereby "consolidate the campesino businesses" and "alleviate the condition of dependence that the nation suffers given the considerable importations of oils from abroad."[40] Trusting in their power over nature, the generals did not fully recognize that, besides natural grasses, very few plants can survive

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[38] Mayer, *Ugly Stories*, 97-98.
[39] "The Puno Project," in *Development: New Zealand's Co-operation with Developing Countries*, March 1982, p. 5, INIA Library Illpa, Puno.
[40] Agustín Morales Espinoza and Pedro Villalta Rojas, "Investigaciones sobre el Cultivo de la Colza (Brassica sp.)," Ministerio de Agricultura, Centro Regional de investigación Agraria del Sur, Volumen No. 2, octubre de 1974, p. 1, INIA Library, Salcedo, Puno.

beyond 4200 meters. One of these, for example, is maca, a tuberous root with leaves that hug the ground.[41] Rapeseed, with its tall stems and delicate flowers, did not stand a chance.

Even in the lower sections of the altiplano (3800 to 4000 meters), where native potatoes and quinoa grow, *heladas* (frosts) often destroy crops, especially during the winter months of May through August. Frosts usually occur in the early mornings (3:00am-5:30am) when cold air causes plants' transpiration to freeze, which, in turn, destroys the inner tissues of the leaves and stems. Upon exposure to sunlight, the plants wither. In the best cases, frost only affects a fraction of a crop or a portion of plant. If roots survive, the plant can sometimes sprout anew. In worst cases, farmers must plow under the entire crop or salvage what they can for forage or silage.[42]

By 1974, researchers had learned that the altiplano required adaptation, not importation, of technology. "To this day," they wrote, "large extensions of the altiplano of Puno remain … unproductive because of the ecological barriers that its unique climatological conditions create."[43] Regarding livestock, they later explained, "our country continues to experience a crisis regarding national livestock because production is not sufficient to satisfy internal demand, a problem that, in many cases, we have tried to solve by importing livestock of high genetic value." This solution was flawed, they wrote, because it "did not take into account that an animal cannot reach the maximum yield of its genetic or hereditary capacity if it is not well fed."[44]

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[41] *Lost Crops of the Incas:* 57, 63, CIMMYT Library, Texcoco, Mexico.
[42] See Antonio Manrique Chávez, *El Maíz en el Perú* (Lima: Edigraf, 1987), 105; see also: "Heladas en el Perú: ¿Por qué ocurren y cuánto daño le hacen a la sierra sur y centro?" RPP, https://rpp.pe/peru/actualidad/heladas-en-el-peru-por-que-ocurren-y-cuanto-dano-le-hacen-a-la-sierra-sur-y-centro-puno-noticia-1349054?ref=rpp (accessed July 31, 2024); "Atlas de Helada," SENAMHI (Servicio Nacional de Meteorología e Hidrología del Perú), https://idesep.senamhi.gob.pe/portalidesep/idesep_tema_atlas_helada.jsp (accessed July 31, 2024).
[43] Agustín Morales Espinoza y Pedro Villalta Rojas, "Investigaciones sobre el Cultivo de la Colza (Brassica sp.)," Ministerio de Agricultura, Centro Regional de investigación Agraria del Sur, Volumen No. 2, octubre de 1974, p. 1, INIA Library, Salcedo, Puno.
[44] Dr. Duriel Pérez Campana e Ing. Julio Choque Lázaro, INIPA, Estación Experimental Agropecuaria Puno, "Investigación en Pastos Andinos Anuales y Perennes," octubre de 1981, p. 1, INIA Archive, Salcedo, Puno.

Though humbled, the Velasco administration did not lose interest in the altiplano. Instead, it shifted its focus to improving livestock diets. By 1974, it had already undertaken a relatively small bilateral project with agronomists from Switzerland to find the ideal diet for maximizing cattle height and weight.[45] It soon began a larger project that focused on sheep. In 1974, it signed an agreement with the New Zealand government in which this nation pledged to help adapt nutritious grasses to the rangeland of Puno. Despite setbacks, government innovators remained confident in the power of science to boost agricultural production on the altiplano.

The agreement alone represents an accomplishment. While the New Zealand government had a robust development assistance program for foreign nations, its "long-standing policy," as the Minister of Foreign Affairs explained in 1982, "[was] to give priority to the South Pacific in the allocation of New Zealand's overseas aid." Next on the list were nations of Southeast Asia.[46] For example, projects during the late 1970s and early 1980s dealt with geothermal power in Indonesia and the Philippines, beekeeping in Thailand, renewable energy in Papua New Guinea and the Cook Islands, poultry farming on the Solomon Islands, and even runway lighting at the Tonga International Airport. Criteria for such projects included the potential to increase the productive capacity of the recipient country, to expand employment opportunities, to improve living conditions, and to protect the interests of vulnerable groups.[47] Although Puno fell well outside the normal geographic range of New Zealand's aid program, the Velasco administration apparently made a convincing case for a project to improve the pastures of the altiplano.

In October of 1974, the first researchers from New Zealand arrived in Puno on a two-year assignment. As the New Zealand Ministry of Foreign Affairs later narrated, the group "brought

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[45] Timoteo Adizaca Choque (Agrarian Agency-Ayaviri), in conversation with author, October 24, 2023, Ayaviri.
[46] *Development: New Zealand's Co-operation with Developing Countries*, September 1982, INIA Library, Illpa.
[47] See *Development*, March 1982, September 1982, and December 1983, INIA Library Illpa.

seed, equipment, and know-how." For its part, "the Peruvian government, keen to bolster a programme of agrarian reform, contributed other resources, including personnel to train alongside the New Zealanders." The group first planted two experimental crops on some cooperatives: "ryegrass (cocksfoot) in combination with white clover on irrigation and lucerne on non-irrigated land."[48] Pasture experimentation of this kind was not entirely new. Also in 1974, a student at the National University of the Altiplano submitted a thesis on the effects of Basinex-P, an herbicide, in alfalfa fields.[49] The Peru-New Zealand project stands, however, out because of its scope. In this case, the government and its consultants sought to develop technology directly on the cooperatives and thus achieve innovation, extension, and production all at once.

The foreign consultants seem to have embraced the Velasco administration's vision of agrarian reform *and* innovation. As the New Zealand government explained, "because they had the land, the will to try out the new technology, and stock badly in need of improved feeding, the cooperatives became a natural focus for the project." In time, it continued, "trial plantings [on the cooperatives] turned into production units."[50] Its adoption of the term *production unit*, which was central in the Velasco administration's lexicon, further indicates its acceptance of the military government's vision. The scientists would develop new technology in the cooperatives, and from there the technology would move outward to neighboring communities.

Over the next eight years, four teams of advisors on two-year assignments worked in Puno. Research teams included three to four individuals who specialized in soil science, livestock management, and technology extension. Although Velasco left office in September of

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[48] "The Puno Project," 6, in *Development: New Zealand's Co-operation with Developing Countries*, March 1982, INIA Library Illpa.
[49] Juan Guillermo Salas Miranda, *Efectos del Basinex-P sobre el control de gramíneas, en alfalfa (Medicago sativa L.)*, Tesis presentada a la Universidad Nacional Técnica del Altiplano, Puno, 1974, INIA Library, Illpa.
[50] "The Puno Project," 6.

1975, the project continued during the second half of the decade. Working with counterparts from Peru's National Institute of Agrarian Innovation (INIA), the New Zealand scientists planted new grass varieties on many cooperatives. In time, as INIA researcher Gregorio Argote recalled, they also conducted trials and disseminated seeds from places such as the Wajrani Rural Education Institute, a facility owned by the prelature of the Catholic Church in the town of Ayaviri.[51] During this time, New Zealand firms signed private contracts with several cooperatives to supply "seed, fencing materials, and farm implements." At least four Peruvian agronomists also traveled to New Zealand on one-year training awards.[52]

By the end of the decade, many studies confirmed the value of ryegrass, alfalfa, and other new varieties in livestock diets. In 1978 and 1979, researchers at INIA's experimental station in Illpa and at the nearby SAIS Buenavista recommended increasing these varieties year by year. Notably, this SAIS controlled land in several districts around Illpa, including Capachica, where agrarian reform engineers had run into opposition in 1970.[53] At this point, innovation promised to improve the government's image in the area. Researchers further explained that "with a system of rotative grazing and good management of improved pastures it is possible [to achieve] sheep fattening at an intensive level in Puno." They noted that one hectare of alfalfa could feed 30 sheep for most of the year but 35 to 40 sheep during January and February (the rainy months). They added that the weight of sheep that grazed on alfalfa, versus those that ate natural grasses, could be significant, but to maximize that difference, farmers must start the fattening process early. Adult sheep that fed on alfalfa would not gain as much weight.[54]

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[51] Gregorio Argote, in conversation with author, September 27, 2023, Puno, Peru.
[52] "The Puno Project," 7-9; Timoteo Adizaca Choque, in conversation with author, October 24, 2023, Ayaviri.
[53] See Gumercindo Flores Checalla y Juan Nina Llanqui, "Informe memoria de las acciones realizadas en la Sociedad Agrícola de Interés Social Buenavista Ltda. No. 23," 97-100, tesis presentada en la Universidad Nacional Técnica del Altiplano, 1979, INIA Library, Illpa.
[54] Instituto Nacional de Investigación Agraria, "Engorde de Ovinos Capones en Alfalfa con *Dactylis Glomerata* en Puno," Convenio Perú-Neozelandés, Estación Experimental de Puno, Agosto de 1979, p. 12, INIA Archive, Salcedo.

In 1980, researchers at the Illpa station published an additional study, this one on forage turnips. In their trials, several varieties, such as Green Globe, had proven resistant to Puno's heladas. Given their "magnificent adaptation and production," the researchers wrote, these varieties "are decisive for animal feeding," especially for the winter months "when the production of natural grasses and crops is insufficient for the large livestock population." Experimental plantings further revealed that forage turnips grew best when rotated into a planting schedule in November or December following potato, oat, or barley harvests. After plowing and leveling the field, researchers wrote, "the ground is ready to receive the [new] seed, and it will favor germination at a high rate, as well as growth and development of the bulbs and leaves." With fertilizer, they added, farmers could expect high yields that would be ready in April for grazing by sheep, cows, or pigs.[55] Notably, these researchers said nothing about alpacas.

Despite these findings, many farmers were reluctant to plant new grass varieties for fear of ruminal tympany or bloat, a condition in which excessive gasses in an animal can cause asphyxiation and death.[56] The risk of bloat increased if sheep and cattle were not used to eating protein-rich forage. Gregorio Argote recalled that in the SAIS Buenavista some 60 sheep died from tympany and asphyxiation, a fact that researchers largely omitted from their reports, but which gave rise to endless rumors of sudden bloating and collapse. "Alfalfa kills your cows," farmers would say.[57] In one of the Illpa studies, however, researchers discovered that consuming oat or barley silage in the mornings could prepare sheep for fattening on alfalfa without the problem of bloat, and once adapted, animals did not usually have further problems.[58]

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[55] "Nuevas Variedades de Nabo Forrajero: Convenio Peruano-Neozelandés, Estacional Experimental Puno, Boletín Técnico No. 2, febrero 1980, p. 1-4, INIA Library, Salcedo.
[56] See Jerad Jaborek, "Why Are My Cattle Bloating?" Michigan State University Extension, July 1, 2021, https://www.canr.msu.edu/news/why-are-my-cattle-bloating (accessed May 9, 2024).
[57] Gregorio Argote (INIA-Illpa), in conversation with author, September 27, 2023.
[58] "Engorde de Ovinos Capones en Alfalfa," 12-13.

In addition to the fattening process, researchers also examined wool production. For his 1981 thesis in veterinary medicine, Woodro Andía Castelo of the University of the Altiplano examined the effects of the new pastures on the weight and length of sheep's wool, as well as on the diameter of wool strands. In each category, the sheep that fed on improved pastures had higher yields than those that did not. Wool weight of his subjects increased from 2.586 kilograms to 3.331 kilograms. Consequently, Andía's first recommendation was to promote the production of grasses like alfalfa in the area. He also recommended further studies to better understand how alfalfa would affect sheep at different stages of their growth.[59]

The New Zealand government followed the project closely. In 1982, after eight years of work and an investment of over two million dollars, officials touted the results in places such as the SAIS Picotani, which it described as "one of the highest farms in the world." Created in 1969 out of hacienda lands, Picotani had a headquarters at 4,500 meters above sea level, and its 47,000 hectares of pastures extended to altitudes above 5,000 meters. This SAIS, as New Zealand officials further explained, supported 400 families, 43,000 sheep (mostly Corriedales) 28,000 alpacas, 2500 dairy cows, and some 280 wild vicuñas. The families subsisted by trading meat for vegetables with farmers from lower altitudes. Notably, too, the manager of the cooperative, José Vizcarra Gamero, had previously worked on the hacienda as an accountant, another example of the Velasco administration's effort to preserve the expertise of hacienda personnel.[60]

As the New Zealanders noted, "pasture improvement was slow to catch on at Picotani," perhaps because of rumors of bloat. However, "a beef fattening trial on ryegrass/clover tripled the value of a line of steers in 2½ months and suddenly Picotani wanted to embrace the new

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[59] Woodro Francisco Andía Castelo, "Efectos de la Alimentación con Pastos Cultivados sobre el Vellón de Borregas 'Corriedale,'" Tesis presentada a la Universidad Nacional Técnica del Altiplano, 1981, 32-33.
[60] "The Puno Project," in *Development*, March 1982, 10.

technology. Thirty hectares are established," officials wrote, "and 16 more are planned for this year. 'We would like more—much more,' [added] Mr. Vizcarra."[61] Despite the upbeat tone, the amount of improved pasture only sufficed for a small fraction of the cooperative's livestock. According to the Illpa study, during most of the year, thirty hectares would only feed 900 sheep. The cooperative had 43,000 (nearly five times more), to say nothing of the alpacas and cattle.

Several factors limited the spread of improved pastures, especially the soil PH (acid/alkaline levels) and funding for seed and equipment.[62] While the New Zealand maintained an upbeat tone, fertilizer and funding were not exactly easy to obtain, at least not in large amounts. Further studies confirmed that improved pastures required horizontal surfaces, regular rain or seasonal irrigation, and moderate (by highland standards) temperatures. With such requirements, improved pasture was not an option for many areas of Puno.[63] Yet authorities remained optimistic. "Neither the New Zealanders nor their counterparts have any illusions about turning the Altiplano completely green all year round," they stated. But "maybe one of these days a few of the green patches with link up."[64]

Notwithstanding environmental and financial restraints, the green color of alfalfa and ryegrass seemed to lift everyone's spirits—a literal, albeit limited, green revolution on the altiplano. "Splashes of green here and there in the brown landscape pinpoint the new approach [to highland agriculture]," New Zealand officials wrote. The project, they continued, "is [merely] at takeoff point." Besides the increasing interest from farmers, the Peruvian government was now providing credit. "When the project began," officials explained, "no bank would countenance a

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[61] "The Puno Project," in *Development*, March 1982, 7, 10.
[62] "The Puno Project," in *Development*, March 1982, 7, 9.
[63] "INIAA (Instituto Nacional de Investigación Agraria y Agroindustrial): Plan de Desarrollo a Mediano Plazo (1990-95) de la Estación Experimental Illpa-Puno, 1990," p. 30-32, INIA Library, Illpa.
[64] "The Puno Project," in *Development*, March 1982, 7, 9.

loan for pasture development. Now the Banco Agrario [the Agrarian Bank] has announced the availability of $US 10 million for farm improvement loans—including pasture establishment."[65]

The Agrarian Bank that the New Zealanders spoke of was another brainchild of the Velasco administration and the clearest example of its interest in providing credit for farmers. Like many of Velasco's creations, it did not live up to its expectations. Enrique Mayer includes the bank in a list of "bureaucratic state services" that, in his view, "became obstacles to cooperative development instead of fostering [their] growth." He admits, however, that the bank's effectiveness also decreased as money ran out during the … economic crises" and the waning government interest of the Morales Bermúdez (1975-1980) and Belaúnde Terry (1980-1985) administrations.[66] In the late 1980s, bank administrators became targets of the Shining Path because of alleged (and likely) corruption.[67] Later, President Alberto Fujimori (1990-2000), in his "neoliberal restructuring and reduction of the state," closed the agrarian bank completely.[68]

Notwithstanding the demise of the Agrarian Bank, in the early 1980s the New Zealand government and many cooperatives still used it. As New Zealand officials noted, "more than 20 cooperatives (of a total of 43 in the project area) are reported to be borrowing funds [from the bank] to put into new pasture—about 3000 hectares altogether."[69] Even if this number was high, the loans indicated a potential to feed tens of thousands of animals.

While Velasco had emphasized sheep, given their adaptability to the highlands, many cooperatives prioritized their cattle, perhaps because milk and beef had the highest market value. The SAIS Sollocota, where Cayo Warthon Riveros worked as manager (see Chapter 2), had 280

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[65] "The Puno Project," in *Development*, March 1982, 6.
[66] Mayer, *Ugly Stories*, 24.
[67] Ricardo Trinidad Alegre, in conversation with author, August 2, 2024.
[68] Mayer, *Ugly Stories*, 32.
[69] "The Puno Project," in *Development*, March 1982, 6.

families, some 400 dairy cows, and 30,000 Corriedale sheep, a third of which were imports and their offspring from the government's 1973 purchase from New Zealand.[70] The sheep could have benefited from the improved pastures, yet the SAIS used the nutritious grass for just 120 cows.

Aside from the two-year research teams, New Zealand authorities sent a shearing instructor to Puno for three years in a row to train Peruvian farmers and set up a national shearing championship. "More than anything," officials wrote, "the championship is helping establish standard and improved shearing techniques," which drastically increase the number of sheep that specialists could shear in one day. With the guidance of New Zealand advisors, some farmers also began using shearing machines on vicuñas. "Previously the delicate vicuñas had been blade shorn—a drawn out and traumatic experience for them," officials reported. Now, the instructor has showed farmers "how to shear [vicuñas] with an electric handpiece in just a minute or two (compared with the 20 minutes with blade shears)."[71]

The inclusion of vicuñas is significant. Throughout much of the project, Peruvian researchers assumed, almost subconsciously, that improved pastures were intended for sheep and cattle. Vicuñas, alpacas, and other camelids did not enter their thinking, even though they thrived in the highlands. Centuries of European influence in both culture and agriculture had forged a tradition in which non-native agricultural products as well as pure-bred, imported breeders, signified status and sophistication. In turn, as Terry West observed in 1981, market prices for beef, milk, mutton, and sheep's wool exceeded those of alpaca meat or wool.[72] By contrast, the New Zealand scientists quickly noticed and emphasized the potential of alpacas.

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[70] "The Puno Project: Picotani Farms Dizzy Heights," in *Development*, March 1982, 10.
[71] "The Puno Project: 'Shear Enthusiasm,'" in *Development*, March 1982, 8.
[72] West, "Alpaca Production in Puno," 1, 13.

In so doing, they challenged a long colonial tradition. In an article for *Agronoticias*, published near the end of the Peru-New Zealand project, archaeologist and ethnohistorian Jorge A. Flores of the National University of San Antonio Abad in Cusco pointed out that, prior to the Spanish conquest, camelids covered vast stretches of the Andes. But "just like the decimated [Indigenous] peoples," he wrote, "Andean camelids were gradually displaced to the poorest and most inhospitable lands by Spaniards and their heirs." The main agents of displacement, Flores continued, were sheep. In his view, the "ovinization" of the highlands underpinned Spanish political and cultural domination. Not only did sheep take pastureland from camelids, but in Puno colonial authorities, including at least one friar, mandated that communities sell their llama and alpaca herds and adopt sheep farming. The imposition of sheep, Flores wrote, "was part of the policy of domination to which Andean populations summitted." He concluded, "thus also began the marginalization of alpacas and llamas in a process that continues to this day."[73]

Other studies corroborated this perspective. In 1983 German innovators and Peruvian counterparts began a project that sought to use small windmills to power irrigation pumps on the altiplano. The abundance of one resource, wind, would mitigate the scarcity of another, water. Although the project never came to fruition, the preliminary studies also grappled with the region's past. "The Peruvian state has a long centralist tradition," wrote this research group, which underpins diverse forms of "cultural usurpation," as well as "the underdevelopment of peripheral regions, such as Puno."[74] The imposition of sheep exemplified one from of cultural usurpation. Ironically, too, as sheep displaced alpacas in Peru, foreign scientists and elites often

[73] Jorge A. Flores Ochoa, "La Ganadería Altoandina Ayer y Hoy," *Agronoticias* julio-agosto 1983, 24-25, Biblioteca Nacional, Lima.
[74] "Aprovechamiento del potencial eólico y uso racional de tecnologías para bombeo de agua," 7.

extracted Andean camelids for collections of exotic flora and fauna, facilitating what Marcia Stevenson calls "the triumphal march of scientific knowledge in lockstep with empire."[75]

In her work on the introduction of sheep in colonial Mexico, historian Elinor Melville argues that "ungulate irruption" contributed to rapid environmental degradation, the propagation of diseases, and the impoverishment of native communities. In her words, rapidly expanding sheep herds in the Mezquital Valley "enabled the conquest of the indigenous populations and the domination of vast areas of rural space."[76] The following decade, historian Marsha Weisiger challenged this thesis in her study of pastoralism among Diné communities in the U.S. West. In her words, theories of ungulate irruption and environmental declension are "far too simple to explain the complex interactions between animals and plants."[77] In the Navajo nation, sheep and goats may have arrived as invasive species from Spain, yet they became integral in the nation's economy, cosmology, and family labor. They were more than mere agents of colonization.

Both arguments help explain the role of sheep in Puno. Non-human colonization or "ecological imperialism," to use historian Alfred Crosby's term, was a real phenomenon.[78] Nevertheless, to return to the ideas of scientist Robin Wall Kimmerer, some non-indigenous species became "naturalized," integral, beneficial, and potentially sustainable in local agriculture.[79] The Velasco administration's focus on sheep perpetuated a colonial tradition, but at the same time it reflected the role sheep had come to play in highland economies and cultures.

At the same time, the New Zealanders helped Peruvian scientists rediscover the potential of alpacas. Near the end of the project, they happily reported that "the pasture improvement

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[75] Stephenson, *Llamas Beyond the Andes*, 196.
[76] Elinor G.K. Melville, *A Plague of Sheep: Environmental Consequences of the Conquest of Mexico* (New York: Cambridge University, 1994), xi, 115.
[77] Marsha Weisiger, *Dreaming of Sheep in Navajo Country* (Seattle: University of Washington, 2011), 133.
[78] Alfred Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900* (New York: Cambridge University, 1986.
[79] Kimmerer, *Braiding Sweetgrass*, 214-215.

programme is … helping restore the alpaca's respectability as a farm animal." As consultant Bill Stevenson declared, "the message is getting through slowly that alpacas do extraordinarily well on better pasture" and alpaca wool has "three times the value of sheep's wool."[80] Following the New Zealanders' work on the SAIS Buenavista in 1979, Peruvian researchers admitted that alpacas "have not received the attention they deserve," and they recommended "substituting the privately owned sheep with … llamas and alpacas" on the highest lands of the cooperative.[81]

In a way, the New Zealand scientists fit alongside other foreigners who questioned long-running social injustices. In her study of Maryknoll Catholic missionaries who worked in Puno from the 1940s through the 1980s, historian Susan Fitzpatrick-Behrens explores the "paternalistic alliance" that these missionaries developed with native communities. Despite "unconscious racism," she argues, the missionaries' interest in simply helping these communities "initiated a process of eroding Puno's hierarchy."[82] In a similar way, by simply seeking to boost livestock production on the altiplano, the New Zealand scientists chipped away at the culture of marginalization which affected alpacas and Andean communities.

Like the Maryknoll missionaries, the New Zealanders also deserve some credit for their own adaptation to the highlands, for the altitude does not just affect livestock. In her study, Fitzpatrick-Behrens notes that "the environmental conditions devastated the clergy during their first decade." After moving to Puno, many became sick or demoralized and had to relocate to Arequipa or Bolivia. "In the early years, few priests survived more than three years."[83] Although the New Zealand scientists only lived in Puno for two years—or four when assignments were renewed—they too had to adjust to the cold and scarcity of oxygen, which causes nausea,

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[80] "The Puno Project," in Development, March 1982, 7.
[81] Flores Checalla y Nina Llanqui, "Informe memoria … Buenavista Ltda. No. 23," 97-99.
[82] Fitzpatrick-Behrens, *The Maryknoll Catholic Mission*, 63.
[83] Fitzpatrick-Behrens, *The Maryknoll Catholic Mission*, 95-95; 48; see also 49-50, 71.

headaches, and shortness of breath. The reality of thin air also manifests itself when residents of the altiplano travel to coastal areas and face an excess of oxygen in the lungs. Notably, too, the New Zealanders came with their families. In 1982, the three project leaders (all men) lived in the cities of Puno and Juliaca with their wives and a total of eight children of ages four to nine.[84]

The New Zealanders' interest in alpacas contributed to the nationwide renaissance in agricultural ideas in the late 1970s and early 1980s as the nation returned to civilian rule. In this renaissance, officials often sought the advice of the foreign experts, yet they failed to realize that, when it came to alpacas and their relatives, they had much more to learn from the farmers of the altiplano who had raised these animals for thousands of years. "Vernacular expertise," to return to historian Sarah Hines' term, mattered more than other credentials.[85] Yet, as Stephenson demonstrates, outside scientists tended to "eras[e] local peoples and histories."[86] Indeed, in this renaissance, many scientists seemed bent on demarginalizing alpacas but not their owners.

The best example of this erasure is the "paco-vicuña," the romanticized hybrid of a male vicuña and a female alpaca (see the Introduction). In theory, this hybrid would not only increase wool production in the highlands but also help resolve the "vicuña problem," which referred to the competition for pastures between wild vicuñas and domestic livestock.[87] While the New Zealand advisors do not seem to have promoted this idea specifically, their interest in boosting alpaca farming likely encouraged Peruvian zootechnicians to pursue the paco-vicuña.

This idea sparked debates about the unique status and symbolism of the vicuña. Appearing on the national coat of arms, the vicuña, in some ways, is to Peru what the bald eagle

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[84] "The Puno Project: How the Advisers' Wives Cope," in *Development*, March 1982, 15-16; see also 7.
[85] Sarah T. Hines, *Water for All: Community, Property, and Revolution in Modern Bolivia* (Oakland: University of California, 2022), 15.
[86] Stephenson, *Llamas beyond the Andes*, 197.
[87] "¿Qué Pasa con las Vicuñas?" *Agronoticias*, julio 1979, 7.

is to the United States. In Peru, however, the idea of making a camelid a national symbol had come from foreign generals during the wars of independence who included a condor and a llama on the first coat of arms as icons of "Andean grandeur."[88] Yet during the nineteenth century, Peru's elite became increasingly ambivalent about the role of Andean lands, people, and animals in the modernizing country. In the 1970s and 1980s, the nation's newfound interest in camelids marked a major scientific and cultural change in which the marginal became mainstream.

In some ways, changes in Peru vis-à-vis camelids paralleled those in neighboring Chile. In his study of Patagonia, historian John Soluri examines a process of double displacement in the late nineteenth century in which sheep ranchers displaced native communities and "called for the extermination of guanacos—the region's largest grazing animal—contending that the[se] camelids spread diseases and damaged fences in addition to competing with sheep for pasture." However, through "land reform, fiber revolutions, tourism, and wildlife conservation," Soluri argues, "guanacos and other native kinds of fauna found new material and symbolic places in southern Patagonia."[89] On the altiplano of Puno, another peripheral region relative to national metropoles, land reform, the move toward scientific agriculture, the fiber revolution, and, later, tourism gave alpacas and their relatives a new place in Peruvian cultures and economies.

In this process, however, the expertise, perspectives, and culture of Andean communities remained marginal. As historian Emily Wakild points out, in the 1980s, international conservationists "invented [a] link between campesinos and vicuña [that] had neither historical nor cultural roots." Historically, she explains, "enterprising poachers—rarely drawn from

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[88] See "Descubre el secreto milenario del escudo peruano: La historia detrás de la vicuña y la cornucopia," *La República*, 5 de julio 2024, https://larepublica.pe/datos-lr/2024/07/04/sabias-que-la-vicuna-y-la-cornucopia-esconden-una-historia-milenaria-en-el-escudo-del-peru-aqui-te-contamos-evat-100593 (accessed March 17, 2025).
[89] John Soluri, *Creatures of Fashion: Animals, Global Markets, and the Transformation of Patagonia* (Chapel Hill: University of North Carolina, 2024), 10, 15-19, 150.

resident communities—harvested vicuña to serve unreliable luxury wool markets."[90] For their part, campesino communities relied mainly on sheep, cattle, and, in some cases, alpaca herds, but not usually wild vicuñas. "The imagined camaraderie between campesinos and vicuña … dramatically misrepresented conservation's key participants," Wakild concludes.[91]

As another example, the scientists who promoted the paco-vicuña knew very little about alpaca husbandry. Unfortunately, too, they lacked the acumen to know what they did not know. When they began the paco-vicuña project, they immediately ran into a dead end because, as Dr. Victor Bustinza wrote, male vicuñas had no interest in female alpacas. Thus, he concluded, scientists needed more research on the sexual behavior of vicuñas.[92] They did indeed need more research—but on vernacular expertise. Instead of trying to force stubborn male vicuñas on female alpacas, scientists could have consulted past collaborative projects with communities.

One such project involved camelid husbandry at the government's Chuquibambilla experimental station near Ayaviri. In 1921, as Raúl Asensio explains, the Peruvian government created this "model farm" out of three haciendas to "demonstrate that with a combination of scientific agriculture and perseverance, the altiplano's wool industry could [grow]." It also sought to "turn [youth from nearby communities] into agricultural experts" and provide "better standards of living … without affecting the key question of land distribution." The government created a second model farm called Kcaira in Cusco in 1929.[93] Like the Vicos project in Ancash (see Chapter 1), these farms tiptoed around the haciendas, which limited their impact, yet in Puno, the model farm did help document some of the knowledge of Andean communities.

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[90] Emily Wakild, "Saving the Vicuña: the Political, Biophysical, and Cultural History of Wild Animal Conservation in Peru, 1964-2000," *American Historical Review* 125, no. 1 (February 2020), 59.
[91] Wakild, "Saving the Vicuña," 59.
[92] "El Paco-Vicuña es Una Posibilidad Incierta," *Agronoticas*, septiembre, 1979, 14-15.
[93] Raúl Asencio, *Breve Historia del Desarrollo en el Perú, 1900-2020* (Lima: IEP, 2023), 47-48.

In one Chuquibambilla study from 1944, researchers appear mainly to have compiled and verified a portion of communities' expertise on camelid husbandry. As the report indicated, many hybrids existed. The most common, the *huarizo*, was a cross of male llama and female alpaca; the *misti* was a cross between a male alpaca and female llama. *Llamohuanacos*, of course, were crosses between llamas and huanacos (or guanaco), while *llamovicuñas* were just what their name suggested.[94] Like its relatives, the llama had once covered the altiplano, yet llama numbers declined as the use of motor vehicles increased.[95] Farmers mainly used llamas as pack animals.

The famous paco-vicuña also had a place in the report. Yet contrary to the assumptions of the late 1970s, the creation of this hybrid required more than simply putting a male vicuña and female alpaca in the same pen. Since female alpacas do not enter an estrous cycle, the male alpaca induces ovulation by mating.[96] But for a male vicuña to mate with an alpaca, it must think of itself as an alpaca, which usually requires human intervention. As researchers wrote in the 1940s, "farmers … take a newborn male vicuña and have it raised by a mother alpaca. To do so, they must skin the baby of the [mother] alpaca … and cover the baby vicuña with the alpaca skin. This way," they continued, "the mother alpaca will accept the baby vicuña. Farmers can remove the skin after four days." At the age of a year and a half, it will serve female alpacas.[97]

Farmers on the altiplano knew this. Today, even the most self-respecting scientists in Puno acknowledge that they, the class of credentialed animal experts, failed to appreciate communities' knowledge in the early 1980s. Despite this snafu, studies on alpaca husbandry and

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[94] Ing. Agr. Jorge Gallegos P., Director de la Granja Modelo de Puno, "Explotación de Auquénidos en el Perú," Publicado por la Granja Modelo de Puno, Ayaviri, Febrero 1944, 23, Archivo del EPS Rural Alianza, Ayaviri, Puno.
[95] West, "Alpaca Production in Puno," 1, 3.
[96] See Ahmed Tibary and Abdelhak Anouassi, "The Estrous Cycle," in *Theriogenology in Camelidae—Anatomy, Physiology, Pathology and Artificial Breeding* (Abu Dhabi: Abu Dhabi Printing and Publishing Company, 2022), available online at IVIS (International Veterinary Information Service, https://www.ivis.org/library/theriogenology-camelidae-anatomy-physiology-pathology-and-artificial-breeding (accessed August 21, 2024).
[97] Jorge Gallegos P., "Explotación de Auquénidos," 23; see also Stephenson, *Llamas beyond the Andes*, 195.

wool production proliferated. In 1982 one regional office launched an "Integral Development Program for South American Camelids in the Department of Puno." Market studies indicated that external demand for alpaca wool was increasing because of the wool's "uniqueness, its wide range of natural colors (in which the white of the alpaca is whiter than that of sheep), its radiance, its resilience, its dropping point (drape), its softness, and its flexibility." From 1974 to 1985, researchers expected export earnings to increase from $581,800 to $14,290,000, and they anticipated that internal demand would nearly quadruple.[98] Additional studies of the 1980s and early 1990s involved fattening alpacas on protein-rich grasses (a continuation of the Peru-New Zealand project); preserving llama varieties, which were diminishing; understanding campesino culture regarding alpacas; and intensifying alpaca farming in certain parts of the altiplano.[99]

In many studies, scientists maintained a position of superiority. One 1992 publication began with the line: "We have determined that most alpaca farmers … in the southern part of … Puno do not carry out at the appropriate time an activity that is vital for alpaca farming, namely the weening of the young."[100] Other studies, however, offered at least a dose of respect. Alpaca farming in campesino communities "is not very technified," one report began. "Nevertheless, producers have managed to maintain their livestock capital despite a series of economic, ecological, and social limitations."[101] What this scientist failed to mention was that credentialed

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[98] "Plan Regional de Alpacas y Llamas: Estudio de Mercado, Puno, agosto de 1987," La Corporación de Fomento y promoción Social y Económica de Puno (CORPUNO), p. 31-49, INIA Library, Salcedo.
[99] See Juan F. Quinto Ybañes, "Engorde de alpcas y llamas jóvenes"; Miguel Chávez F., "Estudio de parámetros productivos y reproductivos de llamas en puna seca"; Anastacio Llanos Uriarte, "Influencia de actitudes y toma de decisiones en la adopción de tecnología en familias alpaqueras"; Luís Abarca Bejarano, "Evaluación de un sistema semi intensivo en crianza de alpacas en la zona suni," in *Avances y Logros de Investigación Agropecuaria*, 86-120, INIAA, junio 1992, Puno, Peru, INIA Library, Salcedo; the bibliographies at the end of each of these publications underscore the proliferation of scientific study on camelids in the 1980s.
[100] Néstor Espezua F., "Validación de destete en condiciones de comunidades," in *Avances y Logros de Investigación Agropecuaria*, p. 73-78, INIAA, junio 1992, Puno, Peru, INIA Library, Salcedo.
[101] Néstor Espezua F. "Efecto de las medidas preventivas sobre la mortalidad de crías de alpacas," in *Avances y Logros de investigación Agropecuaria*, 78-85.

experts like him had historically bolstered these social limitations by prioritizing cows and sheep. As another example, in 1988 Puneño zootechnician Julio Barreda Aragón acknowledged that the Spanish conquest had eliminated many of the experienced camelid breeders within the Inca State. Without their expertise, he wrote, the Andes saw the gradual "degeneration of native livestock—and their complete disappearance in certain regions." Only some community leaders' commitment to traditional livestock, he continued, "saved [alpacas] from extinction."[102]

While the idea for the paco-vicuña lost its shine momentarily, it did not disappear. In response to another wave of interest in this hybrid, Barreda argued that the idea was neither as new nor as promising as some scientists believed. Oral tradition in Puno held that, from the mid-1820s to the mid-1840s, Father Juan Pablo Cabrera, a priest in the town of Ayapata, district of Macusani, in northern Puno (altitude: 4,300 meters), experimented with camelid hybrids until he discovered the paco-vicuña.[103] *Discover*, of course, is not the correct word. What Cabrera really did was learn about camelid husbandry from local communities and insist upon creating a herd of paco-vicuñas, in spite of the long local tradition of *not* crossing alpacas and vicuñas.

Recalling his childhood in Macusani, Barreda noted that the Hacienda Cconchatanca had continued to breed the paco-vicuña into the 1930s. The Chuquibambilla Station, of course, also experimented with this hybrid. Yet the results were, in his words, "inconclusive." Smaller paco-vicuñas produced less wool than alpacas, and they could only be sheared every three years, whereas alpacas were sheared yearly. Moreover, in the cross, genes for darker wool almost always dominated, while, in the 1980s, white wool garnered higher prices. As a final challenge, the paco-vicuña, contrary to many assumptions, did not inherit the docility of its mother. It was

[102] Julio Barreda Aragón, "Los Pacovicuñas del Cura Cabrera," *Agronoticas*, agosto 1988. Biblioteca Nacional.
[103] Barreda Aragón, "Los Pacovicuñas del Cura Cabrera."

stubborn. It would run away. And when farmers lassoed it from a horse, it would "throw itself to the ground … spitting and shrieking for all it was worth."[104]

Paco-vicuñas, in other words, were not miracle hybrids. Again, highland communities knew this. There were reasons why they raised alpacas, not vicuñas—and certainly not paco-vicuñas. Given its limited regard for Andean expertise, the scientific community had to repeatedly arrive at this conclusion on its own. To get some economic value from vicuñas, Barreda recommended "semi-domestication" in the form of a regulated shear-and-release policy. "For this task," he wrote, "nobody knows better than alpaca farmers how to do it efficiently." Though an understatement, this declaration ceded more authority to communities than usual. Barreda added that selective breeding of alpacas could "refine alpaca wool without the need to cross [the alpaca] with the vicuña."[105]

Despite these recommendations, the paco-vicuña continued to fascinate some animal scientists on the altiplano. In a long article in 1989, Rigoberto Calle Escobar came back to the idea that paco-vicuña wool would be far superior to regular alpaca wool, and if scientists applied the same genealogical precision to alpaca-vicuña crosses as they did to sheep and cattle breeding, Puno could see breakthroughs in its wool industry. Launching a breeding campaign, he argued, was urgent because other, "more visionary countries," such as the United States, Canada, England, Australia, and New Zealand, would surely take the lead if Peru did not.[106] In the year 2000, *Agronoticias* acknowledged the mixed opinions regarding the paco-vicuña but called on the Peruvian government to fund a research program to provide definitive answers.[107] Overall,

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[104] Barreda Aragón, "Los Pacovicuñas del Cura Cabrera," *Agronoticas*, agosto 1988.
[105] Barreda Aragón, "Los Pacovicuñas del Cura Cabrera," "¿Cruzar Alpacas y Vicuñas o Mejorar solo Alpacas?" *Agronoticas*, agosto 1988. Biblioteca Nacional.
[106] Rigoberto Calle Escobar, "¡Hora de Producir el Paco-Vicuña!" *Agronoticias*, Marzo 1989. Biblioteca Nacional.
[107] "Paco Vicuña: ¿Alternativa Conveniente?" *Agronoticias* Julio 2000. Biblioteca Nacional.

some scientists clung tenaciously to the idea of the paco-vicuña, believing that modern veterinary science would, sooner or later, prove superior to Andean livestock traditions. In this case, it never did. Communities knew what they were doing.

In the early 1980s, most of Puno's alpacas were privately owned, but in some cases community-cooperative relations began to revolve productively around alpacas.[108] A look at the community of Ajoyani, which had issued the 1972 complaint about the cooperative Aurora, illustrates the change. In his 1982 internal annual report, the community president offered three recommendations: 1) the acquisition of usufruct rights of a piece of land controlled by another cooperative; 2) the completion of an agricultural school; and 3) the genetic improvement of the community's sheep and alpaca herds.[109]

For this third goal, the community looked to the cooperative, and it prioritized alpacas. In 1983, community leaders reported positively on "the acquisition of 100 female alpacas from the SAIS Aricoma; this acquisition," the president wrote, "was made with surplus funds that the community had set aside for the year."[110] Community livestock now included 151 sheep and 222 alpacas.[111] Increasing the alpaca herd must have been profitable, for the following year, the community reported the additional acquisition of 80 alpacas from the SAIS Aricoma.[112] These purchases highlight the participation of cooperatives and communities in the new alpaca trend.

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[108] West, "Alpaca Farming in Puno," 5.
[109] Ysaac Lima Tito, "Memoria Anual del Concejo de Administración, C.C. Ajoyani, 31 de diciembre de 1982," Oficina de Comunidades Campesinas, Dirección Regional de Agricultura, Puno.
[110] Folder: C.C. de Ajoyani, "Memoria Anual Presentado por el Presidente del Consejo de Vigilancia, Don Saturino Quispe Ramos, Ajoyani, 1983," Oficina de Comunidades Campesinas, Dirección Regional de Agricultura, Puno.
[111] Folder: C.C. de Ajoyani, "Continúa Memorial Anual 1983: Comité Agropecuario, 31 de diciembre de 1983," Oficina de Comunidades Campesinas, Dirección Regional de Agricultura, Puno.
[112] Folder: C.C. de Ajoyani, "Memoria Anual del 1 de enero al 31 de diciembre de 1984," Oficina de Comunidades Campesinas, Dirección Regional de Agricultura, Puno.

By this time, some authorities in Puno no longer saw their state as a "Cinderella" but as a "leader of high-altitude livestock," and great "source of pride."[113] As some officials observed, thanks largely to the altiplano, "Peru boasts a monopoly in the production of llama and alpaca fiber on the world stage because these … species only thrive in the high Andean environments like those of Peru and Bolivia. This fact places [Peru] in a situation of exception advantage," they continued, and could lead to "transcendent economic accomplishments" for the nation.[114]

From the 1980s onward, alpaca farming remained at the forefront of a movement toward "technological alternatives."[115] When they employed this term, innovators in Peru referred to traditional Andean farming techniques and plant or animal varieties, which the scientific community had long neglected, but which were, in fact, better suited to highland environments than foreign techniques and species. By the turn of the century, *Agronoticias* was recommending the gradual replacement of sheep with alpacas in Peru—a complete reversal of the colonial tradition. "In the sheep industry, Peru has no chance of competing with world leaders," the editors wrote in 2004, whereas it "has a near monopoly on alpacas in the world." At the time, Peru accounted for 87 percent of all alpacas, followed by Bolivia with 9 percent.[116]

Alpacas, the editors explained with pride, are "extremely well adapted to the unique ecosystem of the high Andes…. They make better use of the available grasses in the region and … do not cause problems of erosion because their hooves are padded (not pointed like those of sheep and cows) and therefore do not pierce or stir the soil." Moreover, "the economic yield of alpacas is nearly four times more than that of sheep," although they occupy the same space and

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[113] *Agroextensión: Revista de INIPA*, diciembre 1982, 44, INIA Library, Illpa.
[114] "Plan Regional de Alpacas y Llamas: Estudio de Mercado, Puno, agosto de 1987," La Corporación de Fomento y promoción Social y Económica de Puno (CORPUNO), p. 70, INIA Library, Salcedo.
[115] See INIAA (Instituto Nacional de Investigación Agraria y Agroindustrial): Plan de Desarrollo a Mediano Plazo (1990-95) de la Estación Experimental Illpa-Puno, 1990," p. 32, INIA Library, Illpa.
[116] "Criar alpacas en lugar de ovinos," *Agronoticias*, agosto de 2004, 27.

require the same investment. Finally, the editors concluded, "tender alpaca meat has a sure future … since it has a lower cholesterol content than red meat."[117]

As pivotal as this recommendation was, communities did not heed it. Not only had sheep become fundamental in their livelihoods, but they had a long history of resisting outside efforts to control their farming practices. In the colonial era, Andean communities had not altogether buckled under Spanish pressure to replace alpacas with sheep. In the early Velasco era, they did not do away with their mixed-raced sheep like government technicians had wanted (see Chapter 2).[118] If they were going to change their farming practices, it would be on their own terms. The autonomous, evolving nature of communities helps explain why, in some cases, they did not embrace technological alternatives that authorities recommended, even if, to them, these technologies were more ancestral than alternative.

Economically, a reliance on both sheep and alpacas may have worked in their favor because more production of alpaca wool or meat did not necessarily mean greater profits. In 1977, the federal government observed that even within Peru, the state of Puno faced unfavorable trade relations because "extra-regional power nuclei," often on the coast, dominated internal trade. Puno exported low-cost primary materials such as alpaca fiber, then acquired more expensive products with added value. Partly as a result of these trade relations, socio-economic standards in Puno remained lower than the national average and outward migration continued.[119] In 1984, innovators on the Peru-Germany wind-powered irrigation project described Puno as "one of the most backward regions of Peru, largely at the margins … of … industrialization and

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[117] "Criar alpacas en lugar de ovinos," *Agronoticias*, agosto de 2004, 27; for more on erosion, which was common, see "Linea de Productos Agropecuarios: Empresa Regional Puno, junio 1977," Ministerio de Alimentación, Zona XII-Puno, 4, INIA Library, Salcedo, Puno.
[118] See Mayer, *Ugly Stories*, 267-268, note. 3
[119] "Linea de Productos Agropecuarios: Empresa Regional Puno, junio 1977," Ministerio de Alimentación, Zona XII-Puno, 1-8, INIA Library, Salcedo.

urbanization." Regarding per capita GDP, Puno was the third poorest state in Peru.[120] Alpaca monoculture, even when the market for camelid wool was growing, would likely have benefited the extra-regional power nuclei more than the farmers themselves.

As other examples of technological alternatives, in the late 1980s and early 1990s, many innovators began promoting the restoration of Andean terraces to increase cropland.[121] In recent years, this idea has again become popular.[122] Although terrace farming was central to Inca and pre-Inca civilizations, for Andean communities in the late twentieth century, the benefits of this ancestral method did not appear to surpass the significant investment of time and labor needed to restore and maintain these terraces. Another alternative was quinoa, which some innovators had promoted as a miracle grain for decades.[123] In the 1980s, as with alpacas, researchers realized that Puno had a near monopoly on quinoa production.[124] In this case, international consumers embraced the Andean grain as a superfood, yet Puneño farmers ultimately gained little.[125]

Consumer preferences also shaped the movement toward technological alternatives. While alpacas and quinoa became popular, communities on the altiplano have continued planting and harvesting traditional crops, such as the tubers oca and mashua, without much attention from innovators. In Ajoyani, the 1984 communal harvest included 230 pounds of white chuño, some

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[120] Aprovechamiento del potencial eólico," 19.
[121] See "Curso: Recuperemos Nuestros Andenes, Guía del Participante," c. 1985, INIA Library, Illpa, Puno; see also "Informe del Segundo Seminario-Taller 'Recuperación de Andenes y Otras Tecnologías Tradicionales: Problemas y Soluciones,' Lima, Perú 18 al 20 de abril de 1989," CIMMYT Library, Texcoco.
[122] See "MIDAGRI se proyecta restaurar y recuperar 120 mil hectáreas de Andenes en beneficio de zonas altoandinas," Ministerio de Desarrollo y Riego, Nota de Prensa, 7 de mayo de 2024, https://www.gob.pe/institucion/midagri/noticias/950315-midagri-se-proyecta-restaurar-y-recuperar-120-mil-hectareas-de-andenes-en-beneficio-de-zonas-altoandinas (accessed September 3, 2024).
[123] Matthew Turetsky, "Quinoa Commodification in the Andean Highlands and the Pursuit of Alternative Grains," Presentation at the American Society for Environmental History Annual Conference, April 3-7, 2025, Denver, CO; "Producción de Semilla Fundamental de Quinua: Estación Experimental Puno, Avance de Investigación No. 1, setiembre 1981," Instituto Nacional de Investigación y Promoción Agropecuaria, INIA Library, Salcedo, Puno..
[124] See INIAA: Plan de Desarrollo a Mediano Plazo (1990-1995), 19.
[125] See Emma McDonell, *The Quinoa Bust: The Making and Unmaking of an Andean Miracle Crop* (Berkely: University of California, 2025).

850 pounds of dark chuño, and 922 pounds of cañahua (cañihua).[126] Cañahua is an Andean grain, related to quinoa. Communities prepare chuño in the winter months by periodically rotating sacks of potatoes in cold, flowing mountain rivers; later, they dry the chuño in the sun. Historically, Peru's centralism and hacienda elitism generated disdainful, or at least dismissive, attitudes among coastal, urban, or economically privileged consumers towards these foods, which, in some cases, persist to this day.

Work with nutritious grasses, alpacas, sheep, and many crops continued throughout the 1980s, as did scientists' interest in technological alternatives.[127] In their 1990 Development Plan, government researchers at the Illpa experimental station pointed out that the state of Puno continued to be the nation's primary producer of quinoa, alpaca meat, mutton, and both sheep and alpaca wool. It was the second largest producer of potatoes and the fourth largest in beef. The Development Plan also included an "Inventory of … Agricultural Technological Alternatives," a nineteen-page, bullet-point list of dozens of projects that had taken place either at the university in Puno or at the government's experimental stations during the decade.[128]

Although research and experimentation were constant, the sense of renaissance soon gave way to more somber realities. For one, in 1983 a severe drought spread across the altiplano causing crops to wither and livestock to lose weight. Moreover, social conflict in the countryside, especially between cooperatives and communities, was growing. Finally, armed groups began extending their influence far faster than scientists were extending technology. These conflicts ultimately led to the disintegration of many cooperatives, and they cut short innovation efforts, such as the pasture improvement program, that had originated on the cooperatives.

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[126] "Continúa Memorial Anual 1983: Comité Agropecuario, Ajoyani, 31 de diciembre de 1983."
[127] See, for example, Informe Anual, INIPA, 1982, pp. 128-150. Personal records of Dr. Gregorio Argote.
[128] INIAA (Instituto Nacional de Investigación Agraria y Agroindustrial): Plan de Desarrollo a Mediano Plazo (1990-95) de la Estación Experimental Illpa-Puno, 1990," p. 9, 32-50, INIA Library, Illpa.

In the state of Puno, as the spontaneous protest in Capachica in 1970 had revealed, some residents were wary of agrarian reform to begin with, and the work of the cooperatives did not change their minds. In 1975, the prefecture received reports that some groups and individuals, such as schoolteachers, were circulating "counterrevolutionary propaganda," including "pamphlets and pasquinades [leaflets]" in "all the educational institutions" in the town of Chucuito beside the city of Puno.[129] Like other Andean nations, Peru's history, especially of the colonial era, included protest of unwanted regimes or policies through semi-anonymous pasquinades.[130] Even a radical reformer like Velasco was not immune to such protest. Nobel laureate Gabriel García Márquez described pasquinades in Colombia as a "less deadly, but no less damaging" manifestation of unrest and a "prelude" to violence.[131] So they were in Peru.

One of the problems of agrarian reform, especially in a highly populated state like Puno, was the level of exclusion. In 1976, one regional office observed that, "with the application of structural reform [through land redistribution], some conflictive relations have emerged. Among campesinos, [these conflicts] have arisen between beneficiaries of Agrarian Reform … which are a minority, and the vast majority of the rural population … that are not involved in the process of Agrarian Reform."[132] In 1984, the German irrigation innovators made a similar observation. Agrarian reform "barely touched the majority of rural producers," they wrote. "Small farmers [*minifundistas*] received no aid worth mentioning, and they are in the same state as before: very

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[129] Informe No. 07, Juli, 16 de 1975, Caja 406, Fondo Prefectura, Año 1975, Dirección de Archivo Histórico, Archivo Regional de Puno; unfortunately, these pasquinades do not seem to have be preserved in the archive.
[130] See Guillermo Galdós Rodríguez, *La rebelión de los pasquines: un intento emancipador de Arequipa colonial, 1780* (Arequipa: Editorial Universitaria de Arequipa, 1967); Sarah Chambers, *From Subjects to Citizens: Honor, Gender, and Politics in Arequipa, Peru, 1780-1854* (University Park: Pennsylvania State University, 2004), 19; author, "*Papeles Seductivos*: Friars Intermediaries, and Organizers in the Huánuco Rebellion of 1812," *The Americas* 80, no. 2 (April 2023), 261-289.
[131] Gabriel García Márquez, *Vivir para contarla* (New York: Knopf, 2002), 269.
[132] "Factores Socio-Culturales de la Alimentación: Departamento de Puno, Marzo 1976," Oficina Nacional de Apoyo Alimentario, p. 7, INIA Library, Salcedo, Puno.

unprotected from adverse production conditions and … natural disasters."[133] During the drought, an economist at the University of the Altiplano further observed that in the agrarian reform process in Puno, "43 associative businesses … received more than 85% of the nearly 2 million hectares of adjudicated land. Communities received [only] marginal benefits."[134]

Disproportional land and technology bolstered the sense of elitism in many cooperatives. In her field research in the late 1970s and early 1980s, political scientist Cynthia McClintock examined the new forms of classism that developed in rural Peru following the formation of the cooperatives.[135] What she and other scholars did not fully consider was the way these divisions also hindered the extension of technology. In Velasco's vision, the cooperatives would not only form the vanguard of technological innovation, but they would also, metaphorically speaking, blaze the scientific trail for their partner communities to follow. Yet their elitism created a social dysfunction that reduced the potential to share technology.

A related critique in the early 1980s held that the federal government had not invested enough in Puno. In 1983, the same economist from the University of the Altiplano underscored Puno's unfavorable position in national markets and charged, "Puno was never the scene of significant capital investment, public or private, that could radically transform its productive structure, increase productivity, [and] raise income levels." He added, "technological renovation in the countryside was late, limited, and halting."[136] On one level, this statement demonstrated Puneño leaders' tendency to compare their state with others, particularly Arequipa, and declare, in essence, "if only the federal government had invested as much in us as it did in them…." In its

[133] "Aprovechamiento del potencial eólico," 7.
[134] Fernando Paredes, "Puno: Pobreza, Abandono y Encima… Sequía," 105.
[135] Cynthia McClintock, *Peasant Cooperatives and Political Change in Peru* (Princeton: Princeton University, 1981).
[136] Fernando Paredes, "Puno: Pobreza, Abandono y Encima… Sequía," 105 (103-105).

statement of 1970, the Pro-Electrification Committee employed a similar line of reasoning. Most importantly, however, this statement suggested that reform and innovation had not gone far enough in Puno. Land and technology remained in the hands of the cooperatives.

To make matters worse, the poor administration of many of these cooperatives became increasingly evident as the decade wore on. After the nation's transition to civilian rule in 1980, the future of the cooperatives became a topic of national debate. Some agronomists, including many contributors to *Agronoticias*, maintained that these businesses had tremendous potential *if* the government gave them the technical support they needed. Many others, such as politicians who branded themselves as new and different from Velasco, promoted the idea of "restructuring," which meant dissolving the business and creating something new in their stead.

In the midst of this debate, the CAP Santa Lucía in San Román, Puno spoke out in favor of its own survival and that of fellow cooperatives. "Like a sword hanging over the head of Damocles," the CAP directors wrote, "there has emerged with the constitutional and democratic regime the threat of 'restructuring' the associative agrarian businesses." Instead of offering a coherent alternative, they said, this threat has "awakened many personal ambitions to 'recover' or take advantage of the opportunity to obtain the lands and properties of the businesses."[137]

According to the cooperative, many parties wanted an agrarian free-for-all. Besides small landholders who hoped to improve their situation from the "individual redistribution of lands," some former hacendados also sought to recover land and status through restructuring. These were just two groups. "Recently," added the Santa Lucía directors, "we have had unusual yet frequent visits of a series of officers and leaders from diverse [political] parties" that wish "to control the [associative] businesses." These individuals claim to act in "defense of campesinos"

[137] "Cooperativa Agraria de Producción Santa Lucía, Ltda. No. 179: Boletín Informativo," Puno, Peru, 1, INIA Library, Salcedo, Puno.

they explained, yet their real goal is to "convince cooperative members [to join them] and push for agrarian restructuring," so that these parties "can gain control" in the countryside. Besides this, the CAP leaders noted, we have even seen cases in which "political agents seek to gain control of land for personal benefit." To all, the CAP sent a reminder that restructuring was not their prerogative. Pursuant to the laws of the Velasco era, which were still valid, the cooperatives could only be dissolved if 60 percent or more of the members voted in favor of dissolution.[138]

At the same time, the CAP directors frankly acknowledged administrative errors within the cooperatives. "Anyone who would deny the existence of problems in the current businesses," they wrote, "is a dupe [*ingenuo*] and a liar." Yet these problems, they suggested, could have been mitigated with greater government support. "Inexperience in an agrarian process like that of Peru, one that had neither historic precedents nor guiding examples, as well as … the bewilderment [*desorientación*] and lack of knowledge of many cooperative leaders, created a deficient administration in 90 percent of the businesses." While poor administration accounted for many financial woes, the directors continued, other factors contributed, such as high interest rates (often from the Agrarian Bank), market fluctuations, and a complete lack of government involvement in the market for agricultural products. If restructuring is the answer, they concluded, it should be done only after thorough analysis, not for personal and political profit.[139]

After presenting this perspective, the CAP Santa Lucía included a report on its recent activities. We seek to "technify our work in more and better ways," leaders wrote. Thus, we have recently purchased a tractor and three trucks. Moreover, they added, prices and shipping options for sheep's wool have improved, which "puts us at the vanguard of [rural industry] and

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[138] "Cooperativa Agraria de Producción Santa Lucía, Ltda. No. 179: Boletín Informativo," Puno, Peru, 1-2, INIA Library, Salcedo, Puno.
[139] "Cooperativa Agraria de Producción Santa Lucía, Ltda. No. 179: Boletín Informativo," Puno, Peru, 1-2, INIA Library, Salcedo, Puno.

encourages us to work and sell our products for greater profits." Finally, the CAP continued to work with neighboring communities. "We cannot solve all their problems," leaders wrote, "but we have made simple but meaningful contributions," such as "building materials, animals for raffle, one- and two-person desks, and labor for diverse jobs … especially in the communities of Quita, Cahuarani, Pumiti, and Callapoca," as well as in several rural schools.[140] While the CAP clearly wanted to emphasize its effectiveness at a time when Peruvians were debating the value of the cooperatives, its report suggests, at the least, a solid understanding of its original purpose: technified, profitable agriculture that would share benefits with neighboring communities.

In most cases, however, the cooperatives shared quite little. In 1985, for example, the workers of the SAIS Buenavista received a four-day training from government technicians on sheep parturition, alpaca breeding and management, and "crop technology" for potatoes, barley, oats, and winter wheat.[141] Such training helped the cooperative, yet there is little evidence that the knowledge and technology spread outward like it was supposed to. On the contrary, communities, which had been wary of the cooperatives to begin with, felt increasingly neglected.

In late 1979, the mayor of Juliaca reported that campesinos in the region intended or organize themselves and carry out invasions. At the same time, in Asillo, just to the north of Ayaviri, municipal leaders reported "the spread of activities of a communist character led by the parish priest of the district."[142] As the decade wore on, land invasions by communities and attacks by armed groups, especially the Maoist group the Shining Path, became tangled together in a narrative of violence and destruction. In 1982, the New Zealand scientists had expressed

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[140] "Cooperativa Agraria de Producción Santa Lucía, Ltda. No. 179: Boletín Informativo," Puno, Peru, 4-5, INIA Library, Salcedo, Puno.
[141] "Evento de Capacitación," CORPUNO, Proyecto de Desarrollo Rural Puno, SAIS Buena Vista Ltda. No. 23, Central Moro, 19 al 23 de agosto de 1985, INIA Library, Illpa.
[142] Julio A. Bardales Rodríguez, Subprefecto de Azángaro, "Informe Administrativo a la Prefectura de Puno," 30 de noviembre de 1979, Caja 423, Año 1980, Fondo Prefectura, Archivo Histórico, Archivo Regional de Puno.

their hope that some of the green patches of ryegrass on the altiplano would link up. In reality, red zones began to dot the region and, unfortunately, *they* were the ones that linked up.

The Shining Path led the process of destruction. In 1985, the subprefect of Azángaro reported to the Prefect of Puno that, "the terrorism continues." He continued, "seventy-six hours after detonating three charges of dynamite in this town, the common enemies (shining path) of the progress of our nation … committed another one of their signature acts by blowing up the repeater tower, along with its installation devices … completely isolating the Province of Azángaro." This isolation, he added, portends "a tragedy of serious and irreparable proportions." We reiterate our "urgent and immediate [request] for a larger division of police reinforcements from … the National Army." In a different section of this report, the subprefect also explained that a few days previously, in the district of Asillo, "three hooded and armed figures violently entered the domicile of [one resident], killing him with a shot to the head and leaving the message: 'Thus die informers [*soplones*]. Long live President Gonzalo. Long live the Popular Army.'"[143] Incidents of this nature continued until 1992 when the army finally captured Shining Path leader Abimael Guzmán, who operated under the alias President Gonzalo.[144]

As in other parts of the country, research institutions and cooperatives became targets. In Ayaviri, the Shining Path razed the Chuquibambilla experimental station, which had helped lead livestock innovation with cattle, sheep and alpacas. The stables, cheese factory, administrative offices, and archive all burned.[145] In this same region, armed groups destroyed the Prelature's

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[143] Subprefecto de Azángaro al Prefecto del Departamento de Puno, 27 de mayo de 1985, Caja 440, Año 1985, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[144] See Stephen Kinzer, "Abimael Guzmán, Leader of Guerrilla Groups That Terrorized Peru, Dies at 86," *New York Times*, September 11, 2021, https://www.nytimes.com/2021/09/11/world/americas/abimael-guzman-leader-of-guerrilla-group-that-terrorized-peru-dies-at-86.html (accessed September 2, 2024).
[145] Román Alberto Quispe Alata, in conversation with author, October 31, 2023, Chuquibambilla, Puno.

Wajrani Rural Education Institute, which had been training farmers in alfalfa cultivation and disseminating seeds from New Zealand.[146]

In the eyes of the Shining Path, the cooperatives were bastions of capitalism, inequality, and corruption. Thus, many SAIS administrators and employees received death threats if they did not leave; others were murdered. In late 1986, for instance, five men and two women, armed and hooded, broke into the home of the watchman of the SAIS Illari in Azángaro. As the record indicates, they proceeded to beat and kick him, calling him "miserable dog." When his wife tried to defend him, they assaulted her, too. Finally, they tied up the beaten man, finished him with a shot to the head, and warned his wife to say nothing to the police.[147] As just one more example, in 1989, in another part of Azángaro, Shining Path operatives captured the administrator of the SAIS Huayna Cápac, along with a municipal authority. They took both to the municipal plaza and executed them publicly with approximately five shots each. They also wounded a police officer and burned the local library, the main municipal building, and a town truck.[148]

While the attacks of armed groups overlapped in some cases with community invasions, communities had their own goals. The documents they prepared illustrate a semi-formal approach to restructuring. In 1987, the community of Saytococha in Azángaro wrote to the prefect to announce that: "the authorities and members of [our community] have agreed to take possession of the lands of the CAP Manco Capac, Jupari, Ccoa, and Pichacani in the amount of 3000 hectares on the 28th day of July of this year. One hundred and eighty-three heads of families

[146] In the case of Chuquibambilla, the National University of the Altiplano restored the facilities and operates them to this day. In the case of Wajrani, all that remains today are the bases of burned buildings.
[147] See Comisión para la Verdad y Reconciliación, Puno, Caso 1015703, Defensoría del Pueblo, Lima.
[148] CVR, Puno, Caso 1006143, Defensoría del Pueblo, Lima.

… have made this decision," they continued, "since the [regional] office of Agrarian Reform … has not addressed" our petitions for land, "which we have been presenting for over a year."[149]

Considering the poor administration of many cooperatives, regional government offices approved of restructuring, provided that they would control the process. Communities acknowledged this authority, yet in practice they usually announced what they would do or what they had done, rather than waiting for permission from government bureaucrats.[150] In 1987, the community of Choquechampi Carpani, erstwhile partner of the SAIS Huayna Cápac in Azangaro, recalled the decisiveness of their ancestors "when they felt dominated and cornered by the gamonalismo of their time." We have felt similarly, they wrote, because of "the gamonalismo of the SAIS." In the restructuring process, officials, which perhaps included some of the SAIS administrators, had assigned the community a piece of land at 5000 meters above sea level. Given the futility of agriculture at this altitude, the community wrote, "we have decided to take possession of our original lands, which we had as partners of the aforementioned business."[151]

With an eye to the future, many communities sought to legitimize their invasions. In Azángaro in 1987, leaders in the town of Putina requested approval from the Subprefect for their takeover of part of the now defunct SAIS Churura, and they invoked the constitution of Peru and the current initiative of the United Nations. "Considering the need for housing, and that the two hundred and fifty residents have precarious economic situations," they began; "and pursuant to article 124 of the political constitution of Peru, which indicates that the State promotes the right to shelter and property…. Considering," they continued, "that this is the International Year of

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[149] Carta al Prefecto del Departamento de Puno, 24 de julio de 1987, Caja 450, Año 1987, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[150] See, for example, Carta de la Comunidad de Catachilla Chusamarca al Prefecto de Puno, 11 de setiembre de 1989, Caja 459, Año 1989, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[151] Carta de la C.C. Choquechambi Carpani al Prefecto del Departamento de Puno, 27 de mayo de 1987, Caja 450, Año 1987, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno

Shelter for the Homeless declared by the United Nations…. [and] Considering that the demographic growth of the town of Putina and its nine neighborhoods is truly alarming, which is why the need for housing increases daily, and which is why we have appealed to different State entities for more than seven consecutive years, without receiving a concrete solution to date… we have assumed possession," they concluded, of the property we need.[152]

The authors attached one hundred and thirty-two pages "as evidence of the procedures undertaken in an effort to [effectuate] adjudication" prior to this invasion. Finally, they wrote, "we call upon you, Mr. Prefect, to accept our petition, which is just, that it may redound to the benefit of the most forgotten residents of this corner of the Altiplano."[153] In this case, the takeover had already occurred, yet the community employed a legally coherent and deferential petition to formalize it. In other cases, communities ended up fighting among themselves. When the cooperatives dissolved in the district of Quilca, south of the city of Puno, the communities of Ticani and Uyuni, as one document recorded, "never reached an agreement regarding the distribution of lands, and because of this we constantly see small confrontations."[154]

Often, civil authorities appeared unable to assert control. In 1985, a landowner near the city of Juliaca charged that some 500 people had committed "crimes of terrorism, invasion, and usurpation of rural land." In such complaints, petitioners used the term *terrorism* liberally. Even if the accused had no affiliation with the Shining Path, the term often appeared as a kind of hyperbole. "With a premeditated plan of terrorism," the petitioner continued, "with explosions gunshots, and shouts of death … [the invaders] completely destroyed everything there was." For

[152] Carta del Comité de Expansión Urbana de Putina al Prefecto del Departamento de Puno, 7 de octubre de 1987, Caja 450, Año 1987, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[153] Carta del Comité de Expansión Urbana de Putina al Prefecto del Departamento de Puno, 7 de octubre de 1987.
[154] Guardia Civil del Perú, Informe al Prefecto del Departamento de Puno, 28 de octubre de 1987, Caja 440, Año 1985, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.

example, “they had destroyed the farmhouse by blowing it up at the foundation…. Now, he continued, “they have proceeded to occupy the land as a group … distributing it in individual parcels, which they have divided with trenches. Currently, they are consummating the crime of usurpation by hastening to build dwellings.”[155] Since the police lacked the manpower to solve the problem, the resident called upon the prefect to request intervention of the army.[156]

As part of this same petition, the landowner charged that among the invaders was an administrator from the SAIS Buenavista. If true, this accusation suggests that once the SAIS dissolved, some administrators joined the scramble for land. In other cases, these individuals refused to leave. In early 1986, authorities near the city of Puno distributed 400 hectares of the land of the SAIS Illare to the community of Tuni Requina “to live and cultivate.” Over two years later, however, the community complained that some of the administrators remained on the land and continued to ignore (*hacen de oido sordo*) the terms of restructuring.[157] It is unclear how much this defiance had to do with the attacks of the Shining Path on this same cooperative.

A common theme in individual and community petitions during this time is a request for police protection or support, especially in response to attacks by alleged Shining Path members. An equally common theme, however, is abuse of power by police and military forces. On one afternoon in 1989, seven police officers, “in a state of drunkenness and arrogance” approached the owner of a car, dealt him several blows, and ordered him to drive them to a site where, earlier that day, a fight had occurred between the National Police and an armed group.[158]

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[155] Jorge Ismael Rodríguez Molina al Señor Subprefecto de Huancané, 21 de agosto de 1985, Caja 440, Año 1985.
[156] Guardia Civil del Perú, Emite Informe sobre Otorgamiento de Garantías personales a don Jorge Ismael Rodríguez Molina, 28 de agosto de 1985, Caja 440, Año 1985.
[157] Carta de Francisco Ramos Belizario al Prefecto de Puno, 1 de marzo de 1988, Caja 454, Año 1988, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[158] Informe sobre el incidente ocurrido en Pucará de Station Wagon, Azángaro, 7 de julio de 1989, Caja 459, Año 1989, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.

On other occasions, the police demanded food or resources. In late 1988, government technicians offered a two-day training titled "Reproduction and Parturition of South American Camelids" in the community of Chambalaya near Chucuito. Since the event would last two days, attendees from other communities came prepared with food for their own meals. Individuals from the community of Pisacoma reported that upon arriving, they presented their identification to the police officers of the area. All was in order, yet the commanding officer ordered them to "leave a sack of potatoes." When they protested, he said, "if you don't, I'll take everything." Seeing no other option, they did so. In their complaint to the prefect, the community members concluded "This lieutenant must be used to skimming money and getting rich in this way."[159]

As another example, in 1989 a mayor in Antauta, Melgar (northern Puno) wrote to the prefect to request the return on his pistol, which a police officer in the area had confiscated for an "antiterrorist operation" but had never returned. "Since the zone of Antauta is currently besieged by subversive elements," the mayor wrote, "and since police protection is insufficient, and, finally, since [municipal] authorities [like me] are the object of threats and murders by the subversives, it is extremely necessary that I have my revolver to defend myself."[160]

Robbing potatoes and revolvers, of course, was not the worst of police abuses. Officers imprisoned, abused, and tortured many individuals and groups for alleged subversive activities without proof or even probable cause.[161] Nevertheless, throughout the late 1980s and early 1990s, some towns and communities continued to request police protection from the Shining Path. In 1989 when the police battalion of Amantaní (near the city of Puno) was transferred to

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[159] Carta de la Comunidades y Parcialidades del Distrito de Pisacoma al Prefecto de Puno, 19 de diciembre de 1988, Caja 454, Año 1988, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[160] Carta de Francisco Abel Ortega Humaya al Prefecto de Puno, 4 de diciembre de 1989, Caja 459, Año 1989, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[161] I read accounts of police torture in records of the Truth and Reconciliation Commission in the Defensoría del Pueblo in Lima. The status of these records is "read only" (no photos or citations).

Chucuito, local leaders and residents wrote to the prefect to request its "immediate return."[162] In their view, the empty police post was an invitation for the Shining Path to move in and take over.

In his study of Puno, historian José Luis Rénique aptly depicts the land of the altiplano during these years as a great battlefield in which multiple parties vied for control.[163] By 1990, 25 cooperatives and their roughly 761,000 hectares of land had been redistributed to a total of 357 communities, which included 36,765 families.[164] More restructuring followed. Only a few cooperatives survived. While parcelization may have pleased communities, it eliminated the experimentation with new technology that had been occurring on the cooperatives. For example, thanks to its proximity to the Illpa experimental station, the SAIS Buenavista had tested new grass varieties on livestock. When this SAIS was invaded in 1988, that research halted.[165]

Granted, the cooperatives had never achieved the goal of sharing technology with communities, but the process of parcelization sacrificed that potential. Without the cooperatives, the next largest organizational unit was the communities. Puno had some 350 recognized communities and others that lacked official recognition.[166] Extensionists could never visit all of them. To this day, many communities remain at the margins of innovation projects. In other cases, entrepreneurs such as Cayo Warthon Riveros, an alpaca farmer and former SAIS director, have worked to foster associativity among small farmers and thereby restore, to an extent, the economies of scale and facilitate the extension of technology.[167] The Peru-New Zealand project was the state's most significant attempt to combine land reform with localized green revolution.

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[162] Carta del Concejo Distrital de Amantaní al Prefecto de Puno, 13 de abril de 1989, Caja 459, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[163] Rénique, *La Batalla por Puno*; Rénique's work provides a much more thorough analysis of the land conflicts.
[164] See "INIAA: Plan de Desarrollo a Mediano Plazo (1990-95) de la Estación Experimental Illpa-Puno, 1990," p.9, INIA Library, Illpa.
[165] Solicitud de Garantías de Amadeo Laquise Lerma al Prefecto de Puno, 27 de marzo de 1989, Caja 459, Año 1989, Fondo Prefectura, Dirección de Archivo Histórico, Archivo Regional de Puno.
[166] See "INIAA: Plan de Desarrollo a Mediano Plazo (1990-95), p.9, INIA Library, Illpa.
[167] Cayo Warthon Riveros, in conversation with author, November 4, 2023, Juliaca.

Chapter 4

Cajatambo and the *Callejón de Huaylas*: Participation and Privatization of Development in Ancash

Throughout much of the twentieth century, governments and universities, both Peruvian and foreign, led rural development efforts in the Andes. In the 1980s, however, a third group of actors took the lead in some areas: non-governmental organizations (NGOs). Following agrarian reform, as the nation searched for new solutions to rural poverty, NGOs proliferated. Scholar Raúl Asencio describes the long 1980s (late 1970s through 1990s) as "the golden age of Peruvian NGOs" in which lay and religious groups led the "privatization of development." By 1988, he adds, around 218 NGOs were operating in Peru, 72 of which focused on rural areas.[1]

In many cases, these organizations tried to address obstacles to rural development that the government, thus far, had failed to address. The largest Lima-based NGOs included: the Group for the Analysis of Development (GRADE), the Peruvian Center for Social Studies (CEPES); and the Center for the Study and Promotion of Development (DESCO). Cusco was home to the Center for Agro-Industrial Training (CCAIJO); Arequipa, the Center for the Study of Regional Development (CEDER); and Tarapoto, the Center for the Development and Research of the Jungle (CEDISA). These and other NGOs usually leaned left, found foreign sources of funding, and brought together young people who wanted to transform rural Peru by introducing new technologies. As Asensio argues, during the long 1980s, "a large percentage of the knowledge about Peruvian agriculture came from these institutions, even more than from universities."[2]

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[1] Raúl Asensio, *Breve historia del desarrollo rural en el Perú, 1900-2020* (Lima: IEP, 2023), 225-227.
[2] Asensio, *Breve historia*, 228.

This observation alone calls into question sociologist James Petras's sweeping attack on NGOs in the 1990s. In his work, Petras blames these organizations for "displacing and destroying … organized Leftist movements and co-opting their intellectual strategists and organized leaders." According to Petras, "the formal claims used by NGO directors to justify their position—that they fight poverty, inequality, etc. are self-serving and specious. There is a direct relation," he charges, "between the growth of NGOs and the decline of living standards: the proliferation of NGOs has not reduced structural unemployment, massive displacements of peasants, nor provided livable wage levels for the growing army of informal workers."[3]

In Peru, the history of many NGOs challenges these charges. One major example is the Lima-based Center for the Study of Development and Participation (CEDEP), which neither destroyed nor co-opted Velasco's leftist movement but grew out of it. In 1977, as Morales Bermúdez backed away from agrarian reform, leftist intellectuals Carlos Franco Cortez and Héctor Béjar Rivera, both of whom had served under Velasco, helped found CEDEP in pursuit of "a socialist, national, and popular Left." This new Left, in their view, would build upon Velasco's reforms by cultivating "social policies and practices based on the values of national independence, popular participation, and confidence in our capacity for self-development."[4]

While CEDEP contributed to intellectual debates, its real legacy was community-level agricultural innovation, which it provided in the states of Lima, Ica, and Ancash. Some of its largest projects dealt with dairy innovation in the northern Lima province of Cajatambo, the reintroduction of alpacas in the *Callejón de Huaylas* (Valley, or, more literally, Ally, of Huaylas) in Ancash, and ecological pest control in Ica and Ancash. Even during the armed conflict, these

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[3] James Petras, "NGOs: In the Service of Imperialism," *Journal of Contemporary Asia* 29, no. 4 (1999), 429-430.
[4] Consejo Editorial, "Hacia Una Izquierda Socialista, Nacional y Popular," *Socialismo y Participación* 1 (Octubre de 1977), CEDEP Library, Lima.

regions became laboratories in which CEDEP technicians, inspired by Velasco, cultivated a unique style of agrarian praxis that, in their words, "combined [innovative] field work and global reflection…[in] support of popular organizations," especially rural communities.[5]

As they worked, CEDEP technicians learned from the communities that they sought to serve. As they did so, campesino interests, knowledge, and traditions shaped and improved the innovation projects that the NGO was undertaking. Effective collaboration explains why these projects achieved some concrete goals. Overall, through its efforts to provide technical aid, CEDEP built on the work of Velasco and gained unique insight into agricultural science in the Andes, community complexity, and the art of collaboration.

Carlos Franco and Héctor Béjar embody Peru's intellectual and radical Left respectively. Born in 1939, Franco during the 1960s studied psychology at the National University of San Marcos in Lima and the University of Lovaina in Belgium. From 1970 to 1975, he worked in SINAMOS, the Velasco administration's controversial National System to Support Social Mobilization, which sought to help campesinos organize and lobby for their own interests.[6] Anthropologist Enrique Mayer describes SINAMOS as a hub of "former radicals," and leftist "gadflies" who wanted to "incorporate the masses while controlling them at the same time."[7] Historian Javier Puente calls it a "propaganda office that managed social issues, including containing potential upheaval against the regime."[8] These appraisals do not do justice to Franco.

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[5] "CEDEP: Notas para el Recuerdo," https://cedepperu.org/quienes-somos/historia (accessed January 27, 2025).
[6] *Carlos Franco*, compiladora Emma Zevallos Aguilar (Lima: CEDEP, 2012), see cover flaps.
[7] Enrique Mayer, *Ugly Stories of the Peruvian Agrarian Reform* (Durham: Duke University, 2009), 34-35.
[8] Javier Puente, *The Rural State: Making Comunidades, Campesinos, and Conflict in Peru's Central Sierra* (Austin: University of Texas, 2022), 15.

Franco was a young, left-leaning intellectual and idealist, far less interested in power than in social reform. Besides SINAMOS, he served in 1974 and 1975 on the Advisory Committees of the Ministry of Education and the Office of the President. His highest ideal was social integration, a concept which he encapsulated in the term *participation*. As a look at his oeuvre indicates, he spent much of his life searching for answers in Marxism, socialism, and General Velasco's reformism. He wrote or contributed to works such as: *The Participatory Revolution* (1975), *Peru: Popular Participation* (1979), *From Eurocentric Marxism to Latin American Marxism* (1981), *Velasco's Peru* (1983), *Castro Pozo: Nation, Endogenous Modernization, and Socialism* (1989), and *Images of Peruvian Society: The Other Modernity* (1991).[9]

Franco understood that a military dictatorship could never be a true democracy, yet he accepted the Velasco administration as a necessary step. "Without the concentration of power and the use of force," he wrote in 1983, "it was not possible … given the conditions in Peru at the time, to carry out profound social transformations."[10] Peruvian history largely supported this conclusion. One need only consider the historic dominance and impunity of hacienda owners, as well as the pitiful reform efforts of President Fernando Belaúnde Terry in the mid-1960s (see Chapter 1). The military, in other words, was the only institution that had the power to face down Peru's class of hacienda owners and set in motion reforms for a more inclusive society. The other visible road to reform would have been a large-scale conflict, likely a very violent one, between hacienda owners and their allies on one hand and campesino coalitions on the other.

Franco and his colleagues also frequently refuted critiques of the Velasco regime as authoritarian. In their view, popular participation had been one of its priorities and could have

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[9] These works were published in Spanish. For a fuller list of Franco's publications, see, "Carlos Franco (1939-2011)," CEDEP, https://cedepperu.org/carlos-franco (accessed Jan. 15, 2025).
[10] See Eliana Chávez O'Brien, "El Perú de los Ochenta, de los Noventa y del Siglo XXI: La Vigencia de Carlos Franco," in *Carlos Franco*, 26 (25-28).

been, under other circumstances, its legacy. As Eliana Chávez O'Brien, a fellow researcher at CEDEP, put it, all the agrarian cooperatives were "laboratories for participation." They were experimental, yes, but "never before had Peru experienced such interesting processes of social change. With all the errors that are intrinsic in such processes, Peru took its first steps," she writes, "but politicians, businesspeople, our middle class … and part of the church refused to understand. Fear of losing power and the myopia of a short-term view ruled out the idea that social mobilization could give the country greater stability, wealth, and creativity."[11] This view highlighted middle- and upper-class opposition to the democratization of Peruvian society. It obviously downplayed the weaknesses of the Velasco administration's plan for cooperatives.

Aside from a brief period of service as an advisor to President Alán García (1985-1990), which ended in disillusion, Franco throughout most of his career used CEDEP as his main instrument of social change. Within the NGO, Franco pursued the interrelated ideals of social integration and rural development with, as one colleague wrote, "keen intelligence … intellectual honesty … humor … and, above all, solidarity and affection toward others."[12]

In comparison to Franco, Héctor Béjar, demonstrated a greater proclivity to take up both the pen and the sword. Slightly older than Franco, Béjar in the 1950s studied law and political science at the University of San Marcos. He also worked as a journalist, most notably for the Communist Party of Peru. In 1958, when U.S. Vice President Richard Nixon visited Lima as part of a South America tour, Béjar helped organize the large protests against U.S. policy in the hemisphere that forced Nixon to adjust his schedule.[13] The following year, Béjar joined Juan Pablo Chang Navarro, Guillermo Mercado León, Luis Zapata Bodero, and others to break from

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[11] Chávez O'Brien, "El Perú de los Ochenta, de los Noventa y del Siglo XXI," 26.
[12] See *Carlos Franco*, 7-8; see also Chávez O'Brien, "El Perú de los Ochenta, de los Noventa y del Siglo XXI," 28.
[13] See Peter Smith, *Talons of the Eagle: Latin America, the United States, and the World*, 3rd. ed. (New York: Oxford University, 2008), 128-130; see also Vernon Walters, *Silent Missions* (New York: Doubleday, 1978), 320-325.

the Communist Party and form the Leninist Committee of the State of Lima. In 1962, he co-founded the National Liberation Army (ELN) in Cuba, after which he led insurgencies in Peru in 1963 and 1965. In the latter, guerillas attacked haciendas in the state of Ayacucho, killing some owners. In response, the Peruvian military killed nearly all the insurgents, including Mercado and Zapata. Béjar, one of just two survivors, was imprisoned in 1966.[14] Juan Pablo Chang, who had joined Che Guevara's revolutionary band in Bolivia, was killed in a firefight with the Bolivian army on October 9, 1967, just a few hours before Guevara's execution.[15]

In a prison-cell interview of the late 1960s, Béjar described the guerrilla movement in Peru as "the result of a fusion of the most combative peasants and the revolutionary urban petty bourgeoisie. It was potentially a highly explosive fusion," he noted, "but difficult to bring off" because "the [urban] guerrillas carried within themselves … a great many of the historical defects of the Peruvian Left political parties," including a failure to grasp "the reality of the Peruvian peasantry."[16] This failure was fatal because in the Andes campesino groups were the majority, and they formed the vanguard and critical mass of nearly all resistance movements.[17]

In Bolivia, by way of comparison, Che Guevara's failure to recruit campesino groups sealed the fate of his last mission. Based on his experience in Cuba, Guevara believed that a rural guerrilla nucleus or *foco* could both lead and generate a revolutionary movement. The rural nature of the foco mattered because, in his words, the rural population "constitutes the absolute majority … of Latin American populations," it "works the soil under conditions of exploitation indistinguishable from those of the Middle Ages," and thus it is "a tremendous potential

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[14] See "Héctor Béjar Rivera (Canciller del Perú): Biografía Autorizada," La Haine: Proyecto de Desobediencia Informativa, https://www.lahaine.org/mundo.php/hector-bejar-rivera-canciller-del (accessed Jan. 14, 2025).
[15] See Henry Butterfield Ryan, *The Fall of Che Guevara: A Story of Soldiers, Spies, and Diplomats* (New York: Oxford University, 1997), 72, 77, 104, 129, 142.
[16] "Héctor Béjar: An Interview," by Winston Orillo, trans. Paul Bundy, in Héctor Béjar, *Peru 1965: Notes of a Guerrilla Experience*, trans. William Rose (New York: Monthly Review Press, 1970[1969], 11 (9-15).
[17] Virginia Guzmán and Virginia Vargas, *Cronología de Movimientos Campesinos, 1956-1964* (Lima: IEP, 1981).

revolutionary force."[18] In practice, however, Guevara did not understand rural Andean groups. As anthropologist Dirk Kruijt points out, in Bolivia Guevara and his men were "foreigners" who dropped in with "no deep knowledge of indigenous aspirations, social hierarchies, or religious and cultural beliefs." As a result, they fought alone, and it did not take the Bolivian army long to wear down their small *foco*. "For years after the death of Che Guevara," Kruijt adds, "when receiving foreign guerrilla delegations consulting him, Fidel Castro used to underline the importance of support and mobilization of non-guerrilla actors and large segments of society."[19]

Having learned this lesson, Béjar, in his interview, accepted a temporary defeat yet remained committed to his cause. "I've been in prison for three years, and I have no idea when I shall be tried," he said calmly. "The revolution is a war between the oppressed and their oppressors. For the present I've lost this round and am in the hands of the oppressors. That's all." To keep his mind active, he spent his time writing and reading. Favorite authors included French philosopher Jean-Paul Sartre, "whose analytical clarity," Béjar noted, "I wish one could find among orthodox Marxists," as well as Peruvian poet César Vallejo and Colombian novelist Gabriel García Márquez. Reading, however, was more than a mere pastime. "I try to keep informed of everything going on outside of this cage," he said, "and to pull together all the ideas that run around in my head." In so doing, he solidified his belief that "the only road for the oppressed is to struggle against their oppressors, using all the forms possible."[20]

Although this approach had led Béjar's fellow guerrillas to their death and landed him in jail indefinitely, it soon marked him as an apt candidate for the federal government. In 1970, as

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[18] Ernesto Che Guevara, *Guerrilla Warfare: A Method* (Peking: Foreign Language Press, 1964), 3; see also Matt D. Childs, "An Historical Critique of the Emergence and Evolution of Ernesto Che Guevara's Foco Theory," *Journal of Latin American Studies* 27, no. 3 (Oct. 1995), 594-598.
[19] Dirk Kruijt, "Che Guevara and Guerrilla Warfare," *Globalizations* 20, no. 8 (2023), 1529, 1533.
[20] "Héctor Béjar: An Interview," 12-15.

the Peruvian Armed Forces under General Velasco changed their image from that of oppressors (at least in the view of the Left) to defenders of the oppressed, Velasco granted amnesty to Béjar and other political prisoners. He then incorporated Béjar into SINAMOS where the former guerrilla took charge of the General Office of Youth Organizations whose work included providing technical aid to rural groups.[21] For Velasco, tapping people like Béjar symbolized the integration of past revolutionary movements into his "Peruvian Revolution."[22] Yet the move was not just a political stunt; Béjar was not the kind of person to become a pawn. His work in SINAMOS seemed to quench his thirst for justice, for he continued in this capacity until General Francisco Morales Bermúdez and other conservative officers deposed Velasco in 1975.

Thanks in part to his experience in SINAMOS, Béjar did not return to clandestine activity but embraced rural development as the best way to continue fighting oppression. Obviously, too, the old enemy, the haciendas, were now gone. In June of 1977, he joined Franco, Francisco Guerra-García, and Federico Velarde Valdivia to found CEDEP. Besides planning development initiatives, this group launched the quarterly journal *Socialismo y Participación* (Socialism and Participation).[23] From 1977 to 2009 (just two years before Franco's death), the journal served as a forum for regional intellectuals to discuss politics and economics in Latin America.

CEDEP frequently used the journal to defend Velasco. In early 1978, in the wake of the general's death, it opened with an editorial that challenged portrayals of his administration as an autocracy. "Beginning with the moment when hundreds of thousands of Peruvians joyously took to the streets" to celebrate Velasco's takeover of foreign oil companies, the article began, "millions of Peruvians publicly and on diverse occasions manifested their adherence to the

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[21] "Héctor Béjar Rivera (Canciller del Perú): Biografía Autorizada."
[22] See Juan Velasco Alvarado, *La revolución Peruana* (Lima, 1973).
[23] See "Revista *Socialismo and Participación*," CEDEP, https://cedepperu.org/publicaciones/revista-socialismo-y-participacion (accessed Jan. 15, 2025).

transformative efforts that were beginning to take place in their country." Policies such as agrarian reform, it continued, "had an impressive popular framework," that "underpinned the revolutionary process at nearly every stage." Lack of participation, the article added, was limited to certain groups: "the inhabitants of the elegant neighborhoods of Lima, the 'high' classes, those who looked on with skepticism, bitterness and even obvious fear as the common people gained a physical and political presence in Peru."[24] This argument, of course, exaggerates the level of popular participation in the military government. Nevertheless, at a time when Velasco's name was becoming synonymous with failed state-led agrarian reform, it reminded Peruvians that his administration had focused more on the popular classes than any other presidency.

Years later, Héctor Béjar expressed his perspective in a review of Enrique Mayer's *Ugly Stories of the Peruvian Agrarian Reform*. In this study, Mayer argues that "Velasco's technocratic utopia was bland, ill defined, and kitschy. In action it fed more on revenge and hate than on the construction of a tomorrow of solidarity."[25] Revenge and hate? Béjar asks. To the contrary, the reform fed on "heart and fortitude." In his experience, "the weight of justice … won the loyalty of the honest people of the era, those who truly wanted a better and more just country. Among the *beautiful* stories of agrarian reform," he continues, "is the daily experience of military officers of high and low rank who, like Velasco, came to identify with the people" and of "youth who, allied with the campesino movement, helped with the expropriation of their own families' properties." Indeed, "not everything was failure and despair. It was also hope, utopia, and change of personal attitudes…. the only time," Béjar says, "when it felt like the sea was parting between a past of abuses and a future that, we hoped, would be one of justice."[26]

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[24] "Editorial: La Ultima Victoria de Velasco," *Socialismo y Participación* 2 (Enero 1978), 5 (5-8). CEDEP Library.
[25] Mayer, *Ugly Stories*, 240.
[26] Héctor Béjar, "Comentarios a los Cuentos Feos de Enrique Mayer," *Socialismo y Participación* 107 (Octubre 2009), 171-178; emphasis added.

In this pivotal moment, environmental realities played a central role. In Peru, Béjar writes, since "the growth of the population is not accompanied by the growth of arable lands or available water … the only rational solution is large properties that accumulate and distribute not land but benefits." In other words, the government's idea for agrarian cooperatives was logical. Of course, Béjar concedes, they did not achieve their potential. Yet in his experience, problems only mounted when Velasco was forced into retirement and his successor gave ear to the former class of hacienda owners. "Mayer's book could be called *Ugly Stories of the Counter-Agrarian Reform*," Béjar argues, because failure became generalized only later when the government reversed its agrarian policies and campesinos opted for "the apparent security of a small plot … [which] guaranteed [their] poverty," instead of learning the art of collective action. "Being poor and exploited did not necessarily make them agents of change."[27] In short, Béjar laments, revolution is a long process, and neither the government nor the people stuck with it.

Over the years, Béjar has made some controversial and, at times, outlandish statements.[28] Nevertheless, the argument that Velasco's revolution had been "interrupted" had some basis.[29] More importantly, it explains CEDEP's approach to rural development. If, as Béjar and his colleagues believed, the Velasco administration had been moving in the right direction, despite a normal margin of error for something so new, then the logical solution was to pick up where it had left off. After land redistribution, rural communities needed training, technical aid, and organization among themselves. With small grants from the World Council of Churches and the Netherlands Development Cooperation (NOVIB), CEDEP began working in the coastal valleys

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[27] Béjar, "Comentarios a los Cuentos Feos de Enrique Mayer," 175.
[28] Most notably, Béjar has affirmed that the CIA supported the Shining Path—an unsubstantiated argument that combines anti-imperialism (one of his hobby horses) with notions of a deep U.S. state. See "Héctor Béjar y sus polémicas frases sobre la Marina, el terrorismo, la CIA y más," *El Comercio*, 17 de agosto de 2021.
[29] For more on this historical perspective, see Carlos Aguirre and Paulo Drinot, "Introduction," in *The Peculiar Revolution: Rethinking the Peruvian Experiment Under Military Rule* (Austin: University of Texas, 2017), 9-10.

of Cañete and Barranca to the north of Lima.[30] From 1978 to 1980, it organized courses to help campesinos participate in the CAP San Nicolás, the EPS Huáura, and other cooperatives.[31] Overall, the Velasco government had given short shrift to such training.

In 1980, as Peru returned to civilian rule under Fernando Belaúnde Terry (1962-1968, 1980-1985), CEDEP adjusted to an economic crisis and to what it saw as the government's policy of leaving the cooperatives to twist in the wind. As "indebtedness began to asphyxiate these businesses," the NGO noted, its goal for them became survival. One of its pamphlets bore the title: "Facing the Crisis: Organization."[32] Meanwhile, CEDEP began projects in the Valley of Ica to the south of Lima. It also expanded into the Andes, beginning with Cajatambo, a province on the Lima-Ancash border, and, soon thereafter, the Callejón de Huaylas to the north.

In the latter case, the CEDEP worked with the Agrarian Federation of the Department of Ancash (FADA), an organization of nearly all the state's 257 campesino communities. In 1969, the Velasco administration supported the formation of FADA; SINAMOS later offered training.[33] In 1980 Héctor Béjar met with FADA officials in the city of Huaraz to discuss technical aid. As Macedonio Lirio León, a leader within the federation, explained, "In CEDEP there are a lot of people from SINAMOS, which had …tried to lend a hand to the campesino movement…. At least Velasco made some structural changes…. The errors can be overcome along the way. [So when] Héctor Béjar said he would support us … we said, 'the support is welcome.'"[34] Thanks largely Béjar's roots in SINAMOS, FADA officials agreed to work with CEDEP.

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[30] See "CEDEP: Notas para el Recuerdo," https://cedepperu.org/quienes-somos/historia (accessed January 27, 2025).
[31] "Informe Final: Proyecto de Promoción de la Organización Rural en los Valles de Supe, Barranca y Pativilca," c. 1983, CEDEP Library, Lima.
[32] "Informe Final … los Valles de Supe, Barranca y Pativilca."
[33] Interview, Eleuterio Ramírez, in *Ancash: El Hombre y la Tierra* (Lima: CEDEP, 1990), 175.
[34] Interview, Macedonio Lirio León in *Ancash: El Hombre y la Tierra* (Lima: CEDEP, 1992), 210 (207-255).

In Cajatambo, however, CEDEP worked directly with local communities. In early 1979, the NGO formed a team of eight individuals, seven men and one woman, whose trip notes began with the drive into the Andes. After traveling north along the coastal highway, their minibus turned east and "gradually left the sea behind." After passing through "the silent kingdom of cactuses, boulders, and gravelly hills"—environmental icons of Peru's coastal desert—"we stopped in a *pueblito* … where vendors of local pears, limes, [and] mangos besieged us." Then, "with the din of the bus's motor in our ears, we climbed up a solitary, zigzagging road that wound around rock formations, ridges, [and] steep slopes … our deep thoughts of what awaited interrupted only by random oncoming trucks." At about 2000 meters above sea level, the hills became less jagged and the vegetation, less sparse. "Dirty signs that flanked the road announced turn-offs to kaolin mines and small settlements." Finally, mountain sides lined with "alfalfa, potatoes, corn, beans, barley, wheat, olluco, [and] oca" signaled their proximity to human settlement. After eight hours and 350 kilometers, they arrived in the town of Cajatambo.[35]

In contrast to government technicians or university engineers, who often wore their titles on their sleeves, the CEDEP crew did not assume a position of authority. Rather, it began by observing. The name Cajatambo, it noted, was a Hispanicized version of *Casha-Tampu*, a Quechua term meaning "Frozen Place." The town was home to four communities: La Florida, Tambo La Carmelita, Antay Indio, and Antay Mozo. The names of the last two indicated past concentrations of Indigenous and Mestizo groups respectively. These communities were home to four thousand people who, year by year, held *fiestas* in honor of their patroness saint María Magdalena and renewed rivalries in soccer tournaments. Outside the town, additional communities and approximately twenty-six thousand more people inhabited the province.[36]

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[35] Pedro Toledo in *Cajatambo: Experiencia de un desarrollo posible*, ed. César Franco (Lima: CEDEP, 1990), 9, 12.
[36] *Cajatambo*, 12-15.

Not surprisingly, most residents relied on agriculture for their livelihoods. Unlike larger Andean cities located in valleys, Cajatambo sat in a mountainous expanse. Outside the town, many communities had large extensions of rough, rocky land. At the lower altitudes, 2200 to 3200 meters above sea level, *comuneros* (community members) and other residents grew fruits on private plots. At the medium altitudes, 3200 to 3800 meters, they grew crops such as potatoes, beans, wheat, corn, and alfalfa, also on private plots. Finally, at the high altitudes, 3800 to around 4500 meters, comuneros grazed livestock on communal pastures. While crops provided food for subsistence, livestock provided sixty to eighty percent of all income. Residents' roles in agriculture varied from that of communal farmers to independent landholders with small or medium-sized properties. These medium landholders, who had been spared by agrarian reform, were now, in CEDEP's words, the "lords of the *pueblo*." Not only did they have the best irrigated land and the most valuable livestock, but they also had the highest level of education and usually owned the local stores. Their children often relocated permanently to Lima.[37] Cajatambo's socioeconomic hierarchy, in other words, was similar to that of other parts of the rural Andes.[38]

While a few families could purchase properties on the coast, other residents had to work there seasonally. As the CEDEP team explained, the average family had seven members, two of which worked in coastal cities. Young women often worked in Lima as domestic employees; young men worked on cooperatives in Huacho and Barranca. In many cases, these migrants did all they could to find permanent work. "For many, coming back can be embarrassing, a sign of failure," the team observed. By contrast, when Cajatambinos made a new life for themselves on

[37] *Cajatambo*, 12-15, 17, 22-23.
[38] See Elba Doris Mariscal Flores y Nora Valeria Mengoa Panclas, "Reforma Agraria y Situación del Campesino en la Sociedad Agrícola de Interés Social Rio Grande, Acora, Puno," 11-22, Tesis, UNTA, 1975. INIA Library, Illpa.

the coast and returned only for family visits, local residents, even old friends, sometimes addressed them with the respectful and distant pronoun *usted*, instead of the familiar *tú*.[39]

Poverty increased in proportion to distance from the town. Most communities lived in scattered, remote settlements that were connected only by footpaths. Some of these trails, the CEDEP team noted, "are quite narrow and go over steep slopes and around ledges, which forces residents to bring basic necessities—pasta, oil, kerosene, etc.—by pack animals." The town had electricity for about four hours per day, but in rural areas, homes lacked electricity entirely, as well as running water and sewage systems. Moreover, the town had one state-sponsored medical post with a lead doctor, a midwife, and two medical technicians, but the only regular healthcare that reached rural communities was mass vaccination campaigns.[40]

For the eight CEDEP technicians, agriculture outside the town provided the greatest opportunity to attenuate the trends that stemmed from chronic poverty. Existing farming methods, they noted, left much to be desired. Not only were machines nonexistent, but even the hand tools were archaic. Instead of pics and shovels, farmers used the *barreta* (steel lance) and the *raucana* (a more homemade shovel) to turn the earth. With such tools, a field of five hundred square meters required three men and five workdays to prepare for planting. Additionally, since farmers did not use improved seeds or agrochemicals, their fields produced far less than the national average. For livestock, available veterinary care was limited to "amateurs" (*curiosos*).[41]

To begin, the team identified two communities, Huayllapa and Uramasa, home to a total of 1,200 people, in critical condition. Both were located about twenty kilometers from town and could only be accessed by a seven-hour walk. They also showed some of the greatest signs of

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[39] *Cajatambo*, 17-19.
[40] *Cajatambo*, 16-18.
[41] *Cajatambo*, 20-21.

"negligible attention from the State, low productivity, reduced family incomes, degraded natural resources, significant migration, poor health conditions, illiteracy, etc."[42] Once the plan was made, the cry of mule drivers rent the Andean silence as unusual caravans of animals laden with seeds, fertilizer, and tools made their way towards these communities.

One of the main variables in this project was what the CEDEP technicians called the "personalities" of each community, which referred to levels of organization and receptivity. The Huayllapinos made up a unified *ayllu* or kin group and had fought for centuries to restore land that colonial authorities had taken from them; eventually, they triumphed. Their sense of pride was evident in the well-kept central square and public buildings. When the CEDEP team arrived, however, the community was initially suspicious of the outsiders because of a negative experience it had had in the past with a priest who tried to form a federation of communities.[43]

For its part, Uramasa had once been part of La Carmelita in the town of Cajatambo, but in recent years authorities had divided La Carmelita in two and given the new community of Uramasa remote land that had previously belonged to hacienda owners. In so doing, it created an "artificial" community, to borrow a term from anthropologists José Matos Mar and Fernando Fuenzalida.[44] Although Uramasa had been pulled from its historic lands, it still had to defend its current land from the former hacienda owners who had begun litigation to undo agrarian reform. Because of this dispute, CEDEP reported, many Uramasinos "were currently in the Cajatambo jail," and many others, including family members from Lima, urged the NGO to work in the community to help provide legal proof of successful business ventures on the disputed land.[45]

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[42] *Cajatambo*, 24-25.
[43] *Cajatambo,* 25-27.
[44] José Matos Mar and Fernando Fuenzalida, "Proceso de la sociedad rural," en *Hacienda, comunidad y campesinado en el Perú*, compilador José Matos Mar, 2nd ed. (Lima: IEP, 1976), 15, 19.
[45] *Cajatambo*, 25-27.

In both communities, CEDEP sought to strengthen dairy production, as well as improve seeds and soils, install irrigation systems, and increase public health. After six years of work, its greatest achievement, by its own estimation, was the importation of Brown Swiss dairy cows to Huayllapa and the construction and operation of a dairy stable where residents made cheese for sale. Although it tried to implement the same changes in Uramasa, it lamented that "a state of disorganization and deterioration" predominated. In Huayllapa, the team wrote, "the communal structure was stronger, the comuneros participated more in community decisions, and the orders that leaders gave regarding communal responsibilities were respected." In Uramasa, on the other hand, "[training] meetings were missed, communal chores were rarely carried out, and the leaders of the community seemed to have no authority over … members."[46]

In time, the NGO team noticed that the Uramasinos were more interested in crop production, perhaps because their ancestors had farmed lands near the town of Cajatambo, not on the remote pastures where the community currently resided. Adjusting to this interest, the team received credit from the Catholic NGO Caritas to carry out a small project with improved corn seeds. Successful production with this crop allowed Uramasa to pay back the credit in full and achieve CEDEP's goal of participation. In reflecting on this success, the team admitted that initially, "we failed to take into account the differences between the communities."[47] Experience, however, revealed the need to treat each community as a separate and complex entity.

Throughout the six-year project, CEDEP distributed a variety of training booklets in simple language and large print. One 1982 booklet explained how to wash, store, and select seed potatoes to maximize the next harvest.[48] Another in 1984 encouraged residents to plant trees. In

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[46] *Cajatambo*, 34-36.
[47] *Cajatambo*, 36-37.
[48] "La Papa: 10 Secretos para Mejorar la Semilla," 1982, CEDEP Library, Lima.

many Andean regions, trees were scarce, especially at high altitudes, yet communities often used—and sometimes overused—the available trees for firewood. Because of deforestation, comuneros had to walk increasingly long distances for firewood or burn *bostas* (manure). In their booklet, CEDEP technicians suggested that manure was best left to fertilize the soil and not fill homes with dense smoke. Instead, they urged communities to reforest their lands.[49] Other training booklets dealt with family gardens, compost, pastures for livestock, and care of sheep.[50]

During these training efforts, CEDEP technicians learned to better include the women of each community. Looking back, the research team, which included only one woman, admitted that many of its initial plans "were conceived in an ideological space that did not take into account the presence of [campesino women]." Yet we soon realized, they continued, that "in a place where needs and shortages are so acute, men cannot take control of goods that belong to the home as a unit … [or] assume the authority to make decisions … without first consulting their wives."[51] CEDEP had stumbled upon a fundamental feature of Andean society. While men often play a more public role than women, anthropologist Inge Bolin and other scholars have described women as "the power behind the throne." After all, "household economies are controlled by the wife. She decides how much of the harvest will be consumed, what portion can be exchanged or sold, and what products must be harvested to assure an adequate family diet. She also selects the seed stock to plant in the year ahead."[52] In time, CEDEP staff came to

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[49] "Plantemos Arboles," 1984, CEDEP Library, Lima.
[50] See "Mejoremos Nuestros Huertos Familiares," 1984; "El Compost: Abono Natural, Sano, Barato y Fácil de Preparar," 1984; "Control de Plagas y Enfermedades en nuestro Huerto Familiar," 1985; "El Cultivo de Pastos y su Manejo en la Sierra," 1985, "Manejo de Ovinos," 1986, CEDEP Library, Lima.
[51] *Cajatambo*, 37-38.
[52] Inge Bolin, *Rituals of Respect: The Secret of Survival in the High Peruvian Andes* (Austin: University of Texas, 1998), 121 (120-123); see Bolin's footnotes for additional sources.

understand these roles. As coordinator Jorge Silva Guzmán later put it, "the campesino family is a single unit in which everyone, even children, participate in the productive process."[53]

In a series of interviews that CEDEP staff conducted in Ancash in the early 1990s, the topic of gender roles came up. José Sotelo Ibaceta, a municipal authority from the city of Huaraz, described life in the countryside as "a kind of matriarchy."[54] However, FADA leader Eleuterio Ramírez cited the Inca creation story and its standard of "parity" between women and men. "Mamá Ocllo and Manco Cápac emerged side by side from Lake Titicaca," he explained. "We defend that same custom. In our community, if the field needs work, we work in the field, men and women. If the home needs work, it is the same." Admittedly, he continued, "what does at times limit women is the old system of education that [hacienda owners] put into effect" which held that "we should not teach women, nor allow them to go to school."[55] In his view, European and internal colonialism had distorted ancestral and equitable gender roles. Of course, women's perspectives were necessary to verify these ideas, yet one thing was clear: women's leadership was integral to rural life, and all projects related to family economies had to have their support.

One example of overlooking this reality (besides their own) that the CEDEP technicians recorded involved the power company Electro-Peru. At one point during the NGO's time in Cajatambo, Electro-Peru claimed that unless the men of a certain community helped strengthen the nearby dam, the community would soon be washed away. Its request for labor, CEDEP recorded, "was summarily accepted by these men, without having first consulted their wives." However, "on the day that these reparations were supposed to take place and at a key time when

[53] Interview, Jorge Silva Guzmán, in *Ancash*, 327.
[54] Interview, José Sotelo Ibaceta, in *Ancash*, 140-41.
[55] Interview, Eleuterio Ramírez, in Ancash, 192.

the technicians from Electro-Peru were present, the women [of the community] showed up and modified their husbands' commitment according to [the women's] conditions and timing."[56]

Besides learning about the central role of community women, CEDEP, like the Velasco administration in Puno, learned more about the unique environmental conditions of the Andes. In a project that sought to build biodigesters in Uramasa and Huayllapa, the NGO team realized that low-altitude technology could not simply be transferred to the Andes. Biodigesters are airtight tanks in which the breakdown of organic matter (anaerobic digestion) produces a mixture of gases than can be used to generate a modest amount of renewable energy.[57] In these communities, as the CEDEP team explained, "the possibility of having cheap lighting … [for] the central square and … lamps in homes produced a real excitement." In fact, members "demonstrated an enormous desire to volunteer and fulfil the goals that were laid out." Everyone wanted light. Ultimately, however, all were disappointed. The problem, as the CEDEP team later summarized, was ecological. "At three thousand meters above sea level … the efficiency [of biodigesters] diminishes, and the costs to achieve higher [energy] yields would make this technology too expensive" for a single community.[58] The environment made the difference.

In the mid-1980s, a new challenge began to appear, one more sinister than ecological limitations or community personalities: the internal armed conflict. As early as 1984, the CEDEP crew began to hear rumors of "suspicious groups" in the hills who described themselves as members of the Communist Party and visited local stores to ask for supplies. One group revealed

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[56] *Cajatambo*, 38.
[57] See J. Marti Herrero, "Experiencia de transferencia tecnológica de biodigestores familiares en Bolivia," *Livestock Research for Rural Development,* Volume 19, Article #192 (2007), https://lrrd.cipav.org.co/lrrd19/12/mart19192.htm (accessed January 29, 2025); Moses Jeremiah Barasa Kabeyi and Oludolapo Akanni Olanrewaju, "Optimum Bio-digester Design and Operations," Proceedings of the 5th International Conference on Industrial Engineering and Operations Management, Rome, Italy, July 26-28, 2022, https://ieomsociety.org/proceedings/2022rome/424.pdf (accessed January 29, 2025).
[58] *Cajatambo*, 38-39.

its intentions when it tried to bomb a regional dam (perhaps the one managed by Electro-Peru). Fortunately, in this case the dynamite only made a small hole.[59]

The CEDEP technicians had little direct contact with these groups. Because of the reserved nature of community members, they explained, even individuals with whom they had developed a level of trust, "never explained in depth" what the armed groups were doing or how the community was reacting to them. However, before some community events, these members would explain that "it would be best if [the technicians] were not around." On other occasions, they indirectly warned the CEDEP team. "They would use the excuse of bad weather," the technicians recalled, "or say people were working, but they did so in a way that never left any doubt about the true reason … which was the appearance of *senderismo* in the area."[60] The way they shielded the members of the CEDEP team indicates their understanding that the Shining Path was dangerous as well as their respect for the technicians whom they had come to know. Communities themselves also faced danger. In 1985, the Shining Path attacked the community of Paca, perhaps because Paca had not given the Senderistas the welcome they expected.

Later this year, CEDEP's community partners again had to shield the NGO technicians. To celebrate six years of work in Huayllapa and Uramasa, CEDEP received permission from the communities to bring in a professional camera crew from Lima to make a documentary, which would feature the dairy stable and cheese-making room, as well as other projects, such as a new medical post and the roof of a Mothers Center. One day in November, the hired film crew arrived in Huayllapa with its equipment. However, "just before midnight," CEDEP recorded, "as the [camera] crew rested after the tiring journey, several campesinos showed up suddenly at the different homes where crew members were resting, asking them to leave immediately because

[59] *Cajatambo*, 41-42.
[60] *Cajatambo*, 43-44.

they had just been informed that the Senderistas were about to arrive in the community." The crew hastily left and hiked back to the town of Cajatambo in the dark.[61]

Despite the danger, CEDEP persisted. In 1986 it expanded its work to nine communities (711 families) in the province with the goal of "technological change." For crops, this change took the form of hybrid seeds, agrochemicals, experimental plots, training, and irrigation. For livestock, it meant Brown Swiss cattle, artisanal cheese, artificial insemination, and nutrient-rich grasses.[62] This same year, CEDEP also began working directly with communities in Ancash.[63] The *esprit de corps* among participants seemed to attenuate concerns about the Shining Path.

Yet the Sendero was expanding—like "a ghost that grows in mountains," the CEDEP technicians recalled. Subversive slogans began to appear on rock formations around Cajatambo, and the Senderistas' demands on the local population increased. As one resident explained, if a community produced one hundred blocks of cheese, the Senderistas would take ten. Shepherds gave sheep, and store owners had to provide goods. As extortion became commonplace, "the psychological distance" from the armed group diminished. It became clear, CEDEP stated, that the Shining Path sought "the steady indoctrination and conquest of the entire area."[64]

As one sign of this indoctrination, CEDEP personnel noticed that some of their community partners began repeating Shining Path mantras. They had never before heard them speak of government workers with phrases such as "they should be the first ones to die," or "since our companions are on the way, [these officials] will get what's coming to them," or they "should die like a dog." Some people, CEDEP added, accepted the swift justice that the Shining Path enacted on people that nobody liked: abusive sheep salesmen, well-known womanizers,

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[61] *Cajatambo*, 43-44.
[62] *Cajatambo*, 47-49.
[63] See Interview, Miguel Orellana Martel, in *Ancash*, 341 (329-341); interview, Jorge Guzmán, in *Ancash*, 307-328.
[64] *Cajatambo*, 52 (29-32, 41-46, 51-58).

abusive police officers, etc. Soon, however, the group's violence became more indiscriminate. In 1987, it killed a twenty-four-year-old government forestry worker, the president of a Mothers Club, and an elderly farmer in the community of Rajanya. It also tried to kill a CEDEP technician, but this individual happened to be traveling. Soon, many more community and municipal authorities died at the hands of Shining Path operatives.[65]

These operatives also began forcing comuneros to join their ranks. On the Day of the Campesino, June 24, 1987, the people of Huayllapa and Uramasa met for a yearly soccer match. Community authorities had just taken their seats on the sidelines when, in the distance, a column of twenty-five Senderistas appeared and quickly reached the soccer field. As CEDEP later recounted, "Without wasting any time," the leader "crossed onto the dusty field, flanked by his armed followers. He told everyone to gather round, said that the game was cancelled, and … that he was there to select people, both players and spectators … [to] immediately join the armed units…. The silence was heavy" as he pointed and called teenagers forward until he had a group of about thirty. As the armed figures began to escort these youth away, one community leader and two elderly members spoke out in protest, but they were silenced with a threat.[66]

Forced recruitment also occurred in the Callejón de Huaylas. In his interview with CEDEP staff in Huaraz, José Sotelo Ibaceta explained that Shining Path cadres would visit communities and, after "threatening to kill any parents or children who said anything, they would take [young people] away for their incursions." However, he continued, they used these forced recruits mainly to bulk up their numbers (*como bulto*). So, when the news spread that "100 terrorists waged an attack, as they did in Aija or La Merced [towns in central Ancash], it is not entirely true. What is true is that there were 10-12 armed terrorists, but there were 20-30

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[65] *Cajatambo*, 57-58, 72-73.
[66] *Cajatambo*, 67-68.

campesinos boosting their numbers who were forced to be there." Of course, Sotelo added, "there were also campesinos who … participated actively." He recalled one local campesino who advanced in the ranks of the Shining Path. In this case, however, this individual "began to take animals from the campesinos, to exploit and abuse his power, and one day when he arrived in a community and began to demand their continued support, they killed him right there."[67]

While this *comunero* became a leader, albeit briefly, the Shining Path often used other individuals to form "support committees" within communities. These committees displaced normal leadership structures, led indoctrination efforts, and transmitted orders. As CEDEP explained, if the community did not follow these orders, the support committee would answer to the Senderistas, who were not inclined to accept apologies. In this relationship of intimidation, Senderistas ravaged community resources. In Uramasa, CEDEP noted, Senderistas carried out training activities on community pastures, and "every time they felt the need," the cadres "would kill a cow for their own consumption. It didn't matter if [the animal] was pure-bred." In this way, the community lost many of its Brown Swiss milkers. In Huayllapa, farmers protected their cattle by taking them up to the highlands under the pretext of rotating the herds to better pastures.[68]

Rural schools were another site of indoctrination. One campesino recounted that in the far north of the province, he observed schoolchildren playacting during recess. One group played the part of the Shining Path and another, of the police. After an imagined encounter, the Senderistas "won" and proceeded to raise a red flag, after which they shouted *"¡Viva el Movimiento Armado!"* (Long live the armed movement!). The individual who observed this unusual behavior concluded that some teachers were embracing the cause of the Shining Path.[69]

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[67] Interview, José Sotelo Ibaceta, in *Ancash*, 140.
[68] *Cajatambo*, 69.
[69] *Cajatambo*, 70-71.

As the Shining Path expanded its influence, the National Police hastily hired new officers and dispatched them to areas in need. These officers received poor training, equipment, and pay. In Cajatambo, they made up for their deficiencies with bravado and abuse. As CEDEP recalled, officers earned a reputation for drinking, mistreating the local people, and stealing livestock. When a young man died from what appeared to be a police beating, a large crowd of residents gathered outside the police headquarters in town and called for punishment of the perpetrators and the dismissal of "bad policemen." Eventually, CEDEP recalled, the manners of the police did improve, but for a time communities truly found themselves caught "between two fires."[70]

In scholarship on armed conflicts in Latin America, historians have refuted many arguments about two fires or "dos diablos" (two devils), which hold state and guerrilla forces equally responsibility for terrorizing local communities.[71] As historians point out, in many cases, state repression of peaceful protest not only initiated the violence, but state forces accounted for nearly all the death and destruction.[72] Peru's history does not fit this pattern. In this case, the Shining Path and MRTA initiated violent subversion in the wake of the military government's significant reform efforts of the 1970s. In 2001, Peru's Truth and Reconciliation Commission found the Shining Path responsible for 54 percent of all 69,000 casualties, the MRTA responsible for 1.5 percent, and the state and civilian counterinsurgency forces for 44.5 percent.[73] Andean communities, in other words, could very well have felt trapped between two fires.

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[70] Franco *Cajatambo*, 65-67.
[71] For one "dos diablos" study, see David Stoll, *Between Two Armies: In the Ixil Towns of Guatemala* (New York: Columbia University, 1993).
[72] See, for example, Greg Grandin, *The Last Colonial Massacre: Latin America in the Cold War* (Chicago: University of Chicago, 2004); *In From the Cold: Latin America's New Encounter with the Cold War*, eds. Gilbert M. Joseph and Daniela Spenser (Durham: Duke University, 2008); Jeffrey L. Gould, "Solidary under Siege: The Latin American Left, 1968," *American Historical Review* 114, no. 2 (Apr. 2009), 348-349; *A Century of Revolution: Insurgent and Counterinsurgent Violence during Latin America's Long Cold War*, eds. Gilbert M. Joseph and Greg Grandin (Durham: Duke University, 2010).
[73] See Miguel La Serna, *With Masses and Arms: Peru's Tupac Amaru Revolutionary Movement* (Chapel Hill: University of North Carolina, 2020), 4.

Huayllapa's experience illustrates this situation. Although Senderistas did have contact with the community, as they did with many others, the police, encouraged by rumors, treated "all Huayllapinos [as] potential terrorists." CEDEP technicians attributed the rumors to "historic rivalries" between communities, especially considering Huayllapa's success with livestock. Yet to the police, rumors were evidence. In one incident, the police detained and tortured an innocent resident of Huayllapa. In response, the community hired an attorney in town who requested that a municipal commission visit Huayllapa to either confirm or dispel the rumors. A few weeks later, a judge, a priest, and a police officer visited the community and declared the fallacious nature of the rumors. The member who had been tortured was released from the Cajatambo jail.[74]

After three years of cautious work, CEDEP reported that improved seeds, fertilizers, and pesticides in Cajatambo had boosted production of potatoes, wheat, and barley. Since improved seeds are expensive, CEDEP established a line of credit so that the farmers could purchase these seeds for themselves. The NGO also noted successful reforestation efforts, as well as "the experience of selling farming products on the coast," the "cultivation and sale of vegetables," and the "training of comuneros in [business] administration and … pesticide use." For sheep herds, seven communities used the new line of credit to purchase seeds for nutrient-rich grasses, and they constructed baths, corrals, and pens for veterinary treatment. Another example of technological change was artificial insemination. Although some comuneros were leery about his new practice, in December of 1988, the first artificially inseminated sheep was born.[75]

Recognizing the integral role of women, CEDEP tried to use existing Mothers Centers in communities such as Cajamarquilla and Utcas to provide classes on weaving and dying blankets, making marmalade from local products, and health care for young mothers. However, it noted,

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[74] *Cajatambo*, 53.
[75] *Cajatambo*, 48, 56-61.

"training efforts ran into multiple obstacles because of the language difficulties [for monolingual Quechua speakers], the level of education, the women's excessive amount of work, lack of understanding, [and] lack of interest." The NGO did not get a second chance. As violence increased, it finally had to withdraw from the region, leaving projects unfinished.[76] As its staff later wrote, the conflict thus "undermined the rural economy of Peru, especially in the high Andean zones where the subversive activity was most intense."[77]

Although it withdrew from Cajatambo, CEDEP persisted in the Callejón de Huaylas where it still had the support of the FADA. This region included nearly one million people in five provinces (Recuay, Huaraz, Carhuaz, Yungay, and Huaylas). Like Cajatambo, it suffered intense poverty. In the early nineties, the Ministry of Agriculture estimated that over 90 percent of the population earned an average of U.S $26.20 per month, a statistic that reflected widespread subsistence agriculture.[78] During the late 1980s, CEDEP worked with several communities in Carhuaz, including Recuayhuanca, Zanja, Shumay, and San Luis de Poyor. The technicians initially considered partnering with the SAIS Luzuriaga in Huaraz, yet they desisted because the supercooperative already had significant resources.[79] Community needs were greater.

With funding from NOVIB, CEDEP provided credit and technological packages (seeds, fertilizers, pesticides, and training) for potato, wheat, barley, corn, and quinoa crops. Thanks to these packages, yields rose significantly. From 1986 to 1987 in San Luis de Poyor, wheat production rose from 694 to 1,780 kilograms per hectare. Potatoes increased the most from 3,708 to 19,200 kilograms per hectare. Increases in Zanja and Shumay were similar. Although the

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[76] *Cajatambo*, 9, 62-63, 73-76.
[77] *Intermediación financiera y desarrollo rural: El CEDEP en el Callejón de Huaylas*, compilado por Edmundo Beteta Obreros (Lima: CEDEP, 1995), 14.
[78] *Intermediación financiera*, 17.
[79] Jorge Silva G., Miguel Orellana M., Javier Castro Z., Arturo Chávez M., "Proyecto de Desarrollo Rural en Comunidades Campesinas del Callejón de Huaylas," Abril 1989, CEDEP Library.

technology packages increased the cost of production, the difference in income outweighed these costs. In Shumay, for example, production costs for potatoes increased from 8,400 to 13,824 dollars, yet income increased from 1,516 to 12,104.[80] In 1988, CEDEP also provided a tractor that served nearly 300 farm plots and added twenty new hectares of cropland.[81] In a way, CEDEP was trying to facilitate a community-level green revolution in this area.

It also assisted the Zanja Workers Agrarian Cooperative, which owned land in the Poyor River Basin. During colonial times, Spanish authorities had placed the Dominican Order in charge of the ayllus of Poyor. After independence, national leaders divided the area between the haciendas of the Mosquera and Morán families. In 1965, after President Belaúnde promulgated the first agrarian reform law, these hacendados preemptively—and violently—expelled the campesino families who lived on the land.[82] In early 1974, however, the table turned. The Velasco government expelled the hacendados and granted the land to the cooperative, which included the ninety-one families who had historically worked it.

As in many cases, the cooperative struggled to be productive. In 1975, the federal government provided it with twenty-five Brown Swiss dairy cows from the state of Puno, yet these cows ended up breeding with local, mixed-race bulls. The cooperative also built a milking parlor, but in CEDEP's words, "it was not used because of its poor design, and the corrals that remain are falling apart." In 1982, the cooperative requested technical aid from the FADA which, in turn, looked to CEDEP to offer training and to plant and irrigate alfalfa.[83]

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[80] "Memoria: Asistencia Técnica y Fondo Rotatorio para Comunidades Campesinas, Zanja, Shumay y San Luis de Poyor, Campaña 1986-1987." CEDEP Library, Lima.
[81] Silva, et. al., "Proyecto de Dasarrollo Rural."
[82] "Proyecto Ganadero de la Cooperativa Zana: Proyecto Plo," July 1987, CEDEP Library.
[83] "Proyecto Ganadero de la Cooperative Zanja: Poyecto Plo," July 1987, CEDEP Library.

During this time, the internal armed conflict reached its peak. Notably, however, CEDEP remembered the conflict as just one part of a "suffocating economic, social-political (terrorism), and ecological (drought) crisis." Because of this compound crisis, it explained, "the migration of young people to urban zones increased, as did levels of malnutrition" in a downward "spiral of poverty." To mitigate this situation, CEDEP and its community partners in Ancash began considering "strategies of survival" beyond the usual technology packages.[84] The answer they settled on was "alternative technology." In the late 1980s, many Peruvian agronomists and policy makers kindled a new interest in native and hitherto neglected crops, practices, and livestock. For communities in the Callejón de Huaylas, alpaca farming seemed to hold the most promise.

In a region that had soil erosion rates of around 45 tons per hectare per year, native alpacas with their soft hooves seemed ideal.[85] Moreover, as a solution to malnutrition, alpaca and llama meat had more protein than chicken, mutton, pork, or beef, and it had less fat than all these meats except chicken. Additionally, alpaca wool was comparable to other fine fabrics, such as yak wool and cashmere. In many ways, they were an ideal grazing animal—and Peru had a near monopoly with nearly 88 percent (as of 1992) of all alpacas in the world.[86]

Within Peru, however, Ancash was hardly a leader. In fact, Ancash had fewer alpacas than any other state outside the Amazon. Puno, not surprisingly, had over sixty percent of the total 2.7 million alpacas. Cusco had around ten percent, and Arequipa, around seven. Ancash had just 4000 animals, or 0.0015 percent. Notably, too, eighty-one percent of all alpacas in Peru were

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[84] See Luis Oscanoa, Victor Vega, and Miguel Orellana, "Repoblamiento de Alpacas en el Ecosistema Pastizal de la Región Cha[v]ín," Conferencia Electrónica "Estrategias para la Conservación y Desarrollo Sostenible de Páramos y Punas en la Ecorregión Andina: Experiencias y Perspectivas" (1997), https://core.ac.uk/reader/48035485 (accessed February 5, 2025).

[85] See L. Oscanoa and J. Recharte, "Policy and Livestock in the Andes: Recent History in Ancash, Peru," in Tourrand et. al., *Livestock Policy* (Montpellier, France: CIRAD, 2020), 80-81.

[86] César Miguel Orellana Martel, "Repoblamiento de Alpacas en Praderas Alto Andinas de la Cordillera Negra del Callejón de Huaylas, Región Chavín," pp. 2-11, Lima, October 1994, CEDEP Library.

managed by campesino communities. Some 10.8 percent were in the hands of cooperatives, and just 8.2 percent were owned by medium and small landholders.[87] As these numbers indicate, in southern Peru, many communities had maintained a tradition of alpaca farming, despite centuries of disinterest, even distain, from hacienda owners and agronomists who saw alpacas as animals of the Indians. In states such as Ancash, however, communities had moved away from camelid farming. CEDEP's initial focus on Brown Swiss dairy cows reflected community interests.

Yet amid the crises of the late 1980s, the idea of alpaca farming caught on. Resilience manifested itself in the collective desire for innovation. CEDEP's surveys later revealed that 62 percent of its community partners believed this project would boost income.[88] CEDEP would purchase and transport alpacas from Puno; communities would learn herding, husbandry, and weaving techniques. In 1990, after preliminary studies and with funding from NOVIB and the National Center for Development Cooperation (CNCD) in Belgium, the project began.

Immediately, the armed conflict threatened to nip the project in the bud. In June of 1990, the Shining Path in Puno killed the three CEDEP technicians who had come to select and ship alpacas to Ancash—Oscar Torres Zubiaur (who had previously worked in Cajatambo), Glicerio Gonzales Castellares, and Alberto Pumayala Díaz.[89] Yet again the Senderistas demonstrated their animus toward agricultural professionals and their work. Despite this blow, communities, sponsors, and CEDEP remained committed to the project. The hope of agricultural innovation continued to offset fear of destruction. By October of 1991, four communities had received alpaca herds of one hundred females and ten males each (before mortality rates took effect).[90]

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[87] Orellana Martel, "Repoblamiento de Alpacas en Praderas Alto Andinas de la Cordillera Negra," 12-13.
[88] Armando Tealdo A., George Sánchez Q., Jesús Ruitón C., "El Repoblamiento de Alpacas en las Praderas Alto Andinas del Callejón de Huaylas (Ancash, Perú): Evaluación de Impactos," Junio de 1998, 8-9. CEDEP Library.
[89] Jorge Silva Guzmán, in *Ancash*, 13.
[90] CEDEP, "Proyecto Alpacas II, Resumen," Octubre 1991; see also CEDEP "Informe de Cierre, Proyecto: Programa Sierra, Octubre 1993-Diciembre 1996."

As it selected alpacas, the NGO tried to match ecological conditions in Puno with those of Ancash. For the mountain range known as the Cordillera Negra, which has a dry climate, CEDEP purchased alpacas from communities in southern Puno, which is also dry. For the more humid range known as the Cordillera Blanca, CEDEP bought alpacas from entities in the wetter region of northern Puno, including the SAIS Maranganí. "The selection was rigorous," the NGO reported, and focused on alpacas of the Huacaya and Suri breeds that were two years old and had had dense and uniform wool. By the mid-1990s, CEDEP had overseen the shipment of 1,253 alpacas from Puno to the city of Huaraz, followed by the installation of these herds in eleven communities.[91] Three communities already had experience with alpacas; the rest were novices.[92]

During this time, CEDEP's staff included three research teams: one for Ica on the coast, one for urban Lima, and one for the Andes, mainly Ancash. The Andean team had nine livestock technicians, four zootechnicians, three agronomists, one business administrator, one biologist, and one anthropologist.[93] These nineteen individuals maintained the priority of participation. As one outside report put it, CEDEP "mainly acted as a facilitator of interactive learning."[94] CEDEP relied on communities to feed and herd the animals and to conduct the periodic tasks of sheering, bathing, vaccinating, and building fences. While the NGO technicians provided some training to communities individually, they also built Andean Technology Diffusion Centers (CEDTAs) to make the best use of its limited personnel.[95] The Shining Path destroyed one of these centers, but again, the NGO and its partners countered discouragement by working toward innovation.[96]

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[91] Communities included: Chacchán, Ecash, Shinan, Huambo, Cátac, Capillapampa, Carhuamarca, Macate, Sharco, Cajabamba Alta, and Huacos. See Oscanoa, et. al. "Repoblamiento de Alpacas," 1; also Brochure, "Repoblamiento de Alpacas en la Región Chavín: Promoviendo el Desarrollo en las Praderas Altoandinas." CEDEP Library.
[92] Cátac, Ecash and Chacchán had experience. See Tealdo A. et. al., "Repoblamiento de Alpacas," 1998, 6.
[93] See Brochure, "Repoblamiento de Alpacas en la Región Chavín."
[94] L. Oscanoa and J. Recharte, "Policy and Livestock in the Andes," 85.
[95] Oscanoa, et. al. "Repoblamiento de Alpacas," 2.
[96] L. Oscanoa and J. Recharte, "Policy and Livestock," 87.

In Cajatambo, CEDEP had tried to include women in its projects, yet it faced challenges such as language barriers and mothers' lack of time. In the Callejón de Huaylas, it worked with seventeen "female organizations," mostly Mothers Clubs to make alpaca sweaters for sale.[97] Learning from Cajatambo, NGO staff selected campesina project leaders, which they called *promotoras,* based on the quality of their weavings, their efficiency and willingness to learn, and their natural pedagogical skills. They then incorporated these women, usually four from each club, into their training teams that visited other communities and centers. The participation of these women was crucial not only because of their skills and enthusiasm but also because they spoke Quechua and could assist monolingual Quechua-speaking mothers far better than the CEDEP technicians. By 1994, CEDEP had forty-six project leaders, thirteen ongoing training programs, and 240 active participants in the work of spinning and weaving alpaca wool.[98]

Women came to manage almost entirely the transformation of alpaca wool into products for sale. In some cases, their work strained family life. CEDEP reported that, "as [project leaders] gradually assumed responsibility for the expanding training activities, even in the times of greatest violence … some indicators [suggested] a possible deterioration in family relations." Project leaders, in other words, were spending significant time outside the home, which not only pulled them away from their regular work but also marked them as targets for Senderistas. Fortunately, with the capture of Shining Path leader Abimael Guzmán in September of 1992, the armed conflict came to an end. In 1994, however, CEDEP still emphasized the need "to inform family members … about the activities that project leaders are involved in and their importance and role within the project, so that [families] understand … and support them."[99]

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[97] See Brochure, "Repoblamiento de Alpacas en la Región Chavín."
[98] Orellana Martel, "Repoblamiento de Alpacas en Praderas Alto Andinas de la Cordillera Negra," 106-112.
[99] Orellana Martel, "Repoblamiento de Alpacas en Praderas Alto Andinas de la Cordillera Negra," 107.

By shifting the management of the project to community leaders, CEDEP achieved its goal of participation and helped ensure that the project could sustain itself. From the sale of alpaca sweaters, communities kept a portion of the money but also used a portion to repay the NGO's initial investment. After three years, CEDEP tried to require each community to give back one baby alpaca for every breeder it had received, which it would use to form new alpaca herds; however, many communities were reluctant to do so.[100]

Given the magnitude of this project, CEDEP worked with offices within regional and national governments. In 1992, the Ministry of Agriculture created the National Council of South American Camelids (CONACS) to oversee alpaca reintroduction programs. CONACS, in turn, relied on studies from the Program of Sheep and South American Camelids of the National Agrarian University La Molina (UNALM). While this program had existed since the 1960s, in many cases, it had prioritized sheep over camelids. CEDEP's work in Ancash contributed to a change in research priorities. Among other roles, CONACS helped create a breeding bank of 125 alpacas of high genetic quality, and it kept the corresponding genealogical records.[101]

Besides the production of meat and wool, camelids, particularly llamas, had potential for Peru's growing tourist industry. Unlike alpacas, llama meat and wool had little market demand. Historically, Peruvians used them mainly as pack animals. However, travelers who expect to see authentic Andean landscapes are perfectly content with llamas. Thus, in one of its Technology Diffusion Centers, CEDEP acquired and trained ten llamas for "tourist services," which involved carrying packs along the hiking trail of the Huascarán National Park, located in the heart of the Callejón de Huaylas.[102] In one of his last supreme resolutions, General Velasco, in coordination

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[100] See Brochure, "¿Qué es el Proyecto Alpaca," CEDEP Library; Oscanoa and Recharte, "Policy and Livestock," 82.
[101] L. Oscanoa and J. Recharte, "Policy and Livestock in the Andes," 86.
[102] Oscanoa, et. al. "Repoblamiento de Alpacas," 3.

with the Ministry of Agriculture, had created this park in July of 1975.[103] Like other seriously reformist governments in the Americas, the Velasco administration's interests in social justice and rational science included some notable conservation efforts.[104]

In 1998, at the conclusion of the project, CEDEP collected 1539 surveys from eight participating communities. Given the differences among communities, final perceptions varied greatly. In Cajabamba Alta, Shinán, and Huambo, 95, 90, and 53 percent of respondents respectively said they approved of the project. By contrast, in the communities of Chacchán, Carhuamarca, and Capillapampa, less than fifteen percent of all respondents approved, mainly because of the lack of income generated and the mortality rates among alpaca herds.[105]

Regarding income, CEDEP calculated average earnings per family, which included hard cash as well as the value of new alpaca products that families consumed, at U.S. $854.2 from 1996 to 1997. Again, these numbers varied among communities, which helps explain the discrepancies in approval ratings. In the community of Cátac, families boosted their income by $1572, while Capillapampa saw only an increase of $278. Overall, 47 percent of the eight communities said they believed their income had increased. Others appreciated the training. Only 9 percent said they saw no benefit at all. Regarding participation, the surveys indicated that around 74 percent of all community members had participated in the herding, tending, sheering, and other care of the animals, to say nothing of the work that went on in the Mothers Centers.[106]

In their critical look at the project, scholars Luis Oscanoa and J. Recharte emphasize barriers to success, especially "national policies that underestimated rangelands in highland areas

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[103] "Decreto Supremo 0622-75-AG," https://legislacionanp.org.pe/parque-nacional-huascaran/ (acc. Feb. 6, 2025).
[104] See Emily Wakild, *Revolutionary Parks: Conservation, Social Justice, and Mexico's National Parks, 1910-1940* (Tucson: University of Arizona, 2011).
[105] Tealdo A. et. al., "Repoblamiento de Alpacas en las Praderas Alto Andinas," 1998, 14.
[106] Tealdo A. et. al., "Repoblamiento de Alpacas en las Praderas Alto Andinas," 1998, 10-15.

and the potential to develop South American camelids as a source of high-quality meat [and wool].” For example, they note the dissolution of CONACS in 2007. While the Ministry of Agriculture ostensibly transferred the functions of this office to regional governments, it clearly retreated from camelid farming. Other limiting factors, they add, were “the very limited access to markets,” lack of economic understanding, “inadequate management” which increased alpaca mortality, “the climate of violence generated by terrorism,” and “insufficient participatory approaches.[107] This latter critique feels harsh, given CEDEP’s enormous focus on participation. Other challenges, of course, were beyond its control. Overall, the project did not revolutionize farming in Ancash, but it made a difference to many families, and it demonstrated the potential of participatory innovation through the revitalization of traditional Andean practices.

While CEDEP’s alpaca project was arguably its most ambitious, especially since it began at the height of the armed conflict, the NGO launched several others. Given farmers’ perpetual need for credit, one project established seventeen financial cooperatives (*cajas comunales*).[108] Another focused on soil conservation and erosion control. Others provided training to specific groups, including youth and mothers.[109] As soon as the armed conflict abated, however, CEDEP began another significant experiment with alternative technology. This time, the focus was ecological pest control in the Callejón de Huaylas and the Valley of Ica.

For decades, authorities in Peru, as in much of the world, viewed pesticides as modern and necessary. CEDEP included these chemicals in many technology packages. In May of 1988, *Agronoticias*, Peru’s leading agricultural magazine, heralded a new chemical spray plane that the civil aviation sector of the Ministry of Defense had designed “to help agriculture take off.”

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[107] L. Oscanoa and J. Recharte, “Policy and Livestock,” 82, 86-88.
[108] Interview, Miguel Orellana Martel, in *Ancash*, 341.
[109] Rodrigo A. Vergara Ruiz, “Programa: Control de Plagas Claves en Cultivos de Importancia económica en el Callejón de Huaylas y el Valle de Ica, Informe de Asesor Internacional,” enero 1994, 20. CEDEP Library.

Because of the plane's agility, the makers named it the "Chuspi," a term derived from Quechua that means mosquito.[110] *Agronoticias* also reported that in 1986 Peru had imported 17,940,884 units (kilograms or liters) of agrochemicals. In 1987, the amount increased to 25,625,000 units. Without greater increases, the magazine warned, "plagues and diseases [would] come."[111]

While pesticides did indeed kill bugs, many scholars, activists, and farmworkers throughout the hemisphere began pointing out the dangers these poisons posed to workers, consumers, farming communities, and the non-human environment. In the United States, the 1962 publication of environmental activist Rachel Carson's study *Silent Spring* helped kick off the anti-pesticide movement.[112] In time, other activists began pointing out the way bugs evolve and adapt to pesticides, which makes the poisons increasingly less effective.[113]

In the Callejón de Huaylas, campesinos began the trend away from pesticides. Given the small farms and limited income of most residents, the region was not awash in these chemicals, but many farmers still disagreed with authorities' promotion of pesticide use on their lands. As Eleuterio Ramírez recalled, in 1988 and again in 1989 the FADA shut down a highway to protest several policies of the Ministry of Agriculture, including pesticide promotion. Blockades are campesinos' equivalent of strikes. "If we stop working on our little farms, who is going to pay attention?" Ramírez asked. "People may notice when workers or employees strike because [the strike] hurts the business [or] state institutions. But who is going to care if a campesino stops in his field? So," he continued, "for our strategy this time, we used the blockade."[114]

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[110] "¡Alas para el Agro! Los Primero Ejemplares del 'Chuspi'…" *Agronoticias*, mayo de 1988. Biblioteca Nacional.
[111] "¡Se Vienen las Plagas y Enfermedades!" *Agronoticias*, junio de 1988. Biblioteca Nacional.
[112] Rachel Carson, *Silent Spring* (New York: Houghton Mifflin, 1962); see also Angus Wright, *The Death of Ramón González: The Modern Agricultural Dilemma* (Austin: University of Texas, 1990).
[113] See, for example, David Kinkela, *DDT and the American Century: Global Health, Environmental Politics, and the Pesticide that Changed the World* (Chapel Hill: University of North Carolina, 2013).
[114] Interview, Eleuterio Ramírez, in *Ancash*, 185.

Among its grievances in 1988, the FADA highlighted the government's complicity in "the disintegration of the [cooperatives]" and "the shutting down of the process of Agrarian Reform." Another addressed the shaming and punishment in schools of children who only spoke Quechua. Another involved pesticides. Specifically, as Ramírez explained, campesinos noticed that the World Health Organization (WHO) had issued warnings about agrochemicals such as the organochlorine insecticide Aldrin, yet the Peruvian government continued to sell and promote it.[115] Another flagrant example was Parathion, an organophosphate insecticide that, decades earlier, had caused mass poisonings of farmworkers in the United States.[116] As FADA leader Macedonio Lirio León stated, "We have seen that [Parathion] is still used on certain crops, but in its country of origin it is no longer used. The gringos send it to us, and we still use it." Since the "foreign businesses that produce it can't lose their investments," he reasoned, "they say, 'Let's send it to the underdeveloped countries.'"[117]

With this observation, Lirio put his finger on a key problem in the twentieth-century notion of agricultural modernity, namely the disparate impact of pesticide risks. Not only did workers from socially disadvantaged groups within countries usually face greater exposure to toxins in the field, but at the transnational level, U.S. chemical manufacturers often sidestepped regulations by shifting exposure to Latin Americans. For example, in the late 1970s, when the U.S. government banned domestic production of the pesticide 1,2-Dibromo-3-chloropropane (DBCP) to protect U.S. factory workers, U.S. chemical companies began producing it in crude factories just south of the U.S.-Mexico border.[118] In a similar way, when regulation finally put a

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[115] Interview, Eleuterio Ramírez, 184.
[116] See Linda Nash, *Inescapable Ecologies: A History of Environment, Disease, and Knowledge* (Berkeley: University of California, 2006), 128.
[117] Interview, Macedonio Lirio León, 211.
[118] See author, "Workers in the Field and Lawyers in the Court: Environmental Justice, Poverty Law, and the California Rural Legal Assistance," *Pacific Historical Review* 94, no. 1 (2025), 88-90.

check on the domestic sale of cancerous agrochemicals, U.S. companies simply looked abroad for markets, such as Peru's, that had not yet established or enforced pesticide regulations.

Aside from high toxicity and risks of exposure, agrochemicals were not always effective. As Ramírez stated, "when we apply an insecticide and harvest the treated crop, we harvest food with worms, while untreated food is free of worms—a tremendous contradiction." Although he may have oversimplified the results, pesticides do lose their effectiveness over time as insect plagues evolve. As collateral damage increases, economic benefits often decrease. Ramírez even made a parallel observation of hybrid seeds. Hybrid seeds and agrochemicals were the two main pillars of the Green Revolution, yet campesinos in Ancash questioned both. "Our seeds … from time immemorial have never gone bad like the improved seeds [of today]." During the first year, an improved seed yields a good harvest, he granted. "The second year, so-so. By the third year, the improvement disappears; the seed loses quality. But our seeds continue yielding the same."[119] Diminishing returns called into question the logic of investing in new, hybrid seeds.

To campesinos, these contradictions in modern agriculture, especially the damage caused by pesticides, constituted a travesty. As Lirio put it, "the FADA's position is all about defending [our] ecology. That is our standard, our guiding principle, our watchword. That is what we have always defended."[120] Ramírez reiterated this focus. "What distinguishes campesinos is that we are guardians of ecology and ecosystems. Yet modernism [sic], well, it destroys everything." He continued, "we complained to the Ministry of Agriculture and all its technical auxiliary offices, but we were never heard."[121] Thus, the FADA resorted to the highway blockade.

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[119] Interview, Eleuterio Ramírez, in *Ancash*, 181-185, 191-192.
[120] Interview, Macedonio Lirio León, 212.
[121] Interview, Eleuterio Ramírez, 183-184.

Campesino protest helped usher in a new pesticide paradigm in Peru and helped shape a unique, local green revolution in the Callejón de Huaylas. In May of 1998, exactly ten years after celebrating the fumigation planes, *Agronoticias* had changed its tone. "Across the world, twenty-five people die every hour from … pesticide poisoning," read one headline. "If you use pesticides, you are in grave danger."[122] Soon, the giant German chemical company Bayer began working to preserve its Peruvian clientele by giving mass trainings on safe handling of pesticides and treatment in the event of poisoning.[123]

For its part, CEDEP contributed to a new pesticide paradigm by experimenting with ethological and biological pest control. The NGO was aware of campesinos' general feelings about pesticides, and the search for alternatives represented a truly joint effort between the farmers and the technicians. Ethological control used animal behavior, ethology, in farmers' favor. In 1993, CEDEP technicians helped farmers in Ica prepare homemade traps made from used plastic bottles mounted on stakes in cotton fields. Each bottle had a small opening and a sex pheromone inside to attract male pink bollworm moths. Beneath the opening, a mixture of water and detergent immobilized the worm as it entered. As one source explains, these traps "compete with female moths for the males' attention, disrupting mating and reducing the population of this crop-damaging species."[124] In five sectors of the Ica Valley, CEDEP and its partners placed one to three traps per hectare. In the first year of the project, they installed a total of 367 traps. In 1994, they installed 740 more. Although the total crop damage that they preempted was hard to estimate, these traps clearly reduced propagation.[125]

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[122] "Pesticidas Prohibidos: Campaña de Erradicación," *Agronoticias*, mayo de 1998. Biblioteca Nacional.
[123] "Programa de Bayer Cropscience … esta vez en Huancayo," *Agronoticias*, octubre de 2003. Biblioteca Nacional.
[124] "Molecule of the Week Archive: Gossyplure," November 6, 2006, American Chemical Society, https://www.acs.org/molecule-of-the-week/archive/g/gossyplure.html (accessed February 7, 2025).
[125] Brochure, "CEDEP, Junio-1995: Proyecto … Trampa Casera con Feromona (Gossyplure)." CEDEP Library.

In the Callejón de Huaylas, CEDEP and its partners hung hundreds of bottle traps in fruit trees at altitudes of 2,200 to 2,750 meters above sea level. In this case, the main pest was the fruit fly. These traps did not use a pheromone but simply attracted and killed the files with diammonium phosphate (a fertilizer) dissolved in water. Farmers then buried the waste.[126] Ironically, one of General Velasco's supreme decrees had sought, with little success, to control the fruit fly (see Chapter 2). Again, on a small scale, CEDEP helped Velasco's vision materialize.

Aside from these homemade traps, CEDEP installed slightly more sophisticated light traps throughout the region. Connected to a source of electricity, these traps used forty watts of light, the principle of positive phototropism (animals' attraction to light), and a funnel-shaped opening to attract nocturnal insects, such as the corn earworm moth, which local farmers call the *utush* or *mazorquero*, a pest that lays eggs in corn silk.[127] In this case, CEDEP began experimenting with light traps as early as 1990. In February of 1992, the NGO recorded an average capture of 399 adult insects per trap each night, 29 of which were earworm moths and 14 of which were females. Since the females lay around 2000 eggs each, CEDEP estimated that it had eliminated 28,000 future earworm moths per trap per night. Farmers, in turn, were happy because ears of corn without worms in the tips—or pesticide residues—sell better.[128]

CEDEP's most sophisticated chemical alternative was biological pest control in the form of the trichogramma wasp. This species, which measures only half a millimeter in length, parasitizes the eggs of grain moths and other pests. In other words, by laying its eggs in the eggs of the moth, the wasp takes over these eggs and prevents the moth from reproducing. In the

[126] Brochure, "CEDEP, Junio 1996: Proyecto ... Trampa Casera para Capturar Moscas de la Fruta." CEDEP Library.
[127] "Featured Creatures, Entomology and Nematology: Corn Earworm," University of Florida, https://entnemdept.ufl.edu/creatures/veg/corn_earworm.htm (accessed February 10, 2025).
[128] Brochure, "Control Etológico en el Callejón de Huaylas: Trampas de luz para … plagas." CEDEP Library.

1990s, scientific studies on the use of this natural pest control increased significantly.[129] As one recent source notes, "trichogramma wasps … are [now] probably the most widely released insect for pest management. They are raised in very large numbers by institutions and commercial enterprises around the world."[130] CEDEP was at the vanguard of this science in South America.

In January of 1994, Rodrigo Vergara Ruiz, an entomologist from the National University of Colombia in Medellin, examined CEDEP's insectariums in Ica and Marcará (Ancash) and toured its operations in both regions. As an advisor, he suggested some improvements, yet his report was enthusiastic. Citing studies from Peru's Ministry of Agriculture, he pointed out that from 1982 to 1987, pesticide use in the country increased by 166 percent, yet crop yields did not keep up. On the contrary, "new problems arose, such as soil sterilization, the appearance of new insect pests, and an increase in crop production costs." These facts underscored Peru's "irrational use of pesticides" and the need to "reduce pesticide use, improve [food] production, … protect the environment," and "heal … agroecosystems." CEDEP's work was crucial, he added, given "the absence of the state" and "inexistent policies of credit" for small farmers in project areas.[131]

Some of Vergara's recommendations sought to improve the insectariums, such as adding air filters and using containers of kerosene or petroleum around the legs to keep away other arthropods. Most recommendations, however, involved enlarging the project by hiring more technicians, raising more wasps, assisting more farmers, and sharing the results more widely. "CEDEP must present its achievements so far to the public," he wrote. "One cannot be modest," when one's work needs and "deserves to be known." Vergara suggested presenting the work in

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[129] Mike Hoffmann, "Biological Control: Trichogramma ostriniae," Cornell University College of Agricultural and Life Sciences, https://biocontrol.entomology.cornell.edu/parasitoids/trichogramma.php (accessed Feb. 10, 2025).
[130] "Trichogramma Wasp," NC State Extension, https://entomology.ces.ncsu.edu/biological-control-information-center/beneficial-parasitoids/trichogramma-wasp/ (accessed February 10, 2025).
[131] Vergara, "Control de Plagas," 1-6.

both national and international forums. He further urged the NGO staff to visit and compare methods with those of other countries who were leaders in this branch of entomology.[132]

The project mattered, he continued, because it had not only helped control pink bollworms (*Pectinophora gossypiella*) and corn earworms (*Helicoverpa zea*) but also potato tuber moths (*Phthorimaea operculella* and *Symmetrischema plaesiosema*) and Andean potato weevils (of the genus *Premnotrypes*). Moreover, these alternatives to pesticides had enjoyed "high receptivity among farmers," who have "adopted [the new technology] with impressive motivation."[133] Although trapping and counting bugs or managing insectariums required more time than spraying a pesticide, these options costed less, posed no significant health risk to farmers, and did not contaminate landscapes. Small-scale farmers in Ancash preferred this method. By contrast, industrial farmers on the coast favored pesticides for their efficiency.

In fact, in his tour of Ica, Vergara cited "the interference of pesticide vendors" as one of the project's challenges. Although CEDEP worked with small farmers, the agro-industrial sector of the region opposed the NGO's work. In defense of their own industry, Vergara explained, chemical vendors "are pressuring farmers to keep using insecticides, giving them an erroneous idea about integrated control." To counter this pressure, Vergara argued, CEDEP needed to publicize its work in a way that would refute chemical companies' fallacious information.[134]

While CEDEP's resources did not permit it to expand to the full degree that Vergara recommended, the project continued. By 1997, 360 light traps and 2,198 pheromone traps were operating in the project areas. While CEDEP helped install many of these, in other cases farmers

[132] Vergara, "Control de Plagas," 13-16, 19, 30.
[133] Vergara, "Control de Plagas," 8-10, 30.
[134] Vergara, "Control de Plagas," 9-10.

observed and adopted the technology on their own.[135] Biological control continued as well. By 2000, CEDEP's insectariums had produced some 2,470,840,000 parasitoid wasps.[136] In late 1996, Vergara argued that these methods had proven far superior to "modern" inputs such as agrochemicals or hybrid seeds. "The model of input-dependent production promoted by the so-called 'Green Revolution,'" he wrote, "has demonstrated its own failure. What was presented as a [miraculous] paradigm is today a bundle of errors." Regarding agrochemicals, he continued, "the [persistent] presence of pests and the damage they cause, as well as toxic chemical residues on products for export constitute a barrier to public health." In his view, CEDEP had proven the benefits of "technological alternatives for sustainable agriculture."[137]

By 1998, according to CEDEP's records, alternative pest control had directly benefited 1200 family heads, both men and women, in the provinces of Carhuaz and Yungay in the Callejón de Huaylas. In the Ica Valley, it directly benefited 250 families.[138] In his evaluation in 2000, Vergara estimated a total of 5350 users of the new technology.[139] The project had enabled a ninety percent reduction of pesticide use in 2,312 hectares of corn in Carhauz and Yungay, a seventy percent reduction in 179 hectares of potatoes in these same provinces, and a 60 percent reduction in 1,632 hectares of cotton in Ica. In 1998, CEDEP reported that it had trained 25 campesino leaders (15 in Huaraz and 10 in Ica) to maintain the project once CEDEP technicians withdrew. From 1999 to 2001, the NGO prioritized "consolidation and transfer" of the project so that its partner communities could assume full responsibility of the project. [140]

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[135] CEDEP, "Proyecto: Consolidación y Transferencia de Metodologías de Control de Plagas en los Cultivos de Importancia Económica en el Callejón de Huaylas y el Valle de Ica (1999-2001), 7, mayo de 1998. CEDEP Library.
[136] CEDEP, "Programa: Control de Plagas Claves en Cultivos de Importancia Económica en el Callejón de Huaylas y el Valle de Ica, Evaluación Externa por Rodrigo A. Vergara Ruiz," 5, Diciembre de 2000. CEDEP Library.
[137] Rodrigo A. Vergara Ruiz, "Control de Plagas Claves en Cultivos de Importancia Económica en el Callejón de Huaylas y el Valle de Ica," 1-2, Lima, 30 de noviembre, 1996. CEDEP Library.
[138] CEDEP, "Proyecto: Consolidación y Transferencia de Metodologías" (1998), 5.
[139] CEDEP, "Programa: Control de Plagas Claves," (2000), 5.
[140] CEDEP, "Proyecto: Consolidación y Transferencia de Metodologías" (1998), 5-6.

In pursuit of this final goal, CEDEP carried out a total of 360 training events and published 45 documents about alternative pest control. In late 2000, the NGO reported that by learning how to use ethological and biological pest control, the small farmers in the project areas had overcome their aversion to risks and their dependence on insecticides. They had also, to a degree, increased their income because the crops they produced were of higher quality and were free of contaminants. As with other projects, the number of beneficiaries accounted for only a fraction of all people in Ica or Ancash, but the project pioneered the work of participatory innovation in the Andes. Rodrigo Vergara remained optimistic. "In the future," he said, "it would be interesting if the NGO published a book that compiled all the experiences of the project."[141]

Although CEDEP did not publish a book about this specific project, its book of oral history interviews from the early 1990s helps place the NGO in Peruvian history. As the editors note, the interviews capture the "feelings and reflections" of individuals, "who, from time immemorial, have struggled against the adversity of nature and of men in pursuit of a generous and productive cropland."[142] One common theme in these interviews is a complicated yet largely positive perspective of General Velasco. FADA leader Hilario Chávez, who spent his life fighting for workers' rights, recalled that in the early 1970s, "SINAMOS backed us…. Never up until then had campesinos had someone who supported, advised, and guided us in the process of organizing…. We campesinos prior to General Velasco's coup had lived in abandonment and confusion. We were all on our own, and that allowed people to exploit us." He continued, "most of us were mistreated and looked down on. [But] now one is hard pressed to find campesinos who let themselves be deceived."[143] For him, Velasco changed the course of history.

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[141] CEDEP, "Programa: Control de Plagas Claves," (2000), 6.
[142] Jorge Silva Guzmán, in *Ancash*, 9-11.
[143] Interview, Hilario Chávez, in *Ancash*, 160-161.

At the same time, Velasco's relationship with campesinos was sometimes contentious. Chávez recalled a meeting in which the general told campesino leaders to work with local and regional authorities. Chávez spoke up. "General," he said, "but you also need to pass down instructions to the police because they … don't understand us at all and treat us like nothing. For us, our first problem is with the police." Velasco, according to Chávez, became upset. "Why do you accuse the police?" he asked. "If you do not want to coordinate with the police, with whom do you want to coordinate?" But then, a member of Velasco's staff chimed in, saying that campesino groups in Ayacucho had also faced opposition from local police. Velasco calmed down, Chávez recounted, and said he would address the problem. Despite these differences, Chávez remembered Velasco as a bold and intelligent man, sincerely committed to helping the campesinos of Peru. When he heard the news of Velasco's death, he recalled, "I cried."[144]

Another theme in CEDEP's interviews was the self-determination of campesino communities. Santos Vicente Baylón Quiñones, a community leader from Aija, argued that if "the philanthropic countries of the world … want to help … my community, they should do so … as a response to its needs and lived experience, but not by imposing." He then shared an example of outsiders who tried to help by building a road, yet the road mainly served the few families who had cars. What would have helped more people, he said, would have been dams for nearby lagoons to help us "reasonably use the water that is lost during wintertime, to store it and thus make use of the most fertile areas of the community."[145]

Eleuterio Ramírez expressed similar sentiments regarding ideologies. "Socialism-communism, through the theories of Marx, Mao Tse Tung, and others come from other continents," he stated, "from other patterns of development. We are not against the system of

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[144] Interview, Hilario Chávez, in *Ancash*, 164-167.
[145] Interview, Santos Vicente Baylón Quiñones, in *Ancash*, 196-197.

socialization, but we are against all ideological, philosophical, and political conceptions that others want to impose on us." After all, he pointed out, "we have ancestral organizations in our communities" and do not need "[foreign] methodologies and conceptions." Speaking of the Shining Path and MRTA, Ramírez added, "they too show up in communities and destabilize the entire system of … organization, and they impose another system on us." In moments of crisis, he concluded, the Left has not helped us, for it has yet to understand "deep Peru."[146]

Regarding NGOs specifically, Ramírez did not reject them, but he lamented that their expanding role in rural Peru signified the weakness of the Ministry of Agriculture. The ministry, he charged, is full of bureaucrats and politicians but only a small fraction of the personnel are true agronomists.[147] NGOs can help, he suggested, but Peruvians must lead the way. Hilario Chávez echoed this idea. "Nobody is going to save [Peru] until we as a people get organized and work for Peru in a coordinated way—until campesinos, workers, students, and professionals conscientiously close ranks. Only then will we have a chance of saving Peru."[148] His use of the verb *save* may sound dramatic now, but it sounded normal at the height of the armed conflict.

Through its twenty years of work in Cajatambo and the Callejón de Huaylas, CEDEP, more than most institutions, learned many campesinos' interests and aspirations. From dairy farming to alpaca repopulation to alternative pest control, CEDEP helped thousands of families increase agricultural production and mitigate conditions of poverty. Its projects all had limitations. Nevertheless, its vision of participatory innovation expanded upon the work of the Velasco administration in rural Peru, and its Andean laboratories, Cajatambo and the Callejón de Huaylas, remain important case studies that can inform ongoing rural development initiatives.

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[146] Interview, Eleuterio Ramírez, in *Ancash*, 186-187.
[147] Interview, Eleuterio Ramírez, in *Ancash*, 185.
[148] Interview, Hilario Chávez, in *Ancash*, 169; see also Monseñor José Ramón Gurruchaga Ezama, in *Ancash*, 152.

Chapter 5

La Pampa de Majes:

Irrigation, Inclusion, and "Integral Development" in Arequipa

Given Peru's shortage of cropland, which became increasingly acute as the population grew, Peruvian officials from the mid-twentieth century onward discussed the idea of "expanding the agricultural frontier" through the "colonization" of new lands.[1] A second solution, of course, was to increase yields on existing land with certified seeds and agrochemicals.[2] A third involved restoring abandoned cropland, such as Andean terraces.[3] Yet the first option remained ever popular, and the Velasco administration pursued it actively. One method was to open lands in the Amazon for farming.[4] The largest investment, however, was the Majes-Siguas irrigation works in southern Peru. A bold endeavor, the project sought to dam two highland rivers and channel water to the desert plains of Arequipa known as the *Pampas de Majes y Siguas*. In the original plan, the project would open tens of thousands of hectares of previously uninhabited land to some 13,000 families. As justification for the large investment, the administration cited the "social pressure … on farmland" which had led to the "serious problem" of farming families around the city of

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[1] See for example, "Agricultura Debe Estructurar Plan Nacional de Irrigaciones," *La Prensa*, 18 de abril de 1959; "Plantean se Cree un Instituto Para Colonización de la Selva," *La Prensa*, 4 de julio de 1959.
[2] See "Propuesto de Base Productiva Agropecuaria del Proyecto Majes, Año 2000," *El Pueblo*, 11 de setiempre de 1980, Archivo Técnico de Autodema, Arequipa.
[3] See "Curso: Recuperemos Nuestros Andenes, Guía del Participante," c. 1985, INIA Library, Illpa, Puno; see also "Informe del Segundo Seminario-Taller 'Recuperación de Andenes y Otras Tecnologías Tradicionales: Problemas y Soluciones,' Lima, Perú 18 al 20 de abril de 1989," CIMMYT Library, Texcoco.
[4] See, for example, "Colonización Ganadera 'Marichin-Río Yavarí' CABALLO COCHA," Ministerio de Agricultura, Inspectoría General, report prepared by Hector Martinez, Cesar Ramón, and Mario García, Lima, 1974, CEDEP Library, Lima.

Arequipa having just one hectare each.[5] A few years later, officials also emphasized the "rising energy demands in the region" and the need for hydroelectric plants.[6]

Preliminary studies for this project began long before the coup of 1968, yet Velasco and his ministers seized the project and made it their own. At the same time, they deserve credit for moving it out of the planning stage where it had lingered for decades. For Velasco and his ministers, the Majes-Siguas irrigation project provided an opportunity to demonstrate their commitment to small farmers, as well as their capacity to reshape Peruvian environments that were not naturally conducive to agriculture for the benefit of the nation. Moreover, they believed that through this project, they could modernize agriculture and increase campesino prosperity.

The project calls to mind Donald Worster's cautionary arguments about state power in a "hydraulic society." In his study of California, Worster argues that by forming "a social order founded on the intensive management of water," a government can expand its control, stunt democracy, and create "Leviathan in the desert."[7] In Latin America during the late twentieth century, neoliberal, export-oriented policies had the potential to create an even more sinister Leviathan. Not only would intensive water management expand the government's power, but, as scholar Astrid B. Strensrud points out, it could also open the door for agribusiness behemoths and international investors to swoop in, monopolize water, and capture the government's support. Such a scenario would create, in essence, a new extractive economy that minimized local interests as well as its own cultural and environmental impact.[8]

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[5] Angel Paredes Tejada, "Antecedentes," in Dirección Ejecutiva Proyecto Especial Majes-Siguas: Justificación de Asentamientos Escuela y su Evolución Agroeconómica, Mayo" 1973, Technical Archive of Autodema, Arequipa, 1.
[6] Instituto Nacional de Planificación, Oficina Regional III, Grupo de Trabajo del Proyecto Majes: Plan General de Desarrollo del Proyecto Majes," Arequipa, Perú, 1979, Presentación.
[7] See Donald Worster, "Hydraulic Society in California: An Ecological Interpretation," *Agricultural History* 56, no. 3 (July 1982), 504, 507; see also Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Pantheon Books, 1985).
[8] See Astrid B. Strensrud, "Dreams of Growth and Fear of Water Crisis: The Ambivalence of 'Progress' in the Majes-Siguas Irrigation Project, Peru," *History and Anthropology* 27, no. 5 (2016), 570.

As relevant as these arguments are, they do not fully address the situation in southern Peru in the early 1970s. Strensrud's work mainly examines contemporary debates over irrigation in Arequipa, specifically the construction of the Angostura dam. This dam was the main step in the second phase of the Majes-Siguas project, following the construction of the Condoroma dam; yet the plan stalled in the late 1980s and 1990s. During these decades and beyond, neoliberal policies changed the government's objective from the five-hectare family farms of the Velasco era to industrial farms of 200, 500, and even 1000 hectares. Understandably, Stensrud writes, today "the [small] farmers in Majes fear the dominance of foreign agro-corporations."[9] In the 1970s and early 1980s, however, during planning and construction of the Condoroma dam, this fear was minimal. In southern Peru, Velasco wanted to boost agricultural production, reduce food imports, and provide land for a fast-growing population (hence the small farming plots).

Moreover, the control that the government gained by undertaking the large irrigation project overlapped, to an extent, with the interests of many people. In the Andes, chronic neglect from Limeño authorities was a greater problem than excessive control. The idea of *gamonalismo*, which applied to rural Peru throughout much of its national history, referred, in part, to a weak state that gave hacienda owners, *gamonales*, a free hand.[10] Of course, neglect is not synonymous with abandonment. Throughout the twentieth century, state authorities and foreign partners led countless rural development projects in Peru. Given their limitations in scope and impact, however, these projects usually left rural residents wanting more state involvement, not less.

Indeed, communities constantly called on the government to do more in their behalf. Velasco and his administration tried to answer these calls. In so doing, they certainly increased

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[9] Strensrud, "Dreams of Growth," 579.
[10] See Orlando Plaza, "La Problemática de la Comunidad Campesina," en *Realidad del campo peruano después de la Reforma Agraria: 10 Ensayos Críticos*, editado por Francisco Moncloa (Lima: Centro de Investigación y Capacitación, 1980), 166.

the power of the government, filled part of the void left by the hacendados, and imposed their version of modernity on small farmers. The Majes project, like many of Velasco's reforms, was a top-down endeavor. Yet it also sought to address real needs, and the government's vision of modernity overlapped, to a degree, with that of local farmers. In their studies of revolution and water access in Mexico and Bolivia, historians Mikael Wolfe and Sarah Hines (respectively) examine cases in which small farmers and other community members called on the state to live up to revolutionary promises by providing water through large dam projects.[11] Similarly, in the 1970s, communities in Peru looked to the revolutionary government to help provide land, water, and technical support. Although the state provided little space for farmers to weigh in on the Majes-Siguas project, the many calls for inclusion in the irrigation plans illustrate how socially disadvantaged communities embraced the state's vision of agricultural modernity insofar as it would help them produce more food and achieve greater prosperity.

In the common narrative, the story of irrigation in the pampas of Arequipa begins with Charles Sutton, an engineer from the United States whom Peruvian presidents Augusto Leguía (1908–1912; 1919–1930) and later Manuel Prado (1939–1945; 1956–1962) commissioned to investigate irrigation schemes and conduct soil samples.[12] Sutton has become the undisputed "father" of the project. His name is found on streets in Arequipa and in academic departments in Lima, such as the Charles Sutton School of Water Management.[13] In reality, however, Sutton's

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[11] Mikael Wolfe, *Watering the Revolution: An Environmental and Technical History of Agrarian Reform in Mexico* (Durham: Duke University, 2017), 60; Sarah T. Hines, "The Power and Ethics of Vernacular Modernism: The Misicuni Dam Project in Cochabamba, 1944-2017," *Hispanic American Historical Review* 98, no. 2 (May 2018).
[12] *Esto es Majes: Un Sueño Hecho Realidad* (Arequipa: Autodema, 1985); Marcos Obando Aguirre, *El Proyecto Majes* (Arequipa: UNSA, 1992); Lorenzo W. Tacca Quispe, *Majes: Historia de la Irrigación y del Distrito* (Arequipa, Municipalidad de Majes, 2010); *Proyecto especial Majes Siguas: La colosal obra que venció al desierto* (Arequipa: Autodema, 2021).
[13] See, for example, the editorial information in Absalón Vásquez Villanueva*, Manejo de Cuencas Altoandinas* (Lima: Escuela Superior de Administración de Aguas Charles Sutton, 1997).

work was just one of several preliminary studies. In the 1950s, Peruvian engineers carried out at least three additional studies that have been all but forgotten.[14] Moreover, it was not until the 1960s, over a decade after Sutton's death, that the Peruvian government commissioned the comprehensive research needed to finally get the project underway. For this job, it hired Electroconsult, an Italian research firm, which dispatched a team to Arequipa where it worked for several years. Sutton and Electroconsult exemplify the role of foreign collaborators in the project. For decades, the perspectives of international advisors influenced the Peruvian government's notion of agricultural modernization.[15]

Electroconsult's 1966 study of nearly 500 pages was the most influential. In addition to soil samples—one profile per square kilometer in the pampas—the researchers looked in detail at many aspects of the "local environment," which they defined as "the group of areas showing general environmental conditions more similar to those of the pampas." They examined the cramped, one-hectare farms in the rural and semi-rural area surrounding the city of Arequipa, an area which the local population referred to as the *campiña*. They also visited the larger farms in the fertile Valleys of Majes and Siguas located to the west of Arequipa on the way to the pampas. Finally, the researchers studied extensively the conditions in two "inhabited patches" of the desert pampas: Santa Rita de Siguas and La Joya de Vítor. In the late 1930s, the Peruvian government had begun installing canals in the pampas, which gave birth to these settlements. By the 1960s, the consultants noted, Santa Rita and La Joya had "a population of about 4000 [to 5500] and … very rudimentary public services only." Furthermore, during the dry months,

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[14] These studies include those of "Negro Pampa" (1953), Ing. Rosendo Chávez Díaz (1954), and C. Vidalón (1956). See Proyecto Integral de Desarrollo Majes," Exposición del Sr. Ing. José Serra Salazar, Director General Ejecutivo del Proyecto Especial Majes, ante El Centro de Altos Estudios Militares (CAEM), Arequipa, junio 1980, "Antecedentes" Archivo Técnico de Autodema, Arequipa.

[15] See, for example, the following table: "Requerimientos de Personal para el Estudio Completo," in Ministerio de Agricultura, Dirección Ejecutiva del Proyecto Integral de Desarrollo Regional Majes-Siguas: Planificación de la Colonización Majes, Informe No. 9, Arequipa, Setiembre de 1975, Archivo Técnico de Autodema.

irrigation here was inadequate. Using these settlements as a sort of mini model to improve upon, Electroconsult and government authorities sought to turn these isolated patches into some 2500 square kilometers of human settlement. In their words, this land "is destined to become one of the major agricultural zones and demographic expansion areas in South Peru."[16]

In their studies, the researchers examined climate, topography, hydrology, and geology, as well as human geography, economics, agriculture, and animal husbandry. Methods included cartographic studies from a helicopter, drilling, visits to water gauging stations in the mountains (often above 4000 meters above sea level), levelling surveys, inquiries on local farms, and even work on twenty-four experimental plots to investigate "the effects of water on virgin soil, its action on the salt content [of the soil], and … the possibilities of development of those crops which are most commonly grown in the zone." Among these crops were maize, rice, cotton, potatoes, sweet potatoes, barley, fruit trees, and, especially, alfalfa for dairy cows.[17]

Electroconsult's report first highlighted the challenges that the local environment posed for agriculture. The pampas really were a desert. They extended from Arequipa's coastal foothills nearly to the base of the Andes mountains, making up vast stretches of rocky, rugged, unused land at altitudes of 800 to 2500 meters above sea level. The consultants described the area as "extremely rough country, entirely devoid of access facilities" and "a vast wasteland" that had "no economic use whatsoever." They further observed that "the climate in the Pampas ranks among the most arid ones in the world, with no rainfall and very low relative humidity. Winds

[16] Irrigation of the Pampas de Majes, Siguas y La Joya Feasibility Study: Basic Data," ELC Electroconsult, Milano, Italia and Ministerio de Fomento y Obras Públicas, Lima, Perú, May, 1966, Archivo Técnico de Autodema, Arequipa, p. 1-5, 35, 225, 245-246.
[17] "Irrigation of the Pampas de Majes, Siguas y La Joya, 3-5, 35, 249-251.

blow continuously, all year round." In some areas, they added, these winds, created crescent-shaped dunes that moved with the winds at speeds of 1-2 meters a month.[18]

Unlike some deserts, the pampas did have rivers, which flowed down from the mountains and made their way to the ocean, sometimes through canyons. While these rivers provided some hope for irrigated agriculture, they only flowed abundantly from January through April, the rainy season in the highlands. As the consultants explained, "this rain accounts for "75% to 85% of the overall annual volume." Research further revealed "a pronounced irregularity of flow in different years and a clear tendency of hydrologically similar years to be grouped together." Given these challenges, the report concluded that "unless reservoirs are provided to regulate such flows, most of the water could not be used for irrigation."[19]

In the view of the Italian consultants, irrigation mattered not just because it would provide new land for a growing nation but also because it would stimulate modernization in all aspects of the region's agriculture. Their view reflected an international, mid-twentieth century trend that exalted megadams as agents of modernity.[20] While they tried to maintain a professional tone, these advisors did not garnish their opinion that Arequipa's current practices in cultivation, livestock management, and rural living desperately needed to be modernized. First, in the existing canals, which were unlined, they noted that "losses are extremely high, because of the loose nature of the soil … especially in the dry season." Besides lining the canals with concrete, they recommended "the introduction of sprinkler irrigation" to reduce water loss and land erosion, especially in gravelly soils that had a limited holding capacity.[21]

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[18] "Irrigation of the Pampas de Majes, Siguas y La Joya," 5, 9, 20, 24, 32, 263, 439.
[19] "Irrigation of the Pampas de Majes, Siguas, y La Joya" 36.
[20] See Hines, "Power and Ethics," 225.
[21] "Irrigation of the Pampas de Majes, Siguas y La Joya" 248-249, 282, 311, 380-381.

Regarding machinery, the consultants repeatedly expressed dismay. “One notes a practically complete absence of operating machines most frequently used in modern agricultural practice,” they declared. Although some farmers did have tractors, they used them, the consultants complained, only “for ploughing and occasionally for transport purposes, so that their utilization is partial and uneconomic.” By contrast, they reasoned, “sowing, manuring, weeding, cultivating, mowing, reaping, harvesting, and binding machines, etc. are comparatively inexpensive and can also be used without a tractor but simply drawn by animals.” These, they argued, would be “of far greater utility.” For sowing and transplanting, machines would “assure a more regular and appropriate seed distribution and … a uniform and homogenous development of the plants and consequently an increase in yields.” For harvesting, they lamented, it “is done by hand everywhere as the use of … machinery is practically unknown.”[22]

Machinery was not the only “unknown” feature of modern agriculture. When it came to seeds, the consultants noted in similar terms that, “the use of selected or certified seeds [let alone hybrid or genetically modified seeds] is almost entirely unknown.” The one exception, they acknowledged, involved the certified barley seeds that the Peruvian brewing industry had recently started recommending for farmers from whom it purchased beer barley.[23]

Use of fertilizers, overall, received a more positive report. Many farmers used organic guano from the Peruvian coast, which the government administered by means of quotas. After availing themselves of their guano quota, most farmers turned to chemical fertilizers. Electroconsult estimated that in 1963 local farmers purchased 13,000 tons of guano, of which 9,500 tons went to farms that were smaller than 15 hectares. In comparison, they purchased

[22] “Irrigation of the Pampas de Majes, Siguas y La Joya,” 284, 298, 305.
[23] “Irrigation of the Pampas de Majes, Siguas y La Joya,” 285.

10,000 to 12,000 tons of chemical fertilizers. The largest problem, in the consultants' opinion, was the lack of manure pits on cattle farms to provide more organic fertilizer.[24]

Regarding pesticides, Electroconsult noted that "BHC and DDT are among the most commonly used hydrochloric insecticides. Parathion ranks first among phosphoric insecticides, while sulfur and Cupravit are the principal fungicides." Despite the sale of 200 tons of insecticides and 8 tons of fungicides in 1964, the consultant argued that "said quantities are quite modest, and, as a matter of fact, only few farmers engage systematic fights against insects and fungi. Crop yields bear the consequences of this attitude." They added that "progressive farmers try to take appropriate measures, but their technical knowledge is not always sufficient to make their action successful…. There consequently still remains much to be done in the field of pest control.[25] While pesticides fit neatly into Electroconsult's modernization package, scientific study soon linked many of these agrochemicals—DDT, Pariathon, etc.—to cancer clusters, birth defects, farmworker sickness, and myriad forms of environmental destruction. In Ancash in the late 1980s campesinos led protests against current pesticide practices (see Chapter 4). In the 1960s, however, the Italian consultants and their Peruvian clients embraced pesticides as part of the international standard of modern agriculture.

Concerning farming techniques, the consultants also had much to say. Yield "can doubtlessly … be improved," they wrote, "if more modern techniques are adopted and if the necessary public services are provided." As one example, they noted that "tree-growing techniques are largely neglected and inefficient and this explains the low yields and poor crop quality." As another, they found counterproductive the current practice of clearing the stems, roots, and weeds of alfalfa fields in preparation for a new crop. In the region, farmers referred to

[24] "Irrigation of the Pampas de Majes, Siguas y La Joya," 285, 299-300.
[25] "Irrigation of the Pampas de Majes, Siguas y La Joya" 286, 303.

the practice as *rapeo* (barbers use the root of the term, *rapar*, to refer to shaving a person's head). Notably, too, this tedious job usually fell to women. In the opinion of the consultants, "the work performed does not always deserve the name of sound agricultural practice. The elimination alfalfa roots … is not only very burdensome, but it also deprives the soil of a precious mass of organic matter and nitrogen." Instead of the rapeo, they recommended "the use of chemical weed-killers … to achieve much better technical and economic results."[26]

Besides crops, livestock management also left much to be desired. "The breeding of livestock throughout the entire 'local environment' is presently carried out according to traditional methods," the consultants wrote. "These do not always lead to … the best possible results." Specifically, they noted, farmers sometimes imported Holstein cows from Argentina and the United States, yet they often ended up crossbreeding them with smaller, local cows. While such methods could have advantages, the research team observed that "cross breeding has … been carried out indiscriminately, without a well-defined plan and target. This is why the features of the cross-bred animals are sometimes very different from both the morphological and the functional point of view." Furthermore, they observed, farmers often used these cross-bred bulls to serve a second generation of cattle. Since the bulls were no longer "of a certain genealogy," the practice "frustrates the attempts made toward the improvement of cattle." Finally, they added, "artificial fecundation is becoming … more common" in the Arequipa area, thanks to promotion by the condensed milk industry. However, "no methodical recording of the [practice] is available, nor any genealogical files, such as would allow an effective selection in the breeding process."[27]

In addition to the problems related to breeding practices, the consultants also complained about the lack of veterinary interventions. "The present cattle raising method is unsatisfactory

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[26] "Irrigation of the Pampas de Majes, Siguas y La Joya," 290, 296, 302-303, 310.
[27] "Irrigation of the Pampas de Majes, Siguas y La Joya," 313-314.

also from the hygienic and sanitary standpoints," they wrote. "Foot and mouth disease, carbuncle, tuberculosis, and other diseases, including a variety of intestinal parasites, annually cause considerable losses. Remedies are very seldom adopted." So far, they continued, the only mandatory vaccination is one against foot and mouth disease, which a recent law required. "Additional harm," they added, "is caused by bloat (meteorism) due to excessive fresh alfalfa consumption, which can even prove [fatal], especially with calves."[28]

Finally, the consultants found the land and installations of the existing farms inadequate. First, they observed that "the majority of the landowners or farmers [who rented from landowners] do not have sufficient land to absorb their entire activity and assure them a satisfactory standard of living." Over the past twenty years (1940–1960), this shortage of land had affected the entire farming industry. While the number of farmers had remained relatively constant, the population of Arequipa had grown because of higher birth rates and emigration from the neighboring state of Puno. Consequently, the percentage of people engaged in agricultural activities dropped. "Agriculture in the department [of Arequipa] cannot obviously take up more labor, unless … the cultivated area is increased," the consultants reasoned.[29]

Besides land shortages, the existing farms in the pampas often lacked barns and stables. Houses lacked bathrooms and electricity, and "drinking water supply [was] possible only during the turns of irrigation." In short, the consultants wrote, the rural buildings "almost always fall short of satisfactory standards, [and] dwelling-houses are poor, unhealthy, and uncomfortable. The lack of stables or sheds is a limited factor for the productivity of cattle, especially in those zones where severe temperature conditions prevail at night." While the consultants suggested that investment in irrigation infrastructure was paramount, they still argued that "the construction

[28] "Irrigation of the Pampas de Majes, Siguas y La Joya," 315.
[29] "Irrigation of the Pampas de Majes, Siguas y La Joya," 234, 264-265.

of new rural buildings, of an economic and efficient design, will prove a sound investment as it will lead to an increase of the produce in both the agricultural and animal husbandry sectors."[30]

At certain points in their report, the Italian consultants zoomed out and took stock of agriculture in all Peru. In these cases, their perspective hardly changed. "Over the last 20 years," they noted, some sectors of the national economy, such as mining and fishing, "[have] made notable strides to liberate [the nation] from the bonds of a typical undeveloped economy, characterized by heavy dependency from the exterior for industrial and agricultural investments, by low levels of income and consumption, by exportation of raw materials and importation of manufactured goods…. Unfortunately," they stated, "the agricultural field was and remains the poorest."[31] In their view, Arequipa exemplified agricultural problems in much of the nation.

While Electroconsult's idea of modernity led to reiterated and sometimes condescending critiques of agriculture in Arequipa and beyond, many farmers would likely have agreed with the foreign agency's recommendations (though their voice is largely absent from the records of the 1960s and 1970s). After all, they were the ones who had to live in the dark with an unreliable water supply. They were the ones who had to harvest by hand. They—specifically the women—were the ones who meticulously removed the alfalfa roots stems from the fields. To many farmers, electricity, running water, machines, and herbicides probably sounded like a good idea, and they welcomed government involvement in the region that would help provide them.

In Arequipa, government officials and their foreign advisors promised to send such aid on the heels of new irrigation infrastructure. "The scarcity of irrigation water is presently one of the most serious restrictions to the normal development of … agricultural activity," Electroconsult stated. Irrigation, the agency argued, would facilitate modernization on multiple fronts, provided

[30] "Irrigation of the Pampas de Majes, Siguas y La Joya," 264-265, 279-280, 389.
[31] "Irrigation of the Pampas de Majes, Siguas y La Joya," 353.

the government did its part. “To safeguard economical soundness of the agriculture which is intended to be accomplished by irrigation,” the consultants explained, “it will be essential to secure the indispensable public services (experimentation, extension, agricultural credit) and the employment of modern means and techniques (modern and appropriate crop varieties, [certified] seeds, appropriate fertilization, selected animal stock, pedigree, productivity registers, etc.).”[32]

Electroconsult then offered recommendations to help ensure that technification would indeed come with irrigation. For example, the consultants recognized that most small farmers could not afford sowing and harvesting machines, so they recommended the formation of cooperatives that could rent out the machines. They likewise recommended planting fruit trees in ordered rows of cultivars and in “reserved” areas where the gravelly soil was inadequate for plants with shorter roots. For livestock, they insisted that “it will be extremely important to keep genealogical books.” By taking these steps, they concluded, farmers in the region could expect a significant boost in tons per hectare of each crop.[33]

Electroconsult released this report in May of 1966. By this time, the agrarian reform law of President Fernando Belaúnde Terry (1963-1968) had been on the books for two years, yet little action had occurred. The Majes project also seemed to sit on a shelf. Notably, when Electroconsult acknowledged the help of government officials, it hardly mentioned the Belaúnde administration. Instead, it thanked the Peruvian military for providing the helicopter and pilots for the aerial studies. It also thanked the Military Geography Institute for its “invaluable cooperation” in sharing documents related to regional cartography.[34] These comments are telling. While Belaúnde stalled, the military demonstrated that it was one of the most equipped and

[32] “Irrigation of the Pampas de Majes, Siguas y La Joya,” 376, 388.
[33] “Irrigation of the Pampas de Majes, Siguas y La Joya,” 389-391, 393, 403-414.
[34] “Irrigation of the Pampas de Majes, Siguas y La Joya,” 3, 6-7, 10.

willing institutions in the country to participate in technical studies of Peruvian agriculture. When it ousted Belaúnde in 1968, the military took over land reform and rural development.

It is small wonder why the Majes-Siguas project caught the attention of Velasco and his generals. Besides increasing farmland, it promised to provide technology for small farmers. It also required a strong government presence for investment and promotion. All these aspects fit Velasco's vision and his style. In the fall of 1971, before contractors were even ready to break ground, Velasco appeared in the central square of Arequipa to inaugurate the construction of the irrigation infrastructure.[35] While he and his ministers did not publicly credit Electroconsult, they appear to have read its report, for they embraced its vision of modernization. Under the Velasco administration, instead of just an irrigation scheme, Majes-Siguas became a "Comprehensive Regional Development Project," and the pampas became "the [future] development hub of the South."[36] As Minister of Agriculture, Jorge Barandiarán Pagador (1969-1971), explained, through this endeavor, "sixty thousand hectares of [one of the] most arid deserts in the world … would become ten thousand high-production farms, and [in turn] provide opportunities for settlement, electricity, and wealth for the campesinos of the area."[37]

Outside the public eye, however, the military government had to grapple with several challenges. First, it needed to address problems in La Joya. In this "irrigation patch," as Electroconsult called it, settlement had taken place in three main phases and areas. The first, which officials referred to as "Old La Joya," began in the early 1940s. As irrigation made more land available, a second phase began in 1965 and a third in 1968, both of which officials called

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[35] *Proyecto especial Majes Siguas,* 16-17.
[36] Angel Paredes Tejada, "Ministerio de Agricultura, Dirección Ejecutiva Proyecto Especial Majes-Siguas: Justificación de Asentamientos Escuela y su Evolución Agroeconómica," Mayo de 1973, Technical Archive of Autodema, Arequipa, p. 1.
[37] Speech of General Jorge Barandiarán Pagador at the Livestock and Agricultural Exposition in Arequipa, November 15, 1970, Legajo 10, Folder 7, Archivo Agrario, Archivo General de la Nación, Lima.

"New La Joya." The name *La Joya* literally meant *The Jewel*, yet as the Ministry of Agriculture acknowledged in a 1972 study, the settlement had yet to live up to its name. Unless the problems of La Joya were addressed, they would undermine the government's new plan for the pampas.

In Old La Joya, problems had included land recipients' lack of farming experience and the entire settlement's lack of what officials called "social integration." To receive a new plot of land, interested individuals could enter their names in a public raffle. However, as officials noted, "no technical criteria was used [to find] qualified participants." As a result, "the majority of beneficiaries had no agricultural background." Many were "civil engineers and masons who had worked on the construction of the infrastructure." Others were artisans. The majority, officials added, "came from the Arequipa area, and thus their habits and customs were more urban."[38]

Even with training, these individuals would likely have struggled to farm successfully, especially at first, but the government did not provide such training, nor did it plan for an "urban nucleus" with basic services, such as high schools, drinking water, sewers, electrification, or credit to build homes. Beneficiaries, the Ministry explained, "struggled to adapt to living on isolated plots of land." In fact, many chose to live in the city of Arequipa, leaving only hired irrigators, known as *camayos*, on the land. In time, many beneficiaries abandoned the settlement entirely. When a second wave of farmers inherited the land, many also gave up and left. By 1972, Old La Joya was on its third generation of farmers. "Development in the colonization has been slow," officials admitted, "because of the lack of credit and technical assistance and the limited experience of the beneficiaries." Furthermore, "the process of reinvestment is minimal [mainly because of] a lack of a business mentality [*criterio empresarial*], incentive, and interest."[39]

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[38] Ministerio de Agricultura, Zona Agraria VI (Arequipa), Oficina Zonal de Planificación, "Estudios Básicos: Consideraciones a Tomarse en Cuenta para el Plan Integral de Desarrollo de La Joya," 1972, p. 1-5.
[39] "Consideraciones a Tomarse en Cuenta," 1-2.

In New La Joya, officials tried to do things differently. In the raffle for new land, they only allowed landless farmers or small landowners to enter their names. Of 1749 total entries in 1965, officials selected 700 who seemed the most promising, and of these they drew names for 100 new plots. But despite these filtering efforts, many beneficiaries, officials later discovered, "presented fraudulent documents and [so] not everyone had agricultural experience." These individuals often ended up hiring agricultural laborers, which hindered the government's plan for settlement and improvement because individuals who earned a daily wage had less incentive than the owners to clean and maintain irrigation canals or re-invest in the land in any way.[40]

Regarding credit and technology, officials observed a notable improvement from the 1940s to the 1960s. "With the experience of the Old La Joya, whose growth was quite slow," they wrote, "we found it indispensable to provide a sure and quick line of credit. As a result, New La Joya has achieved in three years what the Old La Joya achieved in thirty." They added that "technology is of medium to high quality." For one, sprinkler irrigation in the new settlements had increased wheat yields from 4000 to 6000 kilograms per hectare. "Income levels could increase even more," officials argued, "if [other] technological innovations are applied."[41]

Looking ahead, the Ministry of Agriculture offered several recommendations based on experiences in La Joya. First, officials said, as soon as future settlements begin, "we have to maintain certain social activities that bring people together, which will run parallel to the process of production, such as cultural and sporting activities, contests that incentivize hard work, etc." With this second suggestion, perhaps they were thinking of livestock competitions. They likewise recommended smaller plots of land, just 4.54 hectares per family, to benefit a greater number of farmers and reduce the temptation to hire laborers. With intensive exploitation, they

[40] "Consideraciones a Tomarse en Cuenta," 3.
[41] "Consideraciones a Tomarse en Cuenta," 7-9, 15.

insisted, this amount of land could produce much and provide adequate income for the farmers. Moreover, sprinkler irrigation would reduce erosion and water loss. By eliminating the need for canals, it would also increase cultivated land. At the same time, they admitted, it "constitutes an investment which would have to be made up by industrialization and intensive family labor."[42]

To achieve industrialization, ministry officials recommended dividing the family farms into two main plots: first, a small plot for labor-intensive crops such as tomatoes, peas, cucumber, and *rocoto* (an Andean pepper); second, a large plot of less labor-intensive crops, such as alfalfa, silage corn, and lentils. Machinery for these latter crops could be shared, as could labor. Given the nation's growing dependence on wheat imports, officials recommended growing more wheat in the pampas. They also recommended improving fruit tree cultivation by planting systematized orchards. Finally, officials underscored the need for commercialization. Aside from consumption and sale at local markets, all labor-intensive crops should be sold to industries—tomatoes for sauces, wheat for bread and pasta, and vegetables for jarred foods (*encurtidos*).[43]

Many of these recommendations built on those of Electroconsult. The main, hardly surprising, addition of the Velasco administration to the Majes-Siguas plan was the introduction of cooperatives. "Comprehensive development [depends on] the social and economic success of colonization," it declared in 1973. Consequently, "the adjudication model we have adopted is that of a production-focused cooperative [*Cooperativa de Producción*]" wherein "property will be shared and a new human community formed [on the basis of] individual liberty and self-management."[44] While Electroconsult had considered the collective use of machinery in the pampas, the military government envisioned collectivism for all stages of agriculture. To cite

[42] "Consideraciones a Tomarse en Cuenta," 14-15.
[43] "Consideraciones a Tomarse en Cuenta," 11-12.
[44] Angel Paredes Tejada, "Justificación de Asentamientos Escuela y su Evolución Agroeconómica," 1-7.

Enrique Mayer once again, under Velasco the Ministry of Agriculture truly "fell in love" with the idea of cooperatives and experimented with a variety of models, imagining each as a key to rural prosperity.[45] The pampas were another experimental site, a great desert laboratory in which the military government would combine irrigation, settlement, and cooperative agriculture.

In this case, ministry officials even spoke of themselves as empiricists. Regarding an initial "experimental settlement" of 600 hectares to take place in 1973 and 1974, they declared that "this is the opportunity to … gain the experience we need, as well as obtain answers … to pressing questions … about which diverse opinions without experimental basis are circulating." One of the main questions involved how the new cooperatives would function. For answers, officials planned to "experiment with two or more adjudication models" and "thoroughly analyze the … agronomic technology, organization, and functioning of the cooperatives."[46]

A related question involved farmers' adaptation to the government's cooperative model. Ministry technocrats never really considered what the people wanted. In their view, the potential problem was the people's failure to embrace the system that the military government imposed. "It is widely known," they wrote," that rural communities demonstrate considerable attachment to their customs and traditions. Development implies change in the technology of agricultural operation, customs, etc., which in some cases represent rifts and breakages with traditional values and could produce negative effects in the [major phase] of colonization."[47]

Given this concern, officials proposed an initial "rehearsal" in which they would observe "costs, operational organization, the level of campesino resistance to change … evolution of agricultural technology, [and] evolution of cooperative organization." With a rather detached

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[45] Mayer, *Ugly Stories*, 112-113.
[46] Angel Paredes Tejada, "Justificación de Asentamientos Escuela y su Evolución Agroeconómica, 4-5, 7-9.
[47] Angel Paredes Tejada, "Justificación de Asentamientos Escuela y su Evolución Agroeconómica, 7-8.

tone, they added that "the results we obtain can be negative or positive, but the important thing is in both cases to obtain clear ideas about [these] basic aspects" of the cooperatives. Based on the results, a second experimental phase would take place from 1975 to 1977. Then, the third and main phase of 54,000 hectares would take place from 1978 to 1988. In these later phases, the first site would become a "school settlement" for training residents of the later phases.[48]

None of these plans materialized. While the Velasco administration was relatively efficient in forming cooperatives—on average, nearly one hundred per year—in the pampas, it could not do anything until people relocated, and people could not relocate until there was water. Thus, the military government had to set aside its zeal for cooperatives and focus on construction of the irrigation works. Given the confusion that reigned in many cooperatives throughout the nation, perhaps this delay was a blessing in disguise. By the time construction was complete near the end of the decade, Peruvian officials had long since abandoned the idea of cooperatives.

In mid-1975, during Velasco's final months in office, the Ministry of Agriculture divided construction into two main phases: first, the Condoroma dam on the Colca River in the mountains north of Arequipa. From the dam, water would be diverted through some 100 kilometers of canals and tunnels to the Siguas River where it could then be used to irrigate 23,000 hectares of land in the Pampa de Majes. Crucial stops on the way were the areas of Lluta and Lluclla, north of the pampas, where officials planned to build electricity plants. The second phase would begin with the Angostura dam on the Apurimac River where water would be channeled to the Colca River and, again, to the Siguas River. This second dam would provide water for 22,000 hectares of land in the Pampa de Siguas and 12,000 more hectares in the Pampa de Majes. Officials also planned to water 3000 new hectares for the communities of Huambo and

[48] Angel Paredes Tejada, "Justificación de Asentamientos Escuela y su Evolución Agroeconómica, 4-5, 7-9.

Cabanaconde on the way to the pampas. Figure 9 provides an idea of this irrigation scheme. In total, 60,000 hectares would receive water. Once the water was available, officials wrote, they could begin the "directed migration" of farming families, and the "integral development" of the pampas would create some 52,000 new jobs.[49]

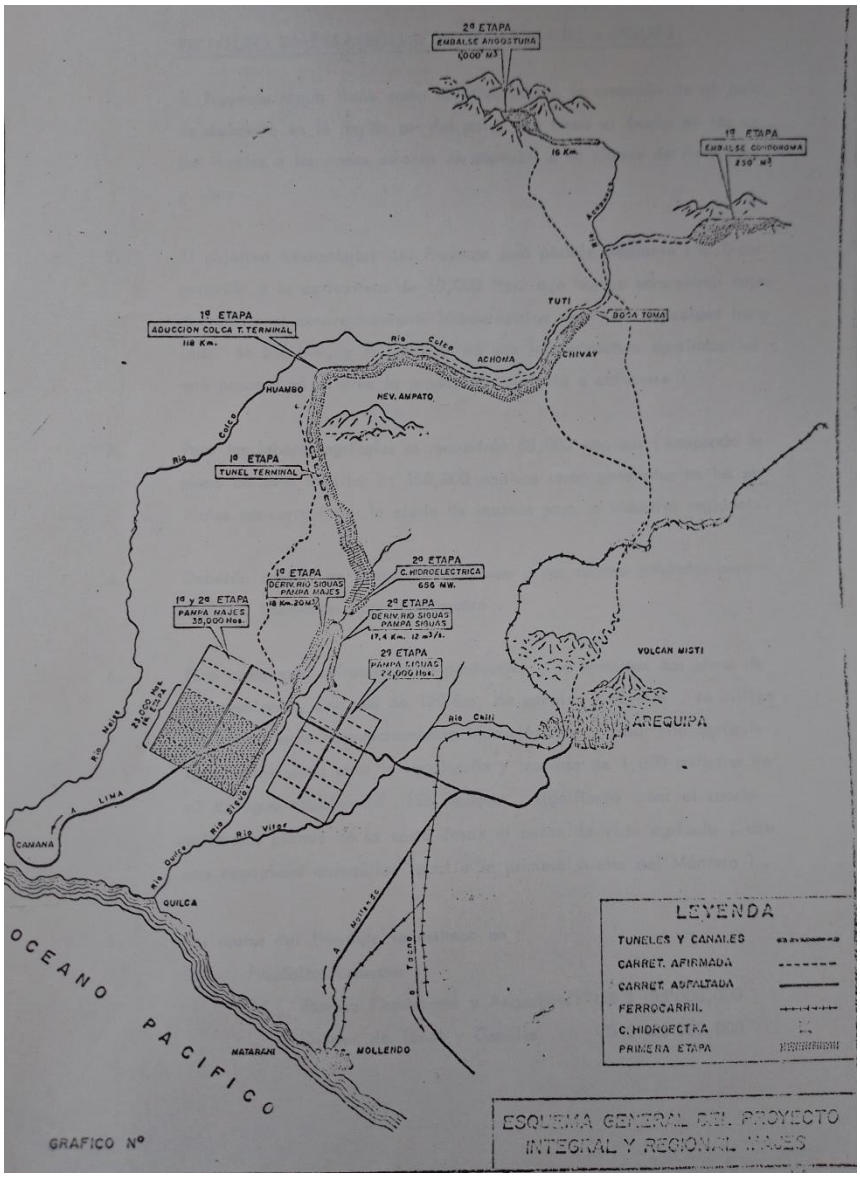

Figure 9. A 1979 sketch of the Majes-Siguas Irrigation Scheme. The first phase included the Condoroma Dam to the northwest and nearly one hundred kilometers of canals and tunnels that would bring water to the pampa of Majes.

Source: Comité Multisectorial Coordinador del Proyecto Majes (COMULCOPMA), "Previsiones para el Corto, Mediano y Largo Plazo: Informe para el Señor Primer Ministro," octubre 1979. Technical Archive of Autodema.

[49] Ministerio de Agricultura, Dirección Ejecutiva del Proyecto Integral de Desarrollo Regional Majes-Siguas: "Planificación de la Colonización Majes, Informe No. 9," Arequipa, Setiembre de 1975, 1-3.

To achieve these goals, officials from the Ministry of Agriculture emphasized that several other government sectors would need to participate, including Energy, Industry, Housing, and Education.[50] On this list, they also included SINAMOS, the National System for Social Mobilization, which became known for hiring former radicals such as Héctor Béjar (see Chapter 4) and, in Mayer's words, trying to "incorporate the masses while controlling them at the same time." Morales Bermúdez shut down the institution in 1976.[51] In the Majes project, the disappearance of SINAMOS exemplifies the state's new ambivalence toward social engineering.

While the idea of cooperative agriculture and controlled popular participation faded, the ideas of irrigation, modernization, and integral development, which were also fundamental elements of Velasco's revolution, remained. As ministry officials noted in 1975, Arequipa currently had nearly 80,000 hectares of irrigated cropland and nearly 900,000 hectares of pastureland. Livestock (milk, meat, etc.) accounted for 44% of all agricultural production, grains (rice, corn, barley wheat, etc.) accounted for 13%, and vegetables (onion, garlic, and others) accounted for 14%. "In general," they wrote, "agricultural technology is low…. Yields of some important products, such as milk, corn, barley and potatoes, are mediocre, while they are good for others, such as rice, beans, onion, garlic, and vegetables. To summarize," they continued, "the state of agriculture in Arequipa hovers between subsistence and diversification, with low productivity, low-income levels of farmworkers, and problems of underemployment and unemployment."[52] Irrigation, they said, would help solve these problems.

On the national level, another challenge, which Velasco had sought to address (unsuccessfully), was the rising quantity of food imports. "There is a notable deficit in national

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[50] "Planificación de la Colonización Majes," 11.
[51] Mayer, *Ugly Stories*, 34-35.
[52] "Planificación de la Colonización Majes," 4-5.

production of some agricultural products," officials wrote, "which is getting worse." The highest deficit was that of wheat: 888,000 metric tons; followed by lactates: 601,000 metric tons; and beef: 66,000 metric tons. For these products, they wrote, "the market is practically unlimited."[53] Again, irrigation in the pampas constituted one of the nation's main hopes to reduce the deficit.

But when would irrigation begin? In October of 1973, the Velasco administration admitted that Peruvian companies had so far managed to build only 1.3 kilometers of tunnels—a tiny fraction of the 98 kilometers planned—because of the difficult geology. "These obstacles," it explained, "are common in this construction of tunnels in the Andes." To pick up the pace, however, it reported negotiations with the InterAmerican Development Bank, Hambros Bank of London, and the English firm Mitchel Construction.[54] The following year, the administration signed an agreement with a consortium of international contractors by the name of Macon, which included companies from England, Sweden, Spain, Canada, and South Africa. Soon thereafter, these companies began setting up camp, importing machinery, and sending personnel. They also helped prepare 140 kilometers of access roads. However, Macon, too, had a slow start. As of September 1975, it had built 8.5 kilometers of tunnels.[55]

During the Morales-Bermúdez era (1975-1980), the pace finally did pick up—and expenses mounted. In 1979 Peruvian officials noted that, to date, they had invested $408 million, and they needed approximately $179 million more to finish construction on the first phase.[56] Looking ahead, they calculated a total cost of $1.2 billion. This sum included the dams, tunnels, canals, and electrification infrastructure, along with leveling equipment, sprinkler systems, and

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[53] "Planificación de la Colonización Majes," 5.
[54] "Proyecto de Majes," in *5 Años de Revolución* (Lima: Prospera, 1973).
[55] "Planificación de la Colonización Majes," 7-9.
[56] Comité Multisectorial Coordinador del Proyecto Majes COMULCOPMA, "Proyecto Integral de Desarrollo Majes-Siguas: Previsiones Para el Corto, Mediano y Largo Plazo, Informe para el Señor Primer Ministro," Lima, Octubre 1979, 5.

other costs of settlement in the pampas.[57] For financing, Peru received credit from the Macon Consortium. Unfortunately, however, prices rose steadily each year because of national and international inflation. As officials noted in 1978, "The approved budget assignments at the start of each year have generally been insufficient and have required one expansion after another to cover the costs of the project." The further lamented that, "the economic situation of the country has not permitted the central government to absorb these increased financial demands."[58]

With growing debt, "integral development" became more urgent. Not only did officials want to use the new lands to raise income levels, reduce food imports, and attenuate migration to the cities; now, they *needed* to ensure settlement and production if they were to have any hope of recuperating the enormous investment. One journalist wrote that, "the gigantic Majes irrigation project [is] one of the largest engineering projects in the world."[59] Another source described it as "the world's most expensive irrigation project."[60] In turn, Peruvian officials began emphasizing the magnitude of the investment and the need to make it count. "The Majes-Siguas project," they wrote in 1979, "represents the most concrete hope for the development of the Southern Region in terms of employment, production, and refurbishment of the territory. We must remember," they added, "that in the short and mid-terms, Majes constitutes the most important investment in the region, which is why it is indispensable to optimize its effects."[61]

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[57] "La Ejecución del Proyecto Majes," 1978, 11-14, 23-34.
[58] "La Ejecución del Proyecto Majes," 1978, 64, Anexo No. 3-A, "Crédito Externo."
[59] Pamela Orlandini, "Peru's Majes Project: Verdant Desert Dream," *The Times of the Americas*, July 30, 1980; Archivo Técnico de Autodema, Arequipa.
[60] See Colegio de Ingenieros del Perú, "Ambicioso y esperado proyecto multipropósito Majes-Siguas II," in *Ingeniería Nacional: Revista Oficial del Colegio de Ingenieros del Perú*, *Consejo Nacional* 12, no. 3 (2013), 42 (40-42), https://www.cip.org.pe/publicaciones/revista-digital/revista-digital-ingenieria-nacional-edicion-12.pdf (accessed August 21, 2024).
[61] Instituto Nacional de Planificación, Oficina Regional III, Grupo de Trabajo del Proyecto Majes: "Plan General de Desarrollo del Proyecto Majes," Arequipa, Perú, 1979, Presentación.

If such effects were optimized, officials believed they could recover the investment. In a different 1979 report, project supervisors explained that over a period of twenty to fifty years, they planned to cover the costs of the project by direct and indirect taxation on the new residents of the pampas, as well as the sale of farming plots and regular water and electricity bills.[62] For this plan to work, however, residents would have to relocate permanently and earn enough to cover these expenses and still make a profit. Since it would be crucial to help farmers start strong, the Ministry of Agriculture called for "distinctly industrial investments, such as fertilizer plants, agro-industrial plants, and other types of inputs."[63]

In this same vein, ministry officials stated that the nature of the project, including the costs, "obligated [them] to conduct … agricultural research, the results of which would be of utmost importance." These studies, they explained, would address the adaptability of crops to the soils and climate of the pampas, consumptive water use, "the development of irrigation technology," and "technology transfer to the future beneficiaries" of the land. Moreover, officials highlighted these beneficiaries' need for credit, as well as population centers that provided "the services required for agricultural activity … and [that] satisfied the material and cultural needs of the population." Finally, they underscored the need to "train … campesinos" before and after adjudication in "the technological, organizational, and entrepreneurial aspects" of their work.[64]

Many of these ideas echoed those of Velasco. Although Velasco's name and many of his policies had become unpopular, the notion of "regional integral development" remained constant. In a rather obvious attempt to repackage the rhetoric of Velasco, the Ministry of Agriculture in 1978 declared that the project would achieve "balanced regional development within an integral

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[62] "Previsiones Para el Corto, Mediano y Largo Plazo," 1979, 5-7.
[63] "La Ejecución del Proyecto Majes," 1978, 69.
[64] "La Ejecución del Proyecto Majes," 1978, 46, 71-72.

conceptualization." Irrigation, it added, would make possible "strategically placed production centers" and the "stable settlement of a significant population, [which would] attenuate the flow of migration from the countryside to urban centers." Irrigation would also "elevate production and productivity through the rational use of resources as well as appropriate technology."[65]

The Velasco administration's plan for small family farms also remained popular, despite a shift in national economic policy. In their "general development plan" for the Majes project, authorities noted their goal to "overcome … the current economic crisis" by prioritizing food production, "gradually abandoning the model of import substitution [ISI]" and widening "the internal market by modernizing marginalized urban sectors and those of rural areas."[66] The plan to abandon ISI is telling. In the wake of World War II, the Economic Commission for Latin America (CEPAL) had recommended inward-looking development models, such as ISI, to help protect Latin American nations from external economic shocks. As Victor Bulmer-Thomas explains, although Peru remained committed to traditional export-led growth until the mid-1960s, Velasco "promoted inward-looking development so aggressively that the republic's share of world trade [fell] by two-thirds in a single decade." Under Morales-Bermúdez, therefore, Peru joined Argentina, Chile, and Uruguay in embracing the market-oriented policies that economist Milton Friedman and others at the University of Chicago were recommending for the region.[67]

This shift favored the United States, which unabashedly supported the repressive military dictatorships in the other three nations. Ironically, in Peru this same economic transition took place as the nation moved from military to civilian rule. But in this case, too, U.S. officials, the Organization of American States (OAS), and the International Monetary Fund offered a mixture

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[65] "Ministerio de Agricultura y Alimentación: "La Ejecución del Proyecto Majes," Documento de Exposición del Director General Ejecutivo del Proyecto Especial Majes, Ing. Oscar Valdivia A., Febrero 1978, p. 6-9, 35-40, 67-68.
[66] "Plan General de Desarrollo del Proyecto Majes," 1979, Presentación, 10 (9-11).
[67] Bulmer-Thomas, *Economic History of Latin America*, 23-326; see also: 60, 144, 156, 164, 268-270, 280-281, 286.

of support and pressure to take the state out of the market.[68] Under Belaúnde, Friedman's free-market doctrines became even more popular.[69] While this shift in economic policy would seem to favor agribusiness over family farms, the Majes-Siguas project maintained its vision for the latter. In 1979, project supervisors noted the need for further discussion about the size of the parcels and the way they would be adjudicated.[70] Yet the following year, they announced that each settler on the first 3,000 hectares would receive a plot of five hectares.[71] This plan of the Velasco era persisted mainly because authorities still hoped that the new settlements would create jobs and absorb up to 100,000 people of the ever-growing regional population.[72]

The size of the plots was not the only example of continuity with the Velasco era. Officials continued to invoke the Velasco administration's agrarian reform law as their source of authority to adjudicate the new lands in Arequipa. They also built on the 1969 Water Law, which had given the state control of the nation's water.[73] Furthermore, they bolstered the legitimacy of their adjudication plan by working with the regional Agrarian Reform office.[74] The emphasis on training and technology remained constant as well. "The agricultural sector must reach higher technological levels to improve production and productivity," officials wrote. We must improve "the use … of machinery and the irrigation system … by training the campesino population." Echoing Velasco's nationalism, officials also foresaw a "reduction in the level of external

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[68] "Plan General de Desarrollo del Proyecto Majes," 1979, Presentación, 10 (9-11).
[69] Stensrud, "Dreams of Growth," 576.
[70] "Previsiones para el Corto, Mediano y Largo Plazo," 7.
[71] "En Adjudicación de Tierra de Majes Se Aplicará Nuevo Modelo," *El Pueblo*, 21 de octubre de 1980. Archivo Técnico de Autodema, Arequipa.
[72] See "Propuesto de Base Productiva Agropecuaria del Proyecto Majees, Año 2000," *El Pueblo*, 11 de setiembre de 1980; "Ordearequipa Firmó Convenio con Universidad 'La Molina,'" *El Correo*, 23 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.
[73] See Stensrud, "Dreams of Growth," 575.
[74] Dirección General del Proyecto Majes, "Modalidad de Adjudicación y Unidades Básicas de Producción para las Primeras 3,000 Ha. de las Pampas de Majes," Arequipa, abril 12 de 1980, 1, Archivo Técnico de Autodema, Arequipa.

technological dependence" and the "creation of a native technology appropriate to the environment and the resources available in the region and in the nation."[75]

For someone so unpopular, Velasco and his ideas still underpinned much of the Majes project. Notably, they also underpinned a second megadam project on the northern coast called Chavimochic, which began in the mid-1980s. As historian Mark Carey notes, this project emerged "partly due to perceived failures of the Velasco era, which helped contribute to the post-1980 shift toward export agriculture." At the same time, this project relied on the land and water laws of the Velasco era, and it built on Velasco's vision of technified, state-controlled infrastructure.[76] In both Chavimochic and Majes, perhaps the greatest divergence from Velasco's vision was the elimination of the idea of cooperatives, which nobody in the 1980s regretted.

In late 1980, the Macon Consortium finished the tunnels from the Colca River to the pampas. Construction on the Condoroma dam would not be complete until 1985, yet the 98 kilometers of tunnels would already bring some water to the pampas.[77] After the installation of 30 kilometers irrigation pipes, settlement on the first 740 hectares could begin.[78] From 1982 onward, officials planned to open approximately 3,000 hectares of farmland each year for eight years, followed by 4,000 hectares annually for the next seven years. Of these 52,000 total hectares, roughly 23,000 would grow alfalfa and other crops for livestock, 16,000 would produce vegetables and grains, and 13,000 would be dedicated to fruit trees.[79] Such potential created widespread anticipation, a ray of hope that assuaged growing fears of food dependency and

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[75] "Plan General de Desarrollo del Proyecto Majes," 1979, 34-37.
[76] Mark Carey, "Watering the Desert, Feeding the Revolution: Velasco's influence on Water Law and Agriculture on Peru's North-Central Coast (Chavimochic)," In *The Peculiar Revolution*, 241-242.
[77] See Autodema, "Proyecto Majes, Primera Etapa: Memoria Final de las Obras," mayo de 1988, 1-7, Archivo Técnico de Autodema, Arequipa.
[78] "Instalarán 30 Kms. De Tubería en Proy. Majes: Inviertan 160 Millones," *El Correo*, 22 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.
[79] "Propuesto de Base Productiva Agropecuaria del Proyecto Majes, Año 2000."

calory deficiencies (see Chapter 2). Dreams of technification also seemed to be coming close to fruition. For example, experimentation confirmed that sprinklers, albeit expensive, would save up to fifty percent of the water used in traditional gravity-flow irrigation.[80]

In the excitement, several institutions pledged to help with the technical studies. The National Institute of Agrarian Research (INIA)—which also had roots in the Velasco era—received a grant of nine million dollars from US AID to study which crops would grow best in the pampas, as well as how farmers could increase yields. These questions, officials stated, constitute "the great challenge," considering the nation's "demographic growth that … increases the demand for food at a rate too fast for national production to satisfy." With their research, they promised, farmers could plant crops and apply technology with confidence.[81] Additionally, Arequipa's General Office of Fishing promised to study the potential of the fishing industry in the project area. Such research, officials explained, would not only serve the industry but also "improve the nutrition of the people who live in the … zone by increasing the protein in their diets."[82] Finally, the National Agrarian University La Molina in Lima signed a "technical and scientific cooperation agreement" to help the project achieve integral development.[83]

Governments abroad also offered support. In August of 1980, the German ambassador visited and pledged funding for the feasibility studies of the Lluta hydroelectric plant. This plant, journalists reported, constituted "an indispensable necessity to successfully tackle future regional

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[80] "Riego por Aspersión Tendrá Majes: Licitan Red de Distribución por 168 Millones," *La Prensa*, 5 de octubre de 1980, Archivo Técnico de Autodema, Arequipa.
[81] "Instituto de Investigación Agraria Investigará 'Células' de Cultivos para el Proyecto Majes," *El Pueblo*, 5 de setiembre de 1980, Archivo Técnico de Autodema, Arequipa.
[82] "Para Aprovechar Recursos del Colca y Siguas P. Majes Firmó Convenio de Desarrollo Pesquero," *El Pueblo*, 12 de setiembre de 1980, Archivo Técnico de Autodema, Arequipa.
[83] "Suscriben un Convenio sobre 'Proyecto Majes,'" *El Comercio*, 14 de noviembre de 1980; "Ordeareqauipa Firmó Convenio con Universidad 'La Molina,'" *El Correo*, 23 de noviembre de 1980, Archivo Técnico de Autodema.

development."[84] Moreover, representatives from Holland and Israel formed a commission to study food production in the desert zones of Peru.[85] The experts from Holland specialized in livestock, while those from Israel focused on crops.[86] In November of 1980, Holland's Ministry of Foreign Relations funded a symposium in Arequipa to discuss the lessons learned in La Joya and Santa Rita de Siguas: The size of the plots should be five hectares at most; water should be administered in even quantities for all; land recipients should live on the land as a condition of adjudication; and new farmers would need "technology packages," including seeds.[87]

The involvement of experts from Holland and Israel mattered because both nations had relatively little cropland per capita.[88] Their encouragement helped keep Peruvian authorities focused on small family farms. As the head of the Holland mission declared, "it is incredible what these pampas can produce."[89] Regarding livestock, he added that, with irrigation, the region could support 20,000 new calves per year, which would satisfy far more of the nation's demand for milk than ever before and allow Arequipa to lead the nation in milk production.[90]

The OAS also promised to continue supporting the Majes project. During a visit to Arequipa one OAS official declared that the project was a "model" for other parts of Latin America.[91] Unlike Holland and Israel, the OAS had a hemispheric agenda behind which the U.S.

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[84] "Alemania Hará Los Estudios de la Hidroeléctrica Lluta: Embajador Loeck Señaló que Efectuarán esta Labor como Donación," *El Comercio*, 20 de agosto de 1980, Archivo Técnico de Autodema, Arequipa.
[85] "Hacen Evaluación de Proyecto FAPROCAF: Una Comisión Holandés-Israelí Visitó Ayer Proyecto Majes," *El Correo*, 13 de agosto de 1980, Archivo Técnico de Autodema, Arequipa.
[86] Carlos Vargas, in conversation with author, August 8, 2023.
[87] "Es Increíble lo que las Pampas de Majes Pueden Producir Declaró el Jefe de Misión Holandesa," *El Pueblo*, 22 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.
[88] See "Cropland Area Per Capita by Region and Subregion," UN Food and Agriculture Organization, FAOSTAT Analytical Brief 71. https://openknowledge.fao.org/server/api/core/bitstreams/5c8b2707-1bcf-4c29-90e2-3487e583f71e/content (accessed April 25, 2024).
[89] "Increible lo que las Pampas de Majes Pueden Producir."
[90] "Hasta 20 Mil Vacunos al Año Puede Producir Zona Pecuaria del Sur," *El Comercio*, 22 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.
[91] "La OEA Continuará Apoyando al Proyecto Majes," *El Pueblo*, 30 de octubre de 1980, Archivo Técnico de Autodema, Arequipa.

government often pulled the strings, but the Majes project seemed to align with that agenda. Still common was the idea that development projects could preempt communist-inspired revolutions. In fact, to some U.S. observers, the Majes project would prompt a smooth change from feudalism to capitalism. As one writer put it, thanks to Macon and the 4450 Peruvians it hired to build tunnels in the Colca Valley (northwest of Arequipa), "peasants … have been catapulted out of feudal stagnation into modern life." Although "primitive customs still prevail," she continued, "the 400 kilometers of good new roads" that Macon had built gave residents a path "into civilization."[92] While residents used the roads, the tunnel workers themselves, who had advanced painstakingly at a rate of four to six meters per day, depending on the terrain, may not have seen anything special about the grueling wage work in comparison to subsistence farming.[93]

Capitalism, modernity, and civilization—accepted antitheses of communism—were not the only ideas embedded in the ubiquitous references to development. Another underlying idea involved the control and transformation of desert environments. Irrigation and agriculture were the obvious elements of change. Tellingly, however, during this period of excitement, the Forestry Committee of the Arequipa government, in collaboration with federal authorities, planted 400 saplings in the Siguas Valley and held several ceremonies around the region in which they announced a forestation campaign to plant some 30 million lumber trees of various species, including pine, eucalyptus, ironwood *(casuarina*), cedar, and carob.[94] These trees, authorities explained, would cover roughly 10 million hectares of land that was unfit for agriculture.[95]

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[92] Orlandini, "Verdant Desert Dream."
[93] "Solo Faltan 35 Metros para la Terminación del Perforación de Túneles del Proyecto Majes," *El Pueblo*, 18 de noviembre de 1980, Archivo Técnico de Autodema, Arequpia.
[94] "Realizan Plantaciones en la Semana Forestal," *El Pueblo*, 5 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.
[95] "Majes ya se Viste de Verde: Plantaron 400 Arbolitos," *El Correo*, 7 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.

Through this project, trees would curb migration to the city by creating a "healthy environment" in towns outside Arequipa. "Forestation in rural zones," federal officials reasoned, "would ensure the permanence of the residents … as well as provide work and a source of income." Furthermore, in agricultural zones, the trees would serve as windbreaks and reduce the evaporation of irrigation water. Finally, officials stated that the Pampa de Majes, a priority zone, would receive 200,000 trees. Tree planting and watering, they said, "would be coordinated with future settlers in order to technify the management of the plantations and teach residents about the best use of water, which must be optimal to improve the ecology of the [Majes] project."[96]

As such plans circulated, the Majes work zone received many visitors, both national and international. In August of 1980, a commission of Peruvian military leaders toured the construction areas and expressed their approval.[97] Perhaps some of them had been around when the Velasco administration launched the project in the early 1970s. In November local authorities hosted a delegation of forty individuals from the Diplomatic Academy of Peru's Ministry of Foreign Affairs. The visit, journalists wrote, would give the diplomats "an authentic vision" of Arequipa.[98] This same month, the U.S. ambassador to Peru also visited Arequipa to learn about the project.[99] The Minister of Agriculture also visited regularly.[100] The project was the pride of the region. As the Executive Director liked to say as he showed off the tunnels, "Majes will become one of the most important development poles in the country."[101]

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[96] "Llegó Director de Forestación: Se Realizará Gran Programa de Reforestación en Arequipa," *El Pueblo*, 20 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.
[97] "Comisión Vistó Proyecto Majes," *El Correo*, 11 de agosto de 1980, Archivo Técnico de Autodema, Arequipa.
[98] "Nos Visitan Diplomáticos," *El Correo*, 26 de octubre de 1980; "Llega Delegación de Academica Diplomática," *El Correo*, 5 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.
[99] "Mostró Interés por Proyectos de Desarrollo," *El Correo*, 18 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.
[100] "SALUDO," *El Pueblo*, 15 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.
[101] "Afirman que Majes Será Vital Polo de Desarrollo," *La Prensa*, 16 de octubre de 1980, Archivo Técnico de Autodema, Arequipa.

The president himself, Fernando Belaúnde Terry, watched the project closely. In August of 1980, his administration decreed that all surplus water in Arequipa should be reserved for Majes.[102] This same month, Belaúnde visited Arequipa and emphasized the federal government's support for all institutions that were contributing to the project. "We have come to accelerate development, not detain it," he stated. He also praised Arequipeño tunnel workers as "builders [*forjadores*] of development."[103] In turn, regional authorities invited Belaúnde to return to Arequipa at the end of the year to ceremoniously detonate the last explosion of the final tunnel, after which they would all toast to the future of Majes.[104] Velasco may have turned in his grave. Although he, not Belaúnde, had acted on Electroconsult's studies of the 1960s, Belaúnde proudly presided over the project in 1980. He even used it to back up, at least partially, his campaign promise to provide one million new jobs.[105] None of the press coverage in 1980 mentioned Velasco, but for Belaúnde, perhaps taking the credit from Velasco mitigated the memories of the 1968 military coup that had deposed and exiled him.

Ultimately, Belaúnde did not make it to the rock-blasting and champaign ceremony, but Arequipa celebrated all the same. "The dream of generations has been achieved," declared one official.[106] The tunnels of Majes, "have no rival," added a foreign engineer; "with these [Peruvian] workers," he continued, "we can do what normally is considered impossible."[107] Of

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[102] "Reservan Recursos para Proyecto de Desarrollo Integral," *El Peruano*, 12 de agosto de 1980, Archivo Técnico de Autodema, Arequipa.
[103] "Pdte. Al Inaugurar Fórum Arequipa Año 2000: Todo el Apoyo a la Irrigación de Majes," *El Correo*, 16 de agosto de 1980, Archivo Técnico de Autodema, Arequipa.
[104] "Para Concluir Perforación de Túneles: Majes, Belaúnde Vuelve a Arequipa," *El Correo*," 17 de octubre de 1980; "El 29 de Noviembre se Concluirán los Trabajos de Perforación de Túneles en el Proyecto Majes," *El Pueblo*, 28 de octubre de 1980; "Presidente Belaúnde Vendrá a Fines de Mes Para la Culminación de Trabajos de Túneles de Majes," *El Pueblo*, 9 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.
[105] "Inició Proyecto Majes la Preparación Para Asentamientos de Colonos en 1ras 3 Mil Hás.," *El Pueblo*, 3 de setiempre de 1980, Archivo Técnico de Autodema, Arequipa.
[106] "Un Día de Júbilo para Arequipa y el Perú: Se Concluyó Excavación de Túneles en Majes," El Correo, 11 de diciembre de 1980, Archivo Técnico de Autodema, Arequipa.
[107] "Los Túneles de Majes 'No Tienen Rival,'" *La Prensa*, 14 de diciembre de 1980, Archivo Técnico de Autodema, Arequipa.

the ceremony, one local newspaper wrote that, "in [this] transcendent moment for our agriculture and our integral development, [we heard] the final blast that [linked] the network of tunnels of the fabulous Majes project."[108] Another article reported that, after the blast, "officials, laborers, technicians, and employees, forgot themselves with emotional hugs and, in some cases, even tears … at having managed to conquer nature in the execution of this important and momentous work." Though not present, Belaúnde authorized the director of the Majes project to make a statement on his behalf: "Despite the financial … difficulties of the county, [the project] will not be held back, and this second phase … necessary and urgent [too], will indeed be carried out."[109]

Amid the celebration, which included tunnel tours, the singing of the national anthem "with singular enthusiasm," and myriad speeches, only one topic momentarily dampened everyone's spirits. As one manager stated, "allow me to conclude [my remarks] by remembering the permanently disabled of the project for whom I call on [the Peruvian government] and Macon to provide permanent aid funds that will allow their respective homes to live in a decent manner." He continued, "let Macon not only be known for [achieving] one of the greatest technical accomplishments that the world has ever seen, but for its recognition for those who sacrificed their [physical] integrity for the good of the project." Building on these comments, one of the tunnel workers, Pedro Luna Casanova, called for a moment of silence "for our brothers and fellow workers who gave their lives in this tunnel." He likewise remembered those injured who now were confined to the hospital.[110] Three days later, one of the foreign engineers clarified

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[108] "Mañana se Realizará el Ultimo Disparo que Unirá la Red de Túneles del Proyecto Majes," *El Pueblo*, 9 de diciembre de 1980; see also "Terminan Mañana Obras de Perforación en Proy. Majes," *El Correo*, 9 de diciembre de 1980, Archivo Técnico de Autodema, Arequipa.
[109] "En Medio de Gran Júbilo se Concluyó Ayer la Perforación de los 98 Kilómetros de los Túneles del Gigantesco Proyecto Majes," *El Pueblo*, 11 de diciembre de 1980; see also "En Majes se Construye El Peru: Trabajador Peruano Logra Hazaña Mundial en Apertura de 100kms en Túneles," *El Correo*, 11 de diciembre de 1980, Archivo Técnico de Autodema, Arequipa.
[110] "En Medio de Gran Júbilo."

that only five workers had lost their lives since the project began, which, he said, indicated a high level of security for a tunneling project.[111] To him, it was an acceptable price for modernization.

Importantly, Luna Casanova, after the moment of silence, used the floor to make a request on behalf of the tunnel workers. "We are willing to take this experience, the knowledge of this large project, and go and work in any corner of Peru in pursuit of the improvement [*superación*] of our homeland," he first stated. However, he continued, we "also want to participate with just a small piece of land in these pampas … for our sweat, too, has been spilled here."[112] With credibility and emotion, workers like Luna could make a convincing case for their own inclusion in land adjudication in the pampas. The problem, of course, was that numerous preliminary studies had reiterated the requirement for land recipients to be experienced farmers.

In the end, authorities did designate a small percentage of new land for workers.[113] Yet the dilemma regarding inclusion and exclusion was only beginning. In addition to the land in the pampas, many rural communities used the moment to petition the government for aid. In October, farmers in the district of Cabanaconde, north of Arequipa and Majes, called on regional authorities for new irrigation infrastructure to help them survive a severe drought that was affecting much of the state. They also asked to be included in the raffle for new land in the first 3000 hectares in the Pampa de Majes.[114] The following month, community leaders of Huambo, just south of Cabanaconde, requested pipes and other materials to improve the community's drinking water supply.[115] As both communities saw it, if authorities were investing so much to

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[111] "Los Túneles de Majes 'No Tienen Rival.'"
[112] "En Medio de Gran Júbilo."
[113] Carlos Vargas, in conversation with author, August 8, 2023.
[114] "Director de Agricultura Visitó Zona de Cabanaconde Afectada por la Sequía," *El Pueblo*, 11 de octubre de 1980, Archivo Técnico de Autodema, Arequipa.
[115] "Gestionan Apoyo del Proyecto Majes," *El Correo*, 2 de noviembre de 1980, Archivo Técnico de Autodema, Arequipa.

turn the desert pampas into a paradise, could they not provide at least a little help for established farmers in the region who were facing droughts and drinking water shortages?

Other petitions came from highlands of Caylloma, even farther north. The communities here lived near the Colca River—the same river that, through 98 kilometers of tunnels, was going to feed the Pampa de Majes. Upon a visit from the Prefect of Arequipa, community delegates presented lists of basic needs, such as potable water, electricity, a medical post, and technical support from the Ministry of Agriculture. The prefect confirmed the validity of these claims.[116] To these residents, it seemed only logical that the government include them in its vision of modernization. After all, did not the irrigation waters originate on their lands?

To return to the arguments of Donald Worster, the regional government, down in the city of Arequipa and in the pampas, was clearly growing. The most obvious example was Autodema (originally Depema), a new regional institution that, under the supervision the National Institute of Development, would manage nearly all aspects of "integral development" in the pampas. In the mid-1980s, Autodema's responsibilities included: the maintenance of irrigation canals and equipment; preparation for electricity distribution; the construction of buildings for education, health, recreation, public administration, and agricultural services in the first towns of the pampas; myriad extension services for farmers; studies of national and international food markets, and others.[117] Needless to say, the number of offices and personnel increased rapidly. By the twenty-first century, as Stensrud notes, Autodema employed hundreds of individuals and had an annual budget of 33 million dollars (8 million for infrastructure and 22 million for

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[116] "Apoyo para 5 Obras Piden al Prefecto en Caylloma," *El Correo*, 15 de octubre de 1980, Archivo Técnico de Autodema, Arequipa.

[117] Instituto Nacional de Desarrollo, Autoridad Autónoma de Majes-Autodema, Comision de las Comunidades Europeas, ELC-Electroconsult, Milano Italia, "Proyecto Piloto de Irrigación Majes," junio de 1984, p. 19-49, Archivo Técnico de Autodema, Arequipa.

staff).[118] The institution now wields considerable control over the region's water and, by extension, over the livelihoods of many residents.

Overall, however, residents since the 1980s have worried less about control than about inclusion. Stensrud's fieldwork includes protests from communities in the highland region of Callalli who feel that Autodema should employ some of their people. After all, they repeat, the water comes from their lands. In the case of Cabanaconde and neighboring communities in the Colca Valley, when their initial calls for inclusion seemed to fall on deaf ears, eleven protesters in 1983 used dynamite to blow a hole in one of the tunnels. In response, regional authorities finally added valves so that these communities could also receive irrigation water.[119] In a 1985 report, Autodema noted plans to study water use and improve agriculture in the areas of Cabanaconde, Colca, Huambo, Huanca, the Siguas Valley, and Santa Rita.[120]

As another example, in 2011, activists marched in the main plaza of Arequipa to demand water justice. Participants included two busloads of residents from Caylloma who chanted: "Where is the water born? In Caylloma! Who owns the water? Caylloma!" and, perhaps surprisingly, "What do we want? … Angostura!"[121] Outside observers may have expected the Cayllominos to protest the Angostura dam because it would channel water away from their lands. To the contrary however, many people wanted the project because, in Strensrud's words, "they feel entitled to take part in the economic development that the irrigation project is supposed to engender." Their stance did later change when they began to worry that agribusiness companies would be the sole beneficiary of the project.[122] Yet overall, the calls for inclusion provide another

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[118] Stensrud, "Dreams of Growth," 579-581.
[119] Stensrud, "Dreams of Growth," 580-581.
[120] Autoridad Autónoma de Majes, "Primeras 3,000 Has.: Estudio Definitivo," Enero 1985, p. 228, Archivo Técnico de Autodema, Arequipa.
[121] Stensrud, "Dreams of Growth," 569.
[122] Stensrud, "Dreams of Growth," 569-571.

clear example of "vernacular modernism," in the Andes, which, to return to the ideas of Sarah Hines, refers to "cross-class efforts in particular sites to promote and participate in modernist development and creatively adapt it to local needs and realities." As in Bolivia, activists in Arequipa sought to "drag … the state back into the messy task of fulfilling its historic commitment" to rural society—in this case, a commitment that dated back to Velasco.[123]

As communities fought for inclusion, settlement slowly began in the Pampa de Majes. In 1982, authorities chose the first 590 beneficiaries in a public raffle out of 4700 candidates.[124] The arrival of the first farmers put two decades of planning to the test, and as always, international consultants participated actively. In early 1984, experts from the Israeli mission published recommendations for settlement and production. Some advisors studied the layout of the new towns.[125] Others concentrated on agriculture. While they each noted the great potential of the pampas, they also observed problems. Jacob Golan, for example, noted optimistically that the new soils were free of disease and thus had significant potential. In his view, however, authorities had not paid enough attention to plant health (*fitosanidad*). In all reality," he wrote, "hardly any agronomy extension exists in this project and the managers have not given it adequate attention. We have seen no plan to combat problems related to plant health."[126]

Similarly, Yehuda Zohar commented positively on the favorable climatic conditions of the pampas. With abundant water, he believed, production could continue all year round. This advantage, he continued, would help make up for the rocky, salty soil. However, he too noted the

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[123] Hines, "Power and Ethics," 228.
[124] *Este es Majes*, 48.
[125] See Yehonatan Golani, "Plan y Principios de Diseño Urbano para la Primera Etapa de Desarrollo de la Ciudad Majes"; Ilan Lifshin, "Propuesta para el Sistema Vial del Proyecto Majes," in Autoridad Autónoma del Proyecto Majes, Misión Israelí para el Proyecto Majes, Cooperación Técnica Perú-Israel: Informes de la Misión, Agosto 1983-Enero 1984, Parte II, Archivo Técnico de Autodema, Arequipa.
[126] Jacob Golán, "Informe y Recomendaciones sobre los Aspectos de Sanidad Vegetal en el Proyecto Majes," 5, in Misión Israelí, Archivo Técnico de Autodema, Arequipa.

lack of specialized extension agents. To maximize production, he recommended one agent for every three or four farmers and “intensive supervision.” He likewise recommended laboratory services that would provide quick and useful information about the soil for the farmers.[127]

Perhaps the largest challenge appeared in the report of Gabriel Krayn, namely a lack of a business mentality among farmers—a similar problem to that of Old La Joya. As Krayn explained, “farmers are still not willing to invest their liquid profits in the development of the parcels, preferring instead to invest in consumer goods, houses, and education outside Arequipa.” Some, he continued, “have successfully changed their mentality from that of subsistence economics to market economics, yet they are still not ready to take an additional step and tackle the management of an intensive agricultural production unit.”[128]

While this observation mattered greatly, farmers deserve some comprehension because the land they received was not ready for intensive agricultural production. Ruth Yanqui, one of the first residents in what became the town of El Pedregal, recalled hauling rocks for days on end in 1982 order to prepare the land for planting.[129] (The town was called *El Pedregal*—literally, "the rocky spot”—for a reason.) Given the rough land, it is understandable that most farmers first planted alfalfa and omitted the labor-intensive crops that officials had envisioned for industries. At the same time, Krayn’s report articulated a challenge like that of Velasco-era cooperatives. In order to operate as entrepreneurs, farmers needed training, especially at first, and the government had to be diligent in providing it. Furthermore, despite even the best planning, government authorities could not guarantee that farmers would always act in accordance with their plans.

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[127] Yehuda Zohar, “Suelos, Salinidad y Experimentación,” in Misión Israelí, Archivo Técnico de Autodema, Arequipa.
[128] Gabriel Krayn, “Plan Físico para la Planificación Integrada de los Asentamientos Rurales en Majes,” 4, in “Misión IsraelíArchivo Técnico de Autodema, Arequipa.
[129] Ruth Yanqui, in conversation with author, July 26, 2023, El Pedregal, Arequipa.

In comparison to the Velasco era, authorities provided training more consistently in the pampas, perhaps because the project did not cover the entire nation. Fittingly, in mid-1984, Electroconsult reassumed a leading role. With funding from the European Economic Commission ($5 million), the Peruvian government ($8.4 million), and its own coffers ($1.8 million), Electroconsult agreed to carry out a four-year, fifteen-million dollar "pilot project" to assist with settlement and production on the first 3,000 hectares of land. Aside from the work of the foreign consultants, these funds also provided credit for farmers in the pampas to purchase Holstein dairy cows. At the start of the study, approximately 300 plots of 4.7 hectares each had received water, and alfalfa constituted the main crop. Nearly two hundred additional plots had been assigned to farmers. Three towns—La Colina, El Alto, and El Pedregal—designed for 2,500 to 4,000 inhabitants each—were under construction or in planning stages. Autodema had begun to operate a handful of demonstrative plots, and regional authorities had designated other areas as "forest farms" for "environmental protection."[130] Through its agreement, Electroconsult set out to help the pampas meet the high expectations that it had helped create.

It first reported several problems. When the irrigation water reached the pampas, the consultants wrote, it often "contains large quantities of floating trash and plant material (aquatic plants, algae, and wood residue). This material can slow or even halt the flow of water in the pipes." As a result, it concluded, authorities needed to "install a filter system all along the distribution network." As another example, Electroconsult noted that authorities had not provided any construction materials or building assistance for houses; residents were using whatever materials they could find. "The construction of permanent houses for those who dwell in the project area is fundamental to the wellbeing of the population, as well as its economic

[130] "Proyecto Piloto de Irrigación Majes," 1984, 2-5, 25, 36.

integration and social participation," the consultants wrote. Finally, like the Israeli consultants, Electroconsult emphasized the need to increase extension services to take techniques and technology from the experimental stations and demonstrative plots to new the farms.[131]

Regarding machinery, Electroconsult returned to the idea of cooperativism. Although cooperative agriculture became increasingly unpopular as the Velasco-era cooperatives faced internal strife, lack of productivity, and invasions, to Electroconsult, the cooperative acquisition and use of machines, fertilizers, pesticides, seeds, and tools was the most efficient way to ensure that all farmers had access to these resources.[132] Autodema accepted this recommendation.[133] By 1988, at the conclusion of the pilot program, Electroconsult reported positively that several machines were collectively available—twelve tractors, six ploughs, nine fumigators, ten alfalfa cutters, and others. It then recorded hourly use by month.

Also in 1988, Electroconsult reported yearly goals for 12 training events for farmers, 84 demonstrations, and 84 visits to pilot plots for "intensive technical assistance." It likewise reported a goal of 2,300 cases of artificial insemination for dairy cows, as well as 12 to 14 thousand vaccines for diseases such as brucellosis and foot and mouth disease.[134] Although just goals, these numbers appeared to build on the achievements of the previous year. Finally, it dedicated a section of its report to viticulture over the past two years.[135] While vineyards had not received specific attention in project planning of the 1970s, they became one of the most successful ventures in the pampas, and they remain so to this day.

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[131] "Proyecto Piloto de Irrigación Majes," 1984, 22, 29.
[132] "Proyecto Piloto de Irrigación Majes," 1984, 29-33.
[133] "Primeras 3,000 Has.: Estudio Definitivo," 1985, 229.
[134] Autodema, "Descripción, Metas, y Avances, Enero-Mayo 1988: Proyecto Piloto Majes," Arequipa 1988, 1-8, Archivo Técnico de Autodema, Arquipa.
[135] Autodema, "Descripción, Metas, y Avances, Enero-Mayo 1988: Proyecto Piloto Majes," Arequipa 1988, 1-8, Archivo Técnico de Autodema, Arquipa.

Considering Electroconsult's unfavorable evaluation of Arequipa agriculture in the mid-1960s, its 1988 report indicated significant differences. At the same time, opportunities remained limited, even more than officials had planned. In the years following the initial settlement of 590 five-hectare plots, sometimes referred to as Section A in the Pampa de Majes, authorities allocated 900 plots in sections B and C, 450 plots in Section D, and 580 plots in Section E.[136] Though significant, this land fell short of the goal of 23,000 total hectares.

Moreover, the second phase of the project, which was supposed to open over 30,000 more hectares, never began. In the neoliberal shift of the late twentieth and early twenty-first centuries, government authorities redirected the second phase of the project to agribusiness, which turned marches for inclusion into protests against the entire project. In recent years, Peruvian governments have promised to begin the second phase of the project, yet overall it has remained mired in political and social conflict. Meanwhile, the farmers of Majes successfully grow and export many products, such as grapes and paprika. Their technified, profitable farming achieved many of the project's original goals. The problem, of course, is that, as in other facets of Peru's agrarian reform, the beneficiaries are so few.

[136] *Este es Majes*, 48.

Chapter 6

El Valle de Mantaro: Green, Agrarian, and Maoist Revolutions in Junín

In May of 1993, R.A. Fischer, director of the Wheat Program at the International Maize and Wheat Improvement Center (CIMMYT) in Mexico, wrote to the agronomists of the Cereals Program at the National Agrarian University La Molina (UNALM) in Lima, Peru to congratulate them for the twenty-fifth anniversary of their program.[1] "CIMMYT is proud of its "close cooperation with Peru and the other Andean countries," Fischer wrote. He then praised the wheat variety María Escobar, which the Cereals Program had developed, for its role as a progenitor in "the majority of the bread wheats of greatest acceptance in the world." He also spoke highly of the program's barley variety UNA 80 for its "tremendous impact not only on local agriculture" but also on varieties around the world that were "resistant to yellow rust."[2]

Ten years later, in June of 2003, community leaders of Ñahuimpuquio in Peru's central Andean state of Huancavelica, wrote to the Lima-based beer company Maltería Lima, S.A. to express thanks for its role in sponsoring the barley research of the Cereals Program. Speaking for 76 small-scale farmers or *campesinos*, these community leaders reported positively on the barley variety UNA La Molina 96, which the Cereals Program had recently shared with them. This variety, they wrote, "produces high yields, is of good quality for flour, has a good grain weight and precocity, and adapts easily in the areas of Ñahuimpuquio that are higher than 4,000 meters above sea level. Previously," they added, "traditional varieties suffered damage because of the

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[1] For more on CIMMYT, see Gabriela Soto Laveaga, "The Socialist Origins of the Green Revolution: Pandurang Khankhoje and Domestic 'Technical Assistance,'" *History and Technology 36*, no. 3-4 (2020), 337-338.
[2] R.A. Fischer, "Un Mensaje del CIMMYT," *25 Años del Programa de Cereales*, 4, Cereals Program Office Archive, National Agrarian University at La Molina (UNALM).

area's low temperatures," but with UNA La Molina 96, crop yields have increased from 800 kilograms per hectare to 3,600 kilograms per hectare.[3]

Letters such as these call into question several assumptions about Peru and the Green Revolution. First, scholars and observers sometimes assume that when technologies such as high-yielding grain varieties spread across Latin America, the Peruvian Andes missed the boat. As scholar Raúl Asensio writes, "in contrast to other countries, in Peru the green revolution was a late trend and one of relatively little importance." He continues, "there was always a sector that considered the green revolution the true engine of rural transformation, but other paradigms, such as agrarian reform, had greater importance."[4] Although this statement is largely true, it does not do justice to Peruvian scientists' active role in decades of transnational farming science, nor does it recognize the interrelated nature of the agrarian reform and green revolution. Moreover, it does not fully address *why* new agricultural technology ultimately had a lower impact in Peru.

One answer is that the shortcomings of agrarian reform limited the extent of the Green Revolution. These were not separate paradigms; they depended on each other. Another answer is that Peruvian landscapes, including the natural environment and agricultural practices, differed significantly from those of other countries. Regarding wheat, the most iconic crop of the Green Revolution (at least in the western hemisphere), Peru lacked a class of commercial farmers who could produce it on a large scale. Wheat was an Andean subsistence crop, especially after the nation's agrarian reform. A third answer is that as the nation's internal armed conflict swept through rural Peru, it interrupted research on agricultural science in the Andes.

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[3] Letter from Pedro Salazar Velásquez, Bertha Ramos Pimentel, Rubén Canposano Ramos, José Acuña M., and Julio Quintanilla Salazar to Maltería Lima S.A., June 2003. UNALM Cereals Program Office Archive.
[4] Raúl Asensio, *Breve historia del desarrollo rural en el Perú, 1900-2020* (Lima: IEP, 2023), 232.

Nevertheless, the letters from CIMMYT and Ñahuimpuquio point to a narrative that unfolded despite the shortcomings of agrarian reform and the violence of the armed conflict. In this history, Peru, from the 1950s onward, played a key role in what historian Leida Fernández Prieto calls the Cold War era's "global archipelago of knowledge."[5] When the military government took over in 1968, it did not withdraw from this network. On the contrary, it engaged even more in hopes of bolstering its land reform program with farming technology. During the armed conflict of the late 1980s, crop and livestock science remained a central part of Lima-based research in rural Peru. Why else would armed groups, whose ultimate goal was to overthrow the government, specifically target agronomists and their research stations? Amid agrarian and Maoist revolutions, Peru experienced a green revolution too.

Here too, however, a second set of assumptions may obscure reality. In the celebrated grand narrative of "the" Green Revolution, U.S. policy makers and agronomists argued that if foreign governments adopted the U.S. model of intensive agriculture, "golden harvest[s]" would abound."[6] To back up these arguments, they displayed graphs that depicted spikes in grain production, similar to those of Ñahuimpuquio. Yet the process of boosting farm production was never that straightforward. First, many scholars and activists questioned triumphalist narratives by underscoring not-so-golden outcomes of applied farm science, such as the expansion of agribusiness, the displacement of small farmers, and the dangerous use of agrochemicals.[7]

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[5] Leida Fernández Prieto, "Islands of Knowledge: Science and Agriculture in the History of Latin America and the Caribbean," *Isis* 104, no. 4 (2013): 797.
[6] Norman Borlaug, et. al. "A Green Revolution Yields a Golden Harvest," *Columbia Journal of World Business*, September-October (1969), 9.
[7] See Clifton R. Wharton Jr., "The Green Revolution: Cornucopia or Pandora's Box," *Foreign Affairs*, 47 (April, 1969) 464-476; Angus Wright, *The Death of Ramón González: The Modern Agricultural Dilemma* (Austin: University of Texas, 1990); John H. Perkins, *Geopolitics and the Green Revolution: Wheat, Genes, and the Cold War* (New York: Oxford University, 1997); Vandana Shiva, *The Violence of the Green Revolution: Third World Agriculture, Ecology, and Politics* (Louisville: University of Kentucky, 2016); Douglas Hurt, *The Green Revolution in the Global South: Science, Politics, and Unintended Consequences* (Tuscaloosa: University of Alabama, 2022).

Second, the classic narrative was too U.S.-centric. Certainly, U.S. policy makers, sponsors, and scientists played a role in the agricultural change of many nations, yet, as the letter of 1993 illustrates, high-yielding seeds did not just flow from north to south; some technology flowed in south-north and south-south patterns. Moreover, hybrid seeds could not simply be exported from one country to another. As the letters further suggest, environmental obstacles, such as high altitudes, cold temperatures, and fungi, required the adaptation of technology to specific ecological conditions. Finally, the U.S.-centric history often assumes that U.S. scientists ran the show, but local agronomists, technicians, and farmers made grain innovation possible.

For all these reasons, Peruvian history supports the notion of multiple, local green revolutions, instead of a single U.S.-centric phenomenon.[8] In fact, as with alpaca husbandry (see Chapter 3), intensive experimentation with transnational staples such as wheat and corn gave scientists a new appreciation for uniquely Andean grains, especially quinoa. Of course, foreign scientific agendas still mattered. To borrow the words of historian Richard White, the green revolution in Peru involved "the intersection of numerous scales"—local, national, and transnational.[9] The work of the UNALM Cereals Program in the Mantaro Valley and in other sites provides a case study of how these scales overlapped, intersected, and, at times, clashed in the Andean laboratories of grain experimentation during the second half of the twentieth century.

U.S. institutions, such as the Rockefeller Foundation (RF) and, to a lesser extent, North Carolina State University, deserve some credit for stimulating grain research in Peru. As

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[8] Timothy Lorek, *Making the Green Revolution: Agriculture and Conflict in Colombia* (Chapel Hill: University of North Carolina, 2022); see also Prakash Kumar et. al, "Roundtable: New Narratives of the Green Revolution," *Agricultural History* 81, no. 3 (2017): 397-422; Soto Laveaga, "Socialist Origins."

[9] White argues against the "nationalization of nature," or the imposition of national borders upon environmental histories that are clearly transnational. However, in the historiography of the Green Revolution the larger challenge has been the Americanization of nature. In both cases, White's emphasis on multiple scales provides a remedy. White, "The Nationalization of Nature," *The Journal of American History* 86, no. 3 (Dec. 1999): 980 (976-986).

Peruvian analysts candidly noted in 1985, during the 1940s "special emphasis was given to the service of [agricultural] extension, but this effort was not very productive because there was no technology to extend." Instead, the nation simply increased food production by increasing the land under cultivation. In the 1950s, however, "the possibility of using improved technology as a means to increase productivity began to be considered."[10] Although this passive statement does not explain why the change occurred, one obvious reason is the inclusion of Peru in the RF's agenda for international agricultural development.

The foundation began operations in Mexico in 1943. As historian Deborah Fitzgerald explains, a three-man Advisory Committee from the RF and a six-man team of scientists established the Mexican Agricultural Program (MAP) to work on corn and wheat breeding, soil improvement, plant protection, extension, and education. By the end of the decade, experimentation with hybrid wheat under the direction of Norman Borlaug had yielded nine new rust-resistant varieties. This success underpinned the Advisory Committee's decision to expand into other countries, beginning with Colombia, Peru's neighbor to the north.[11] Soon thereafter, the Peruvian Andes moved onto the foundation's radar because of their virulent strains of rust, which officers saw as a threat to wheat production throughout the hemisphere (see Chapter 1).

Unlike Mexico, Peru did not receive a team of U.S. scientists. As Fitzgerald notes, one challenge in the MAP was that "[local] agriculturalists were ill-disposed towards foreigners who set up shop in their country, an act that seemed to suggest that Mexican scientists did not know what they were doing."[12] Logistically, too, the foundation could not have found enough U.S.

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[10] "La Respuesta del INIPA a la Demanda de Investigación y Extensión Agropecuaria en el Perú," Informe al Gobierno del Perú del International Service for Nacional Agricultural Research (ISNAR), 1985, CIMMYT Library, Texcoco, Mexico.
[11] Deborah Fitzgerald, "Exporting American Agriculture: The Rockefeller Foundation in Mexico, 1943-53," *Social Studies of Science* 16, no. 3 (Aug. 1986), 463, 465-468, 477.
[12] Fitzgerald, "Exporting American Agriculture," 465.

agronomists to send separate teams to every country on its agenda. Given its importance to U.S. policy makers, Peru in 1954 did receive a small team from the Department Soil Sciences at NC-State University.[13] The RF, however, adopted a different model in which it sought to identify local scientists and institutions that could manage experimental sites under its supervision. Thus, in Peru, as in other countries, local scientists who both knew their trade and worked well with U.S. sponsors emerged as national leaders of agricultural science.

One such individual was the botanist Alexander Grobman Tversqui, son of Romanian parents who immigrated to Peru in 1930 when their son was three.[14] As a young adult, Grobman received a bachelor's degree in plant physiology from Iowa State University.[15] In 1952, the foundation took note of Grobman's efforts to "develop … synthetic maize varieties for Peruvian conditions," and it described him as "the most active investigator in this important field in Peru." In turn, it sponsored Grobman's participation in an international symposium, followed by a two-month stint in the Mexican Agricultural Program (MAP).[16] During this time, one Rockefeller officer wrote that "meeting [Grobman] was an experience to remember. He is interesting and seems to be very intelligent."[17] His supervisors at the MAP added that "Mr. Grobman is exceptionally well informed on basic corn breeding procedures. He demonstrates intense interest in the program in Mexico…. Certainly, he is a good investment for the RF."[18]

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[13] Ralph J. McCracken, "The History of Soil Science at North Carolina State University," 1989, p. 47-49. Library of the Department of Crop and Soil Sciences at NC-State University; this report credits U.S. AID for funding, but inasmuch as U.S. AID was not created until 1961, funding must have come from another institution initially, perhaps the Inter-American Development Bank.
[14] See "Dr. Alexander Grobman Tversqui," PeruBiotec: Asociación Peruana para el Desarrollo de la Biotecnología, https://www.perubiotec.org/Contenido1-Quien/Quien-Alex.php (accessed November 14, 2024).
[15] "A Proposed Institute of Advanced and Post Graduate Studies, Escuela Nacional de Agricultura, 'La Molina,'" September 11, 1953," Folder 55, Box 6, Record Group 1.2 Projects, 331 Peru, RAC.
[16] See "Travel Grant for Alexander Grobman, National School of Agriculture of Peru," January 7, 1952; Letter, Harry M. Miller, Jr. to Alexander Grobman, October 16, 1951; Letter from Harry M. Miller, Jr. to Alberto Leon, January 10, 1952. Folder 54, Box 6, Record Group 1.2, Peru 331D, RAC.
[17] Letter, J.L. Hydrick to Harry M. Miller, Jr., April 3, 1952, Folder 54, Box 6, Record Group 1.3, Peru 331D, RAC.
[18] Evaluation from E.J. Wellhausen to Harry M. Miller, Jr., "June 30, 1952, Folder 54, Box 6, Record Group 1.2, 331D Peru, RAC.

Grobman believed Peru should play a leading role in corn research in Latin America, more than what the RF originally intended. In 1952, when the foundation sent an agronomist to the Andes to collect maize samples for experimentation in the MAP and in the Colombian Agricultural Program (CAP), Grobman questioned the logic of this approach. "It was and still is my thesis," he asserted, "that we can provide within our territory the best growing conditions for the native varieties [of corn], which in number and variability probably exceed those of Mexico, and certainly those of Colombia."[19] To Grobman, Peru was more than a collection zone; it was a logical center of experimentation, hybridization, and production.

Grobman's claim about corn varieties in Peru may have raised a few eyebrows at the Rockefeller Foundation, but it was not far-fetched. While Mexico's array of native corn species was perhaps better known, Peru had a significant variety of its own. In time, both regions became centers of corn hybridization. As two plant scientists recently noted (in an article that includes Grobman's work in the endnotes), the Americas are now home to 260 races of maize, including 98 in Mesoamerica and 146 in the greater Andes. In Peru, they explain, "the diversification of [Andean maize] took place in the early stages of the Inca's culture, when the mass selection (intrapopulation selection of individuals according to their phenotype) led to the production of a large variety of maize." Since then, they add, Peru's "variety of ecological conditions, soils, and climates … has favored the development of different races of maize."[20]

Grobman's vision, in other words, built on Peru's precolonial agricultural history. In fact, some university and government officials described his research as a kind of reclaiming of Inca science. In a 1954 report to the RF, they extolled ancient agricultural practices, such as crop

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[19] Letter, A. Grobman to J.G. Harrar, August 7, 1952, Folder 54, Box 6, Record Group 1.2, 331D Peru, RAC.
[20] Rebecca Salvador-Reyes and Maria Teresa Pedrosa Silva Clerici, "Peruvian Andean Maize: General Characteristics, Nutritional Properties, Bioactive Compounds, and Culinary Uses," *Food Research International* 130 (April 2020), https://www.sciencedirect.com/science/article/pii/S0963996919308208 (accessed Dec. 16, 2024).

rotations, land organization, "fertilization with guano from islands of the Peruvian littoral," and even "a rustic way of utilizing hybrid vigor" through controlled inter-pollination. However, they continued, this latter practice "degenerated after years of rude oppression…. During four hundred years of Spanish influence, the native population, which always was the one attached to agriculture, did not make any further advances toward a higher total agricultural output." They further explained, "with large masses of indians [sic] being driven to work in the mines or used as expendable labor for feudal lords, the incentive to work his own patch of land, so deeply rooted in the Peruvian indian, was shaken, although not entirely lost."[21]

In many ways, this interpretation of history relegated generations of Andean farmers to the position of mere victims, and it excluded them from the supposed rebirth of Andean farm science in the 1950s. It therefore exemplified what historian Rebecca Earle calls "indianesque nationalism," namely the valorization of pre-Colombian Indigenous peoples for nationalist projects that, ultimately, contribute to the continued marginalization of native communities and their descendants.[22] At the same time, Peru clearly had potential for maize hybridization. Whether or not this renewed science would benefit Andean communities remained to be seen.

Thanks, in part, to Grobman's potential, the RF began funding the Cooperative Program for Maize Research at the National Agrarian University (UNALM) in 1953. By 1955, Grobman was leading a team of five agronomists, all of whom had received training in the MAP.[23] In 1958, the Peruvian Ministry of Agriculture integrated its own corn research with that of the university to avoid duplicating efforts. The following year, UNALM administrators prepared a report for

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[21] "The Improvement of Corn in Peru: A Report and a General Plan Submitted to the Agricultural Division of the Rockefeller Foundation," Cooperative Program for Corn Investigations, Ministerio de Agricultura, Escuela Nacional de Agricultura, February 1954. Folder 59, Box 6, Record Group 1.2 Projects, 331 Peru, RAC.
[22] See Rebecca Earle, *The Return of the Native: Indian and Myth-Making in Spanish America, 1810-1930* (Durham: Duke University, 2007).
[23] W.W. Diary, March 2, 1955, Folder 55, Box 6, Record Group 1.2, 331D Peru, RAC.

their sponsors. “The success of this research program in its practical impact on agriculture is now evident,” they wrote, clearly angling for more funding. “New hybrids and improved maize varieties have been released for both the high and low altitude regions in Peru, and seed is being propagated through a Certified Seed Growers Association, organized by the Maize Program, in quantities heretofore not obtained in this country…. We believe,” they added, “that hybrid maize is one of the most spectacular results of agricultural research in Peru.”[24]

Looking ahead, the administrators explained that “nearly 12,000 Hectares will be planted to hybrids in this coming agricultural season [of 1960], and the tremendous response of farmers for improved seed is only checked by the time lag existent in in increasing … stocks.” Over the next four years, they added, “in order to cover the vast array of complexities of our ecological areas … it is necessary to expand our present research projects to … new geographical areas.” On the coast, they would operate stations in La Molina and in Lambayeque in the north. In the Amazon, they would work in the state of Tingo María. The Andes figured most prominently in their plans, with potential stations in Tingua, Ancash; Huancayo, Junín; Urubamba, Cuzco, and Huanta, Ayacucho. Aside from experimentation with hybrids, the university also planned to study soil fertility, cultural practices, pathology, and grain conservation in each area.[25] Though overambitious, this report illustrates Peruvian scientists’ active participation in the transnational search for high-yielding grain that could thrive in the Andes and Amazon. The RF was pleased. In 1960, it began funding Grobman’s graduate studies in plant genetics at Harvard University.[26] Grobman later became a renowned international expert and entrepreneur in biotechnology.[27]

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[24] “Objectives of the Reorganization of the National School of Agriculture,” Report sent from Javier Becerra to Lewis M. Roberts, October 24, 1959, Folder 58, Box 6, Record Group 1.2, 331D Peru, RAC.
[25] “Objectives of the Reorganization of the National School of Agriculture,” 1959.
[26] Letter, J. Becerra to John J. McKelvey, Jr., Aug. 31, 1959, Folder 58, Box 6, Record Group 1.2, 331 Peru, RAC.
[27] “Dr. Alexander Grobman Tversqui,” PeruBiotec; Alexander Grobman, in conversation with author, July 15, 2023.

The Peruvian government was also pleased. In October of 1959, the chair of the Budget Committee of Peru's unicameral Congress, in tandem with the Ministry of Education, increased funding to UNALM. As justification, he noted "the important role that the National School of Agriculture [UNALM] plays in agricultural research and in the preparation of professionals who are duly trained to raise the yield per unit area of agricultural production."[28] Although corn was just one Peruvian crop of many, the work of Grobman and his team likely contributed to the government's decision to invest in continued research at UNALM.

Of all grains, corn received considerable attention because both people and livestock depended on it. In the mid-1950s, as one UNALM report noted, corn accounted for 13.6 percent of Peru's total cropland, the largest area of any single crop. In 1956, the nation produced some 265,000 metric tons of corn, which, aside from direct human consumption, made possible the production of 125 million eggs, 380 million liters of milk, 2.4 million kilograms of butter, 7,340 metric tons of poultry, 26,500 metric tons of pork, 7.6 million kilograms of lard, and a smaller portion of beef. Despite such production, population growth led to a growing deficit in supply relative to demand, especially in the central and southern Andes. In these regions, the report added, "grains and tubers, mainly corn and potatoes, account for some 65% of all calories." Thus, it concluded, "the only integral, rational, and economically viable solution to attack the food problem in the 1958-1962 period is to increase yield per unit area" by means of genetic improvement, fertilizer, efficient irrigation, and improved methods of land use.[29]

Over the next few decades, genetic improvement and other methods did indeed help increase corn yield per unit area. Data from the twenty-first century points to healthy corn

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[28] Letter, Eduardo Watson Cisneros (Cámara de Diputados) to Javier Becerra (Escuela Nacional de Agricultura), 21 de Octubre de 1959. Folder 58, Box 6, Record Group 1.2, 331D Peru, RAC.
[29] "Programa Cooperativo de Investigaciones en Maíz: Escuela Nacional de Agricultura, Ministerio de Agricultura (P.C.E.A.), Fundación Rockefeller," Folder 57, Box 6, Record Group 1.2, 331 Peru, RAC.

production in coastal states such as Lima, Ica, Ancash, and La Libertad, as well as in the Amazonian states of San Martín and Loreto.[30] In the period of 2014-2023, Peru produced an annual average of 1.58 million metric tons of corn—approximately six times more than it produced in the 1950s.[31] Hybridization, in other words, did help feed the nation. For the most part, however, this technology did not reach farmers in the central and southern Andes. The old Inca science, as the government had called it, mainly served larger farmers on the coast.

The story of wheat and barley is different. Unlike corn, these grains were not native to the Andes, yet they became integral to Peruvian agriculture in the early colonial era.[32] As geographer Karl Zimmerer has written, hacienda owners often planted wheat "as the standard successor of potatoes in the prevailing sequence of crop rotation," and Andean communities gradually "adopted wheat and barley as key ingredients of subsistence."[33] Like sheep, wheat thus became "naturalized" in local agriculture.[34] In the early-twentieth century, the problem of black stem rust in Peru's lower altitudes, led many hacienda owners to reduce wheat cultivation and promote the importation of wheat from abroad instead. By contrast, some barley cultivation remained popular thanks to demand from Peruvian beer companies.

Thus, by the mid-twentieth century, wheat in Peru was largely an Andean subsistence crop, usually grown with low technology on rugged land that farmers did not use for anything

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[30] See "Country Summary: Peru," USDA Foreign Agricultural Service, International Production Assessment Division, https://ipad.fas.usda.gov/countrysummary/Default.aspx?id=PE&crop=Corn (accessed January 6, 2025).
[31] "Production—Peru," USDA Foreign Agricultural Service, https://fas.usda.gov/data/production/country/pe (accessed January 6, 2025).
[32] In 1494, writing from the Caribbean, Christopher Columbus emphasized the need to provide European settlers "with the same food that they are accustomed to in Spain," including "wheat, barley, and grapes." The Spanish likely introduced wheat to Peru in the late 1530s. See: *Select Letters of Christopher Columbus: With Other Original Documents Relating to His Four Voyages to the New World*, 2nd edition (London: Hakluyt Society, 1870), 80-81; Rafael Villanueva Novoa, Gustavo Sandén Ledesma, and Albino Narrea Retamozo, "Trigo: Producción en el Perú y en el Mundo Durante los Últimos Años," Informe No. 1, Junio 1976, p. 6. CIMMYT Library, Texcoco.
[33] Karl S. Zimmerer, *Changing Fortunes: Biodiversity and Peasant Livelihood in the Peruvian Andes* (Berkeley: University of California, 1996), 59-61.
[34] See Kimmerer, *Braiding Sweetgrass*, 214-215.

else.[35] With the MAP as its reference point, the RF did not fully appreciate this difference. In Mexico, Norman Borlaug and his colleagues were disseminating high-yielding seeds across the Yaqui Valley of the state of Sonora and creating a wheat industry that in some ways matched the vast grains fields of the U.S. Midwest and the Prairie provinces of Canada. In Peru, however, ecology and agricultural tradition made this model less tenable. From the outset, a green revolution here would have to unfold differently.

The RF, however, moved ahead with its familiar model. From the early 1950s onward, it funded research on wheat, barley, and oats at UNALM in Lima. It also funded the university's research on the Hacienda Edelmira in Cajamarca in the north, on the Camacani Experimental Station in Puno in the south, and on the Mantaro Experimental Station in the central Andean state of Junín. In these stations, agronomists imported wheat varieties from nations such as Argentina, Brazil, Canada, Egypt, Ethiopia, Mexico, Russia, and the United States, and they tested their resistance to yellow rust (Puccinia glumarum) in Andean environments.[36] In 1958, as with corn, the Ministry of Agriculture integrated its efforts with those of the university.[37] By 1959, the university had added smaller stations in Ancash, Ayacucho, Apurimac, and Cusco.[38]

In Lima, wheat experimentation initially took place under the direction of senior researcher Rosendo Postigo, who in the early 1950s had completed training in the University of Minnesota Department of Plant Pathology.[39] Postigo's relationship with the RF, however, was rocky. "Postigo's request for equipment should be scrutinized carefully," officers agreed in 1954,

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[35] Villanueva Novoa, Sandén Ledesma, and Narrea Retamozo, "Trigo," 5, 8-9.
[36] Letter, Rosendo Postigo to J. George Harrar, June 28, 1956; see also the attached tables: "Información sobre los experimentos de trigo y avena, colecciones internacionales, en la sierra del Perú" and "Variedades de trigo importantes por su reacción a Puccinia glumarum," Folder 56, Box 6, Record Group 1.2 Projects, 331 Peru, RAC.
[37] "Objectives of the Reorganization of the National School of Agriculture," 1959.
[38] Letter, Benjamín Quijandría to John J. McKelvey, Jr., January 29, 1959, Folder 58, Box 6, Record Group 1.2, Peru 331D, RAC.
[39] See: Grant in Aid to the National College of Agriculture, La Molina, Peru, December 19, 1952; Letter, Harry A. Miller, Jr. to Rosendo Postigo, December 5, 1952, Folder 34, Box 4, Record Group 1.1, 331 Peru, RAC.

as if Postigo was inflating his budget.[40] Later, they grew frustrated when Postigo did not follow their protocol for reporting his expenditures (see Chapter 1).

In time, another Peruvian scientist took the lead: the agronomist Marino Romero Loli. In the early 1950s, Romero moved to Lima from his native state of Ancash to study plant science at UNALM. In his thesis of 1955, he examined the "advantages" and "adaptability" of several Canadian potato varieties to the Andes. His findings revealed that the fungi and climate presented formidable obstacles. "The foreign varieties … need more hours of daylight," he concluded, and they were "strongly attacked by plagues and diseases which caused serious problems."[41] While this study dealt with potatoes, Romero soon turned his attention to wheat. In the late 1950s, he became the supervisor at the university's experimental station in the Mantaro Valley. His questions about the advantages and adaptability of new varieties remained the same.

In early 1959, scientists of the NC-State Agricultural Research Mission, who were also participating in field research in the Mantaro Valley, recommended Romero for a scholarship in the MAP.[42] In Mexico, Norman Borlaug wrote that "the strong recommendation which you have made for … Marino Romero Loli makes us enthusiastic over the possibility of having him spend a year or nine months with our wheat program."[43] The following June, Romero departed for Mexico. He concluded the year-long training with a month in the CAP.[44] This second visit "is important," wrote the NC-State scientists, "because the Colombian [genetic] material proved to be well adapted at Huancayo [in the Mantaro Valley] and a continued interchange of lines of

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[40] Letter, E.C. Stakman to J. George Harrar, June 2, 1954, Folder 35, Box 4, Record Group 1.1, 331 Peru, RAC.
[41] Marino Romero Loli, "Estudio comparativo de variedades de papa precedentes de Canada y del efecto de 3 pesos de semilla en la variedad chata blanca de Huasahuasi," (Tesis, Escuela Nacional de Agricultura, 1955), 1-6; UNALM Cereals Program Archive.
[42] See Letter, Joseph F. Shuler to Norman Borlaug, February 2, 1960; Letter, Norman Borlaug to Joseph Shuler, February 13, 1960. Folder 3216, Box 213, Record Group 10.1, 331E, RAC.
[43] Letter, N. E. Borlaug to Josef F. Schuler, August 8, 1959. Folder 3216, Box 213, Record Group 10.1, 331E, RAC.
[44] Scholarship for Marino Romero Loli, January 12, 1960; Letter, John W. Gibler to Kenneth Wernimont, July 10, 1961. Folder 3216, Box 213, Record Group 10.1, 331E, RAC.

wheat and barley is very important to us. Mr. Romero is quite familiar with the Colombian wheat material," they added, "since he has worked for two years with the Colombian nursery."[45]

Romero made good impressions in both countries. In Sonora, Borlaug placed him in a charge of an experimental station.[46] Later, one Rockefeller officer described him as "one of the best scholars that we have ever had from foreign countries."[47] Even more tellingly, in his final evaluation, Borlaug, who did not give praise lightly, wrote, "Romero Loli was one of the best [RF] Scholars we have had from South America. I recommend him for a fellowship to study for an MS at an appropriate time." The only improvement needed, which appeared in the evaluations of many foreign grantees, involved language. "He will need to work hard on English," Borlaug added.[48] English, it seemed, was the lingua franca of transnational agriculture, even in Mexico.

Heeding's Borlaug's recommendations, Romero in 1964 began a master's program in agronomy (and in the English language) at the University of Nebraska. Working with plant science professor John Schmidt, he experimented with new hybrids and measured factors such as the protein content per wheat kernel, number of kernels per head, number of heads per plant, number of plants per acre, sedimentation values, heritability, and "environmental effect," which referred to the difference between plants grown in greenhouses and those grown in the field.[49] This experience further prepared him to play a leading role in wheat research back in Peru.

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[45] Letter, Joseph F. Shuler to Norman Borlaug, February 2, 1960.
[46] See Letter, Norman E. Borlaug to Marino Romero Loli, October 1999, *in Ingeniero Marino Romero Loli: Profesor Emérito de la Universidad Nacional Agraria La Molina, Resolución No. 466-99-UNALM* [Booklet published upon the retirement of Dr. Romero Loli]. UNALM Cereals Program Archive, Lima.
[47] Note, R.W. Richardson, Jr. to Kenneth Wernimont, April 3, 1961, Folder 3216, Box 213, Record Group 10.1, 331E, RAC.
[48] "Report on Fellow or Scholar in the Agricultural Sciences: Romero, Loli, Marino," November 1961, Folder 3216, Box 213, Record Group 10.1, 331E, RAC.
[49] Marino Romero Loli, "The Inheritance of Yield, Its Components and Sedimentation Values in a Winter Wheat Cross," MA Thesis (University of Nebraska, 1965), 59-62; UNALM Cereals Program Archive.

Meanwhile, Peruvian society was changing. Demographic growth was prompting increasing conflicts between communities and hacienda owners in rural areas, as well as mass migration to coastal cities, especially Lima. One consequence of urbanization was a growing demand for bread in the cities. In 1959, just before Romero left for Mexico, high-priced bread became a point of contention in the daily scrum of Peruvian politics. In some cities, bakeries began selling bread by the unit, not the weight, which allowed them to sell smaller units without lowering prices.[50] In other cases, prices simply rose. In response, some consumers blamed the government for not controlling inflation.[51] As one critic pointed out, the price of wheat on the world market was not rising; why, then, did bread cost so much in Lima?[52]

Others looked to the Ministry of Agriculture to bring prices down. Minister Enrique Labarthe, however, argued against state intervention, maintaining that "the increase in the price of bread, when considered from a strictly economic point of view is completely justified." He also criticized his fellow ministers who, "in their desire to defend the purses of the poor," wanted artificially low prices.[53] Finally, under pressure to act, Labarthe came up with one new idea: *pan popular* (bread for the people). Pursuant to a supreme resolution (which, in Peru, fall within the purview of ministry heads), all bakers would now have to sell basic wheat rolls by the kilogram, not the unit. They would also have to produce pan popular in greater quantities and sell it from 6am to 10am each morning.[54] These measures fell flat. After all, prices still depended on the supply of flour, which remained insufficient, and the resolution left all other types of bread untouched. Moreover, many bakery owners and organizations, such as the Association of

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[50] See "Noticias de todo el Perú," *La Prensa*, 11 de marzo de 1959, Hemeroteca, Biblioteca Nacional, Lima.
[51] See Ricardo José Maldonado, "El Pan, el Gobierno y la Inflación," *La Prensa*, 12 de marzo de 1959; "Con el Dólar a 27.50 No Hay Harina Barata," *La Prensa*, 17 de marzo de 1959. Hemeroteca, Biblioteca Nacional, Lima.
[52] Ricardo José Maldonado, "El Encarecimiento del Pan," *La Prensa*, 8 de marzo de 1959; "Pan, Dolor y Gobierno," *La Prensa*, 21 de marzo de 1959. Hemeroteca, Biblioteca Nacional, Lima.
[53] "Pan y Renuncia," *La Prensa*, 22 de marzo de 1959. Hemeroteca, Biblioteca Nacional.
[54] "Pan y Renuncia."

Breadmaking Industrialists (*Asociación de Industriales en Panadería*), refused to comply, and they threatened to strike if the government tried to enforce it.[55]

As this response indicates, urbanization endowed Lima's breadmaking industry, at least momentarily, with a new political clout. When the topic of government subsidies for flour came up for debate, the industry put the kibosh on the idea, arguing that subsidies would increase inflation.[56] Given the intransigence of the industry, Minister Labarthe and his pan popular appeared increasingly *un*popular. His fellow ministers soon forced him to resign.[57] His replacement, Emilio Foley, former General Manager of the Agrarian Bank, tried to work more productively with the bakery industry, yet he too struggled.[58] In May, the Association of Breadmaking Industrialists and the Society for the Union of Breadmaking Industrialists (*Sociedad Unión de Industriales en Panadería*) agreed to raise prices behind Foley's back. "An investigation will be carried out immediately," declared Foley the following day in a tone that tried to assert his authority.[59] Later, however, he admitted that the nation still lacked a solution to the problem of expensive bread because the price of flour remained high.[60]

In the medium and long terms, the problem had two main solutions: 1) produce more wheat; or 2) import more wheat. While many people preferred the former, time and again the government resorted to the latter. From 1960 to 1974, the quantity of wheat imported annually

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[55] "Derrogar Venta Libre del Pan Piden los Obreros Panaderos," *La Prensa*, 8 de marzo de 1959; "Panaderos Solicitarán Baje Costo de Harina," *La Prensa*, 16 de marzo de 1959; "Con la Harina Cara No Habrá Pan Barato," *La Prensa*, 17 de marzo de 1969. Hemeroteca, Biblioteca Nacional, Lima.
[56] "Subsidio a Harina Aumentaría la Inflación y Encarecería Aún Más el Costo de Vida," *La Prensa*, 21 de marzo de 1959, Hemeroteca, Biblioteca Nacional.
[57] "Con el Viejo Sistema Se Vende el Pan Hoy," *La Prensa*, 15 de marzo de 1959. Hemeroteca, Biblioteca Nacional.
[58] "Panificadores Proponen Vender Pan a Peso; Gobierno les Ofrece 4 Fórmulas de Solución," *La Prensa*, 1 de abril de 1959. Hemeroteca, Biblioteca Nacional.
[59] "Las Panaderías Han Decidido que Desde Hoy se Suba el Pan," *La Prensa*, 6 de mayo de 1959; "Un Pan Llamado 'Extra' a 20 Ctvs. La Pieza Hay en Venta Desde Ayer en las Panaderías, *La Prensa*, 7 de mayo de 1959. Hemeroteca, Biblioteca Nacional.
[60] "Problema del Precio del Pan Aún No Tiene Solución Oficial," *La Prensa*, 9 de mayo de 1959; "Pan Caro, ¿Por qué?" *La Prensa*, 2 de julio de 1959. Hemeroteca, Biblioteca Nacional.

from countries such as the United States, Canada, Argentina, and Australia more than doubled.[61] Wheat became Peru's most significant imported food product and, in turn, a source of frustrating dependence on external markets.[62] In response, many parties called for increasing the nation's area of wheat cultivation, but as mass migration to the cities continued, the opposite occurred.

The trends toward less domestic wheat production and more wheat importations raise serious questions about the usefulness of UNALM's fifteen-year wheat research program. Did the Rockefeller-funded experimental sites fail? If not, what happened? One answer is that developing high-yielding hybrid seeds is a lengthy process that usually involves three steps—1) initial crosses; 2) selection of promising new hybrids; and 3) evaluation of these varieties in different conditions.[63] Completing all three steps takes years. Greenhouses, of course, can speed up the process by mitigating seasonal ups and downs, but in Peru most research occurred in the field. Furthermore, a new grain variety is not panacea. In most cases, high-yielding seeds will produce abundantly for about three years until blights evolve and eliminate the seeds' genetic advantages. The process of grain improvement thus becomes a never-ending race against nature. In Peru, it was also a losing race against population growth and urbanization.

A second, more important answer involves the application of new technology. Over time, several promising varieties emerged from UNALM's wheat research. From 1952 to 1967, agronomists developed the varieties Ollanta and Cahuide, which flourished in the Andean highlands. From 1956 to 1964, they produced the variety Helvia Fron for the coast. From 1951 to 1958, they produced Maribal-Mariache, which had an especially strong resistance to rusts. From

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[61] See *Trigo Participación*, Boletín del Ministerio de Agricultura y Alimentación, 1978, p. 3. CIMMYT Library, Texcoco, Mexico.
[62] Mario Valderrama, "El Trigo en Perú," CIMMYT, c.1976, pp. 2, 6; see also Villanueva Novoa, Sandén Ledesma, and Narrea Retamozo, "Trigo," 5; O.G. Bratvold, "Wheat in the Andean Pact Countries," Canadian International Development Agency, Lima, Peru, 1979, pp. 1-5, 7, 14, 20. CIMMYT Library, Texcoco, Mexico.
[63] Villanueva Novoa, Sandén Ledesma, and Narrea Retamozo, "Trigo," 11.

1944 (even before the RF entered the picture) to 1958, they produced La Molina 60, which, they noted, could be used to make bread that was "just as good or better than imported wheat."[64]

Why, then, did wheat imports continue? What the Rockefeller-funded wheat program lacked was a complementary plan to mass produce the new seeds and share them with farmers. In their 1959 report on corn, UNALM administrators highlighted the "enthusiastic response of [coastal] farmers for improved seed." Wheat was more complicated. Since most of the nation's wheat production occurred in small farms or on community lands in the Andes, the question of how to produce wheat for national markets presented a dilemma that, at its core, implied turning marginalized subsistence farmers into an organized class of businesspeople. Rockefeller officers never seriously addressed this question. They may have assumed that hacienda owners were the logical recipients of the new technology, but they did not even plan adequately for them.

The Rockefeller Foundation liked to think big—big investments in big institutions that favored big agriculture. It did so, of course, in the name of producing food and fighting hunger, but in the process, it overlooked countless small farmers. In her study of Mexico, Fitzgerald points out that the MAP had roots in the extension model of U.S. land-grant universities, which focused on big farmers. "Despite the rhetoric of land-grant administrators," she writes, "who suggested that the system and the scientific knowledge it produced would democratize agriculture, the land-grant system was dominated by commercially oriented scientists and farmers." She continues, "These participants were less concerned with educating ordinary farmers to become more efficient than with fashioning sophisticated scientific and technological agenda that favoured farmers who could afford to experiment and expand." In Mexico, she adds, "the agricultural professionals the RF chose to design and implement the programme were fully

[64] Villanueva Novoa, Sandén Ledesma, and Narrea Retamozo, "Trigo," 11.

entrenched in both the land-grant system and the philosophy of expansion it represented." It is no surprise, therefore, that the MAP mainly helped the few large farmers in Mexico expand.[65]

In much of Peruvian agriculture, the marriage of research and industry was similar. In the Graduate School of UNALM, established in the mid-1950s thanks to Rockefeller funding, core areas of study included coastal cash crops for export, especially cotton and sugar, as well as the dairy and livestock industries, which coastal and Andean hacendados controlled. Moreover, the personnel that the university identified to direct research and graduate studies had all received degrees from U.S. land grant universities. Victor L. Guzmán had studied plant physiology at the University of Florida (M.S.) and Cornell (Ph.D.). Antonio Bacigalupo had studied biochemistry and nutrition at Texas A&M (M.S.) and Michigan State (Ph.D.). Alexander Grobman, of course, had studied at Iowa State and Harvard.[66] These individuals were all products of a research system that favored large-scale commercial agriculture.

So too was the Minister of Agriculture in the years leading up to the military coup of 1968. Orlando Olcese held advanced degrees in biochemistry and animal nutrition from Texas A&M University. After completing his studies in the early 1950s, he had returned to Peru and founded a supermarket company, as well as three businesses that sought to industrialize the production of coffee, bananas, and garbanzo beans. In the first half of the 1960s, he served as president of UNALM. Soon thereafter, he became Minister of Agriculture.[67] In this capacity in 1967, he met with the nation's business leaders in the coastal city of Paracas in a conference

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[65] Fitzgerald, "Exporting American Agriculture," 459, 462-463.
[66] "A Proposed Institute of Advanced and Post Graduate Studies, Escuela Nacional de Agricultura." The list of personnel also includes César Rocha, who was completing an advanced degree in the United State, but it does not indicate which university. Folder 55, Box 6, Record Group 1.2, 331D Peru, RAC.
[67] "Curriculum Vitae del Doctor Orlando Olcese Pachas"; "Travel Grant for Dr. Orlando Olcese, Minister of Agriculture," March 14, 1968, Folder 45, Box 5, Record Group 1.2, 331D: Peru, RAC; see also "Doctor Honoris Causa: Dr. Orlando Olcese Pachas," Gaceta Molinera, UNALM, July 26, 2010, https://www.lamolina.edu.pe/gaceta/edicion2010/notas/nota122.htm (accessed December 11, 2014).

titled “The Formation of Leaders for the Technological Revolution of Peru.”[68] Strengthening agribusiness, he believed, was the key to boosting the nation’s food production.

Rockefeller officers saw Olcese as a natural ally. In late 1967, they invited him to speak at Rockefeller University. “We in the … Foundation are increasingly concerned about the seriousness of the world food situation,” they wrote in a two-page letter. “There still seems to be insufficient understanding among world leaders that … agriculture is a primary industry of all nations … and that in each country this agricultural industry is based on a very few highly important crops and animal species. As you know well,” they continued, “the nation that wishes to progress economically must increase the productivity and profitability of these crucial components of its agriculture…. Fortunately for the world, a few nations, including Peru, have under way highly effective crop production efforts in which universities are participating. It now seems important,” they added, “that the nature of these successful national action programs and university endeavors … be made known as widely and quickly as possible.”[69]

In early 1968, William Gaud of US AID labeled this vision of worldwide scientific industrial agriculture a “Green Revolution.” In a speech to the Society for International Development in Washington D.C., he cited grain production in Mexico and Pakistan and stated, “these and other developments in … agriculture contain the makings of a new revolution. It is not a violent Red Revolution like that of the Soviets, nor is it a White Revolution like that of the Shah of Iran. I call it a Green Revolution.” He added, “this new revolution can be as significant and as beneficial to mankind as the industrial revolution of a century and a half ago.”[70]

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[68] See “Curriculum Vitae, Doctor Orlando Olcese Pachas,” Folder 45, Box 5, Record Group 1.2, 331D Peru, RAC.
[69] Letter, Sterling Wortman to Orlando Olcese, October 2, 1967, Folder 45, Box 5, Record Group 1.2, 331D, Peru, RAC.
[70] William S. Gaud, “The Green Revolution: Accomplishments and Apprehensions,” March 8, 1968, The Borlaug Archives, Texas A&M University, https://edocs.tamu.edu/BorlaugWL/DocView.aspx?id=53110&page=3&dbid=0&cr=1 (accessed Dec. 11, 2024).

A shared vision of green revolution among the RF and US AID, as well the Ford Foundation, the United Nations, and other sponsors, led to the creation of the Consulting Group on International Agricultural Research (CGIAR), a network of transnational research centers.[71] The oldest member was the International Rice Research Institute (IRRI) in the Philippines, founded in 1960. In the second half of the decade, partner institutions began to dot the Global South: CIMMYT, successor of the MAP, in 1966; The International Institute of Tropical Agriculture (IITA) in Nigeria, also in 1966; The International Center for Tropical Agriculture (CIAT) in Colombia in 1968; The West Africa Rice Development Association (WARDA) in Liberia in 1971; and the International Potato Center (CIP) in Peru in 1971. By 1980, seven more centers existed.[72] They all geared their research mainly toward commercial farmers.[73]

One exception in Latin America was the Puebla Project. In 1967, the RF provided a grant for a project in the Puebla Valley of Mexico that focused on small farmers with goals such as "better understanding of the new technology," "greater efficiency in obtaining credit," "prompt delivery of fertilizers," "greater interchange of experiences among farmers," and "collective action." By 1973, the RF had contributed nearly $560,000 out of a total investment of $925,000. CIMMYT provided most of the remaining funds.[74] The architects of the Green Revolution were not oblivious to small farmers; however, these farmers were clearly an afterthought.

In Peru, neither the Rockefeller Foundation nor the Peruvian government addressed the situation of the nation's main wheat and barley farmers. For cotton, sugar, coffee, and even corn,

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[71] See *Agricultural Science as International Development: Historical Perspectives on the CGIAR Era*, eds. Helen Anne Curry and Timothy W. Lorek (New York: Cambridge University, 2024).
[72] D.E. Horton, *Social Scientists in Agricultural Research: Lessons from the Mantaro Valley Project, Peru* (Ottawa: International Development Research Centre, 1984), 14.
[73] See Chapter 2; see also E.J. Wellhausen, "Investigación y la Reforma Agraria," Paper Presented at the Sixth Meeting of Ministers of [illegible] in Latin America, Lima, Peru, 1972, CIMMYT Library, Texcoco.
[74] "The Puebla Project: Seven Years of Experience, 1967-1973," 55-61; "Progress Report of a Program to Rapidly Increase Corn Yields on Small Holdings: The Puebla Project, 1967-1969," c. 1970. CIMMYT Library, Texcoco.

Peru had an evolving class of commercial farmers that could afford to experiment and expand. It lacked an equivalent class of farmers for wheat. Wheat remained central to Andean agriculture and, of course, a central crop in the United States' agricultural development agenda. Given the U.S. emphasis on agribusiness, however, the transnational agenda failed to align with national realities. Thus, as hybrid wheat discoveries continued in Peru, so too did wheat importations.

At the national level, community movements gradually forced the government to take more notice of Andean farmers and, in turn, diverge from the transnational research model. The first half of the 1960s saw one of the largest mobilizations of campesinos (small farmers, farm laborers, and rural residents) in all Latin America, which, in some cases, met with violent hacendado repression (see Chapter 1). While campesinos' main grievance was unequal land distribution and hacendado abuses, they also called for farming technology. In October of 1968, the Armed Forces under General Velasco began their "Peruvian Revolution." One tenet of this revolution was land redistribution. Another was agricultural innovation (see Chapter 2). The Peruvian Revolution, in other words, was meant to be at once an agrarian and a green revolution.

This same year, UNALM expanded its Cereals Program to consolidate the past fifteen years of grain research. As director of this renewed center, the university named Marino Romero Loli.[75] Although UNALM had a long tradition of collaborating with hacienda owners, the nature of wheat production in Peru, as well as the bold agenda of General Velasco, portended a different focus for this program. Over the next few years, the Cereals Program and the military government, despite having no formal relationship, opened a phase of wheat research that focused mainly on small farmers of the Andes.

[75] Luz Gómez Pando, in conversation with author, January 6, 2022.

For its part, the self-assured, reformist administration of General Velasco had a plethora of items on its agenda, but wheat was one of them. On July 7, 1970, it issued a supreme resolution creating a National Technical Committee to study to problem of wheat production in Peru and design a plan to increase production, productivity, and commercialization, as well as substitute or stabilize imports. As one report noted, this committee set goals to boost wheat yields from 922 to 2000 kilograms per hectare (which would require new seeds), add 60,000 hectares of wheat to national production by sowing new fields or working wheat into existing crop rotations, and, among other objectives, incorporating roughly 90,000 metric tons of starchy flours into Peruvian food consumption to substitute at least ten percent of wheat flour. On November 3, 1970, using another supreme resolution, the government created the Permanent Commission for the Coordination and Execution of this National Wheat Program.[76]

Supreme resolutions could be paper tigers, but they also set priorities. In 1974, the Velasco administration invited Norman Borlaug to help improve the National Wheat Program. In June, accompanied by R.G. Anderson of CIMMYT and George Dion of the Canadian International Development Agency, Borlaug toured key wheat experimental sites in Peru, including those in the Mantaro Valley (see Figure 10). Among his main observations, he noted that Peru had potential to begin a successful wheat production campaign, and he confirmed that, thanks to previous research, Peru already had wheat varieties that, if used in such a campaign, would prove more resistant to rust and would yield more than current varieties in use.[77]

[76] Villanueva Novoa, Sandén Ledesma, and Narrea Retamozo, "Trigo," 10, 28.
[77] Villanueva Novoa, Sandén Ledesma, and Narrea Retamozo, "Trigo," 10.

Figure 10. In June of 1974, Norman Borlaug, recent Nobel laureate for his work in fighting hunger, visited experimental fields in the Valley of Mantaro to observe the yield and blight resistance of Peruvian wheat varieties.

Source: Rafael Villanueva Novoa, Gustavo Sandén Ledesma, and Albino Narrea Retamozo, "Trigo: Producción en el Perú y en el Mundo Durante los Últimos Años," Informe No. 1, Junio 1976, p. 7. Ministerio de Alimentación, Perú.

The task for the Velasco administration, then, was to do what no previous administration had done, namely produce and share the new varieties with Andean farmers. Heeding Borlaug's advice, it launched a Wheat Campaign to share high-yielding seeds across the nation. By late 1974, 25 agronomists, 55 technicians, and 34 administrators were engaged in this endeavor. Naturally, the new agrarian cooperatives were focus points. The CAP Valle Sagrado in Cusco, for example planted the variety Cahuide. In other cases, the military government first carried out demonstrative plantings to pique the interest of local farmers. In several sites in Ancash, government personnel planted the Ollanta variety with the goal of sharing this variety with the SAIS Chavín and other cooperatives. Meanwhile, in the CAP Túpac Amaru II in Apurimac, the

CAP Chirapa in Ayacucho, and the CAP Manuel Gonzáles Prada in Trujillo, government technicians promoted the use of machinery to incorporate new lands for wheat cultivation.[78]

By 1975, the Velasco administration had helped sow improved wheat on some 13,000 hectares of cropland, which increased Peru's average yield per hectare from 920 kilograms in 1970 to 971 in 1975. During this same time, national production rose from 125,374 to 136,000 metric tons.[79] These changes were obviously modest—nothing like the spikes that appeared in graphs of Mexico or Pakistan—but they were positive steps. Following Velasco's deposition in 1975, however, the Wheat Campaign withered. The federal government pulled back its agrarian policies, and many cooperatives began to struggle. Moreover, the nation entered an economic crisis. As one CIMMYT officer lamented in 1976, inflation in Peru was forcing researchers at UNALM to cut expenses. He also reported "rumors of administrative overhaul in many agencies—and visible candidates are the programs in the [UNALM] and the Ministry of [Agriculture]."[80] During this time, domestic demand for wheat continued to rise.

Studies that lump the Velasco years with other decades often overlook the military government's short-lived wheat program. From 1948 to 1976, for example, national wheat production dropped from 18 to 8 kilos per person, and importations continued to rise.[81] Yet the Wheat Campaign mattered because it demonstrated Peru's potential. In 1976, Norman Borlaug returned to Peru with Arthur Klatt, CIMMYT's new director of research for the Andean Zone, to reiterate this potential.[82] By this point, the Peruvian government seemed to be losing interest in national wheat production, yet the UNALM Cereals Program was just beginning.

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[78] Villanueva Novoa, Sandén Ledesma, and Narrea Retamozo, "Trigo," 20-23, 34
[79] Villanueva Novoa, Sandén Ledesma, and Narrea Retamozo, "Trigo," 29.
[80] Diary Notes, E.C. Johnson, September 14, 1976. Trip Report, Folder T-0200. CIMMYT Library.
[81] "Nos Vamos Acercando al Hambre," *Agronoticias*, junio 20, 1979, 5; Ing. Francisco Salas Valerio, "Producción e Importación de Trigo: Harinas, Molienda y Panificación," 1985, CIMMYT Library.
[82] "Norman e. Borlaug Vuelve al Perú: Habla el Genio de la 'Revolución Verde,'" Agronoticias febrero 1981, 16-18.

As wheat importations continued, one common explanation was that Peruvian conditions were simply not conducive to wheat production; the country had other strengths, but for bread flour, it was best to import wheat. Economically and ecologically, this argument may have had some merit. After all, wheat was not native, and among commercial farmers it was not popular. Andean farmers, however, still relied on it greatly. For his part, Marino Romero Loli maintained that "in Peru it is possible to produce high-quality bread wheat. The available genetic material may," he explained, "in the future allow for the development of varieties with the desired characteristics."[83] In 1972, the Cereals Program developed the variety San Lorenzo UNA 72 in Piura on the northern coast, and it operated experimental sites in several Andean states.[84]

Also in 1972, Romero received a crucial partner: the agronomist Luz Gómez Pando, who had recently completed a thesis on the effects of stem rust on Peruvian wheat.[85] In time, Gómez became co-director of the Cereals Program as well as Romero's spouse. Both individuals were experts at navigating the different scales of agricultural innovation. They first developed strong international ties. In 1976, Gómez traveled to CIMMYT where she specialized further in resistance breeding. Like Romero, she earned the respect of researchers in Mexico. At an experimental site in Toluca, she spent two months injecting wheat plants with rust spores and recording the results in ledgers. As she recalled, the job required shuffling and stooping from plant to plant all day, monotonous labor that one might not expect of an academic.[86]

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[83] "Tres años de investigaciones en trigo, 1968-1970," Informe preparado por Marino Romero Loli, La Molina, diciembre de 1970, Lima Perú, 15, 21, 23; UNALM Cereals Program Archive, Lima.
[84] "Proyectos de Investigación," *25 Años del Programa de Cereales*, 16-17; Cereals Program Office Archive, National Agrarian University at La Molina (UNALM).
[85] Luz R. Gómez Pando, "Identificación de Razas Fisiológicas de Puccinia graminis (Pers.) f. sp. Tritici Erickss y Henn en la Irrigación y Colonización San Lorenzo, Piura," Tesis (Universidad Nacional Agraria La Molina, 1972); UNALM Cereals Program Archive.
[86] Luz Gómez Pando, Interview with author, January 6, 2022.

In fact, in 1969, CIMMYT had faced difficulties with a group of Egyptian trainees who did not want to participate in such work. As one administrator reported, "the trainees [felt] that they were being used as common laborers, which resulted in a lack of interest." In turn, "the staff interpreted this attitude as one of laziness. This lack of understanding on the part of both trainees and staff resulted in a direct conflict between the two groups." At issue, the report continued, was "cultural attitudes about work." CIMMYT staff "failed to understand the depth of the trainees' resentment toward field work," while the trainees, who saw themselves as elite scientists, continued to expect "seminars and field trips."[87] In her study, Fitzgerald notes a similar social stigma regarding fieldwork that U.S. researchers initially faced in Mexico.[88] By contrast, Romero, Gómez, and other Peruvian trainees do not appear to have complained.

Thanks, in part, to Gomez's expertise and her work ethic, CIMMYT provided countless grain varieties for Peruvian researchers to use in their experimental stations.[89] Moreover, many agronomists followed in Gómez's footsteps. From 1976 to 1990, approximately 23 Peruvian agronomists participated in CIMMYT's funded Wheat Improvement, Pathology, and Crop Management trainings—the most of any Latin American nation besides Mexico. After Peru, the most well represented nations were Bolivia and Ecuador.[90] To return to Fernández Prieto's metaphor, the Andes thus became an important island in the archipelago of wheat science.

In the early 1980s, Gómez completed a master's program in crop science at Oregon State University. The opportunity arose when she met Dr. Warren Kronstad at a conference in Ecuador, and he offered her a place in the graduate program. In fact, Kronstad was so impressed with

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[87] Memorandum, B. Swanson to E.J. Wellhausen, July 16, 1969, Folder 20, Box 4, Record Group 1.3, Series 105-CIMMYT, RAC.
[88] Fitzgerald, "Exporting American Agriculture," 465.
[89] "Capacitación," *25 Años del Programa de Cereales*, 15; Cereals Program Office Archive, National Agrarian University at La Molina (UNALM).
[90] These observations are based on the pictures of trainees, organized by year, that appear on one wall of the second floor of CIMMYT's main administrative building in Texcoco, Mexico.

Gómez and the work that she and her colleagues were undertaking that he offered her direct entry without even a language test. Since Gómez did not speak English, the transition to a program that, of course, required many hours of reading and writing in English was overwhelming. "I cried every night," she remembered of her first months in Oregon.[91] Nevertheless, she completed the degree admirably. Her thesis examined the nitrogen content, grain yield, and grain protein in wheat and barley kernels grown in different environments."[92] This thesis became an important footnote in the work of her colleagues and students.

At the national level, Romero and Gómez, who, unlike their predecessors, did not have the luxury of RF funds, faced the relentless challenge of securing sponsors. As Gómez explained, UNALM as an institution provided little research funding, which meant that professors had to seek money from outside. Everything in the Cereals Program, "even my desk," she noted, was purchased with outside funds. The one benefit of this system was that professors had freedom to research virtually any topic for which they could find a sponsor. Naturally, commercial farmers often sponsored agricultural research that would benefit their businesses.[93] Andean community farmers, however, had no money to invest in academic research on wheat.

Over time, therefore, the Cereals Program developed a partnership with the Peruvian beer industry. From the 1970s onward, companies such as Maltería Lima, Backus y Johnson, Compañía Nacional de Cerveza, and Compañía Cervecera del Sur del Perú provided funding for barley research.[94] As field technician Hugo Ccente Quispe recalled, the program used these funds primarily for research on malt barley, yet the money usually allowed for some parallel research

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[91] Luz Gómez Pando, Interview with Author, January 6, 2022.
[92] Luz Gómez Pando, "Influence of Different Nitrogen and Moisture Levels on the Expression of Grain Yield and Protein Content in Selected Wheat (Triticum aestivum, L. em Thell) and Barley (Hordeum vulgare, L em Lam.) Cultivars," (MA Thesis, Oregon State University, 1981), 79.
[93] Luz Gómez Pando, Interview with author, January 6, 2022.
[94] "Proyectos de Investigación," *25 Años del Programa de Cereales*, 16-17; Cereals Program Office Archive.

on bread barley and wheat.[95] Thanks to this funding, the Cereals Program developed the barley variety Zapata 588. As Maltería Lima manager Luis Bentín Remy later recorded, in 1977, when a particularly potent plague of yellow rust "destroyed barley crops throughout the mountains," Zapata 588 "allowed us to continue having barley."[96]

At the local level, the Cereals Program learned to work with Andean communities. If the past two decades of research had demonstrated one thing, it was that adapting grain varieties to highland environments—which took money, time, and labor—was only half the challenge. The other half involved producing these seeds in large numbers and sharing them with farmers. As the agrarian cooperatives struggled, individual communities became the main organizations of farmers. Although the Ministry of Agriculture showed sporadic interest in wheat and barley production at the community level, the Cereals Program embraced a new role as a community ally. As Gómez later stated, "Behind every agricultural plot, especially in areas close to 4000 meters above sea level or on agricultural frontiers, where only a few kinds of food can grow, there is a family aspiring to be increasingly better and waiting for help to improve the productivity of its fields."[97] Among the few crops that do grow are wheat and barley. These are "difficult crops that nobody cares about," she added, "yet, in all reality, they play an enormous role in the Andes where rural poverty is [so common]."[98]

The Cereals Program was not the only center that sought to work with communities. From 1977 to 1980, for example, the International Development Research Centre of Canada worked with Peru's International Potato Center to study agroeconomic constraints to potato

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[95] Hugo Ccente Quispe, Interview with author, June 8, 2023, Julcán, Junín, Peru.
[96] Letter, Luis Bentín Remy to Cereals Program, Abril 1998, In *Ingeniero Marino Romero Loli, Profesor Emérito de la Universidad Nacional Agraria La Molina*, 2 de octubre, 1999, Cereals Program Office Archive.
[97] Luz Gómez Pando, "Discurso de Agradecimiento por la Nominación de Luz Rayda Gómez Pando como Profesor Emérito de la Universidad Nacional Agraria La Molina," Ceremonia de Investidura, Auditorio Principal UNALM, May 30, 2023.
[98] Luz Gómez Pando, In conversation with author, January 6, 2022.

production in the Mantaro Valley. This project is noteworthy because of the many social scientists (including Enrique Mayer) who participated. The project yielded six major empirical findings that applied to wheat as well as potatoes. First, "ecology and farm type influence the technological requirements of farmers." Second, "small-scale farmers are open to change and new technologies." Third, "farmers rarely adopt complete technological packages." Fourth, "farmer's technologies are, in many cases, equal or superior to recommended practices." Fifth, "technological knowledge is available to solve many farmers' problems." And sixth, "technology cannot be 'transferred,' but must be adapted to local conditions."[99]

It is unclear to what extent the Cereals Program staff engaged with this project, yet in practice they adhered closely to these principles. They did not develop expensive technological packages—seeds, fertilizers, pesticides, irrigation requirements, etc.—nor did they shun small Andean farms. Regarding point four, they recognized that, on poor land, rustic wheat varieties would produce almost as much as new hybrids. To be viable, new high-yielding seeds had to be productive even in poor soil. They likewise recognized that most Andean farmers did not use agrochemicals because weeds served as forage for livestock, and agrochemicals were expensive.[100] Overall, they sought to develop one main technology, namely grain varieties that could grow in poor soil, compete with weeds, and resists rusts. They then tried to help farmers integrate these seeds into their standard agricultural practices and beliefs.

Religion and farming often went hand in hand. In many Andean traditions, which continue to evolve, residents venerate *Pachamama* or Earth Mother. Historically, some placed stone altars in their fields at which they called upon Pachamama to bless their lands with

[99] Horton, *Social Scientists in Agricultural Research,* 7-8.
[100] Luz Gómez Pando, interview with author, January 6, 2022, La Molina, Lima, Peru.

fertility.[101] To this day, many farmers inaugurate the planting season with an offering to the Earth Mother (*un pago a la tierra*), in which they symbolically return to the earth the wealth they have taken from her. Such offerings generally include coca leaves and products such as wine or weavings.[102] In such expressions of faith, seeds, with the blessing of Pachamama, represent hope for an abundant future. Thus, when the Cereals Program offered communities new seeds, which implied setting aside the old ones, it intervened, to a degree, in their religion. Yet it tried to do so respectfully. In time, some communities incorporated hybrid seeds into their planting rituals.[103]

The experiences of some field technicians further illustrate how the Cereals Program tried to work with farming communities. In 1974, Hugo Ccente Quispe began working in the program's experimental station in Piura. After five years, he was transferred to the station in Illpa in the southern state of Puno. Here, the SAIS Buena Vista, which collaborated on several research projects (see Chapter 3), provided land for wheat and barley experimentation. Our goal in Puno, Ccente recalled, was to find wheat varieties for pasta and then grow them from the city of Juliaca down to Puno (a distance of about 45 kilometers). From 1982 to 1985, Ccente worked in the Valley of Majes in Arequipa where the Peruvian government was investing heavily in irrigation and "integral development" (see Chapter 5). In 1985, Ccente was transferred to the San Juan de Yanamuclo Experimental Station in the Valley of Mantaro where he stayed for twenty-five years. Finally, he was assigned to work on several sites in the Callejón de Huaylas in Ancash.[104] In summarizing these stages of his career, Ccente noted that in the Cereals Program, "you have to travel hard and speak the language wherever you go."

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[101] See Irene Silverblatt, "Moon, Sun, Witches," in *The Peru Reader: History, Culture, Politics*, eds. Orin Starn, Carlos Iván Degregori, and Robin Kirk (Durham: Duke University, 2005), 39 (36-49).
[102] See Brenda de la Cruz, "El pago a la tierra: respetar a nuestra Pachamama," Canal IPE, 6 de noviembre de 2016, https://www.canalipe.gob.pe/noticias/identidad/el-pago-tierra-respetar-nuestra-pachamama (accessed Jan. 9, 2025).
[103] Luz Gómez Pando, Interview with author, January 6, 2022, La Molina, Lima, Peru.
[104] Hugo Ccente Quispe, Interview with author, June 8, 2023, Julcán, Junín, Peru.

Ccente was particularly valuable to the program because he could speak Quechua. During his time in Junín and Ancash, Luz Gómez would organize four-day training courses for local farmers. Ccente, in turn, would visit communities and invite them to attend. With profits made from selling malt barley seeds, the Cereals Program would provide lunch, transportation, and usually lodging for attendees. Miguel Quino, a field technician who worked in the program from the early 1970s to the early 1990s, recalled a day-long version of these events, which he and his colleagues called *días de campo* (field trips).[105] After such trainings, whether they lasted one day or four, program administrators would ask to lease a portion of community land, usually ten to twenty hectares, for experimentation with new grain varieties, including many from CIMMYT.[106] In exchange, the Cereals Program promised to share the seeds that it developed.[107]

Following this pattern, the Cereals Program set up experimental centers in the community of Catac in Pilapampa, Ancash (3,900 meters above sea level) and in Anta, Ancash (2,700 meters), as well as the communities of Oshpamocco, Jochi San Francisco, and others near Juliaca, Puno (3,800 meters).[108] In other cases, Romero and Gómez used their personal connections in their home states of Ancash and Apurimac respectively to rent land for the Cereals Program. In the Mantaro Valley, most experimentation occurred at the research station, but the Cereals Program did work with the community of Sincos to build a small mill so that the community could make its own flour or barley flakes and thus add value to its product. Working with the Catholic NGO Caritas, the Cereals Program also helped build a mill in the community of Acostambo in the neighboring state of Huancavelica.[109]

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[105] Miguel Quino, Interview with author, April 4, 2023, La Molina, Lima, Peru.
[106] Hugo Ccente Quispe, Interview with author, June 8, 2023, Julcán, Junín, Peru.
[107] Luz Gómez Pando, Interview with author, January 6, 2022, La Molina, Lima, Peru.
[108] *Ingeniero Marino Romero Loli, Profesor Emérito de la Universidad Nacional Agraria La Molina*, 2 de octubre, 1999, Cereals Program Archive; "Áreas Geográficas de Trabajo," *25 Años del Programa de Cereales*, 20-21; Cereals Program Office Archive, National Agrarian University at La Molina (UNALM).
[109] Hugo Ccente Quispe, Interview with author, June 8, 2023, Julcán, Junín, Peru.

In all projects, Ccente noted, some community members disagreed or did not cooperate. In some cases, highland farmers had little desire to use more of their limited land for high-risk crops such as wheat and barley. In others, the younger generation of community families had studied agronomy at regional universities such as the National University of Central Peru in Huancayo, Junín or the National University of the Altiplano in Puno. To them, the involvement of the Cereals Program was unnecessary and suggested that they and their families did not know what they were doing—a Peruvian version of what U.S. researchers faced in the MAP. Despite these realities, Ccente recounted, we earned the trust of some communities. Sometimes, he said, it helped them to see me swinging a pic (*tirando pico*) just like them. "I was born into farming," he explained. "I am Andean. My parents and grandparents taught me to cultivate the land. I've never liked teaching in a classroom."[110] Ccente's approach made him a crucial intermediary between the Cereals Program and the Andean farmers that it sought to work with.

In some cases, the program had to learn from these farmers. Miguel Quino remembered one such experience in the community San Lucas de Colán in the Chira Valley in Piura. In 1974, the community agreed to lease the Cereals Program a fifteen-hectare plot for experimentation, but "you know how people are," Quino said, "they gave us the *worst* possible space." Previously, the community had tried to grow cotton there; the endeavor failed. They had tried to grow rice; it also failed. The main problem, Quino continued, was the high content of salt (*salitre*), likely a mixture of potassium nitrate and sodium nitrate, in the soil. The ground had whitish streaks, and any scraggly plant that broke through the soil had yellowing leaves because of the salt. In Quino's opinion, the community saw this plot as a worthy challenge for their visitors. "These guys are from the Agrarian University," they thought, "let's see what they can do."[111]

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[110] Hugo Ccente Quispe, Interview with author, June 8, 2023, Julcán, Junín, Peru.
[111] Miguel Quino, Interview with author, April 4, 2023, La Molina, Lima, Peru.

Quino was not sure what to do. Neither was Luz Gómez who visited the community to launch the project then returned to Lima leaving Quino and two other technicians to figure it out. "This was the first time we had ever worked with this community," Quino worried, "and now we were going to disappoint them." The solution came when Quino spoke with a lifetime resident. Perhaps this individual had learned from the community's past efforts to farm the land. Or perhaps he had learned from personal experience. Either way, he knew what to try. By covering the land with water (*empozándola*), he said, the salt would accumulate in the water; after a period of time, the salty water cold be drained away. From then on, he added, as soon as the soil began to whiten, the technicians should water the plot thoroughly to restore its moisture level.[112] Although he did not say it, this step could also restore the absorption rate of the plants.[113]

One evening, the technicians and two local residents did as the farmer had suggested. "We bought some pisco to stay warm," Quino recounted, then we flooded the land, waited, and then drained it. "If it didn't work," he said, "I was ready to resign." But it did work. In a short time, the wheat began to sprout. "What a beautiful sight," he remembered. Soon, Gómez, Romero, and the managers of Maltería Lima, who were funding the project, all checked in to see how the project was going. Quino happily reported that the wheat plants had developed large healthy heads (¡*espigazos!*). Everyone was surprised and happy. The following field day, the Maltería managers gave him and his colleagues each a generous tip to go into town and have a beer (perhaps of Maltería's own brew). They also bought Quino a motorcycle to make

[112] Miguel Quino, Interview with author, April 4, 2023, La Molina, Lima, Peru.
[113] See "Soluciones para recudir la salinidad en suelos agrícolas," Tarazona Agrosolutions, https://tarazonaagrosolutions.com/blog/guias-de-cultivos/soluciones-para-reducir-la-salinidad-en-suelos-agricolas/ (accessed January 7, 2025).

transportation easier while he was stationed in Piura.[114] While Quino and his colleagues received most of the credit, the local seasoned farmer was really the expert.

Without the guidance of this local expert, Quino's experience in Piura could easily have ended like his experience in the district of Catac in Ancash. Here, the Cereals Program planted a Russian variety of wheat that was supposed to withstand cold temperatures. Yet one evening, the temperature dropped to negative 17 degrees Celsius (1.4 degrees Fahrenheit) and killed the entire experimental crop. "That was the last year we worked there," Quino said.[115] Nature in the Andean highlands was difficult and unpredictable. In most cases, successful research required cooperation between the agronomists who knew the science and the farmers who knew the land.

By 1980, the Cereals Program had developed the new barley varieties Zapata 588 and UNA 80. As Romero and Mario Zapata Tejerina, rector of UNALM, announced, both varieties "increased average crop yield by more than three times and [were] extraordinarily resistant to traditional plagues and blights, especially yellow rust." If bread and pasta makers replaced imported wheat with local barley, they added, the nation could save 30 million dollars a year.[116] The idea of replacing wheat with barley was perhaps one of the most logical in a series of propositions that circulated in the early 1980s to reduce the nation's dependence on wheat imports. The Ministry of Agriculture and other scientists suggested cultivating yuca, a subtropical crop, to be used as a substitute for wheat flour.[117] Other agronomists discussed the idea of sweet potato flour and, as general interest in native species and ancestral techniques increased, quinoa flour.[118] Overall, however, urban consumers remained partial to wheat flour.

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[114] Miguel Quino, interview with author, April 4, 2023, La Molina, Lima, Peru.
[115] Miguel Quino, interview with author, April 4, 2023, La Molina, Lima, Peru.
[116] "Perspectivas del Agro: Cebada, Variedades Prodigiosas," *Agronoticas*, agosto 1979, 5 (4-5).
[117] "¿Por qué no Pan de Yuca?: Producción de Alimentos y Problemática Rural," *Agronoticias*, agosto 1979, 9; Teodoro Bóza Barducci, "Tecnología de Yuca: Un Alimento Complementario Rico en Vitamina B," *Agronoticias*, octubre 1979, 42-45.
[118] Salas Valerio, "Producción e importación de trigo."

Wheat figured prominently in the post-land reform renaissance of agricultural ideas. “Is Peru condemned to be an eternal beggar of foreign wheat?” asked agronomist Rafael Villanueva Novoa. With a resounding “No!” he pointed to the example of Norman Borlaug as well as agronomists in China, which confirmed that “wheat self-sufficiency [was] not an impossible aspiration” for the nation. The first step to achieving this goal, he continued, was a National Production Program in which each department would gradually increase its wheat production over ten years.[119] This idea, if implemented, would require the Ministry of Agriculture to build on the Cereal’s Program’s example of community collaboration.

In the second half of the 1980s, however, armed conflict spread through the Andes. As in innovation projects Puno and Ancash, the conflict interrupted agricultural experimentation and extension. In the Mantaro Valley, field researcher César Castro remembered how the armed groups, most likely Shining Pather cadres, took over buildings to rest and plan.[120] “At night,” Ccente added, others “would come and take away the equipment,” everything from machines to wheelbarrows to doors. “And you couldn’t say anything!” he added, emphasizing the feelings of frustration and helplessness. “Well, I’m not sure if it was the terrorists themselves,” he added, “or people who lived nearby,” who took advantage of the conflict to loot. “Every wall was covered with subversive insignias,” he continued. “The terrorists ruined everything.”[121]

In Illpa, Puno, the Cereals Program lost its experimental site completely. In this case, its association with the SAIS Buena Vista may help explain the events that unfolded. One early morning in 1988, some 300 students from the National University of the Altiplano led by Shining Path sympathizers spread out on the hills surrounding the program’s experimental station. Field

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[119] Rafael Villanueva Novoa, “Como Producir Más y Mejor Trigo: Un Plan de Diez Años,” *Agronoticias,* noviembre 1979, 24-26.
[120] César Castro, in conversation with author, June 9, 2023, San Lorenzo, Junín.
[121] Hugo Ccente Quispe, Interview with author, June 8, 2023, Julcán, Junín, Peru.

technician Ricardo Trinidad Alegre remembered waking up and looking out into the dark at an enormous mob of agitated young people bearing torches and hammer-and-sickle insignia. The agronomists' cook, a woman from the area, took one look then fled out the back door into the darkness. The Cereals Program personnel, on the other hand, did not dare go out. As the sun came out, the students kept the agronomists trapped inside, but they did not physically harm them. Later that day, Alberto Fujimori, then rector of the Agrarian University, flew in and began to negotiate with the movement's leaders. He gave them new computers, scholarships, and, ultimately, a signed agreement that the Cereals Program would withdraw from Illpa.[122] While the movement's leaders felt they were taking back their land, the Cereals Program personnel lamented that none of their research goals in the region would come to fruition.

Larger research organizations faced even greater hostility. In 1988 in the Valley of Mantaro, armed groups killed the security chief of the International Potato Center. The following year, they bombed and burned the center's installations near Huancayo. As the magazine *Science* put it, "Agricultural researchers of the sort who generated the Green Revolution normally find a welcome in developing countries, but they sometimes must face hardships that have nothing to do with natural hazards and much to do with human nature." As a result of these conditions, the center withdrew all international staff from the area.[123]

To the Shining Path and its sympathizers, research stations in the Andes represented unwanted ties with foreign organizations, and the scientific authority that outside researchers assumed posed a challenge to the Shining Path's sense of control. To keep its personnel safe, the Cereals Program often had to move researchers around.[124] Many international researchers had to

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[122] Ricardo Trinidad Alegre, in conversation with author, June 30, 2023, Illpa, Puno.
[123] John Walsh, "In Peru, Even Potato Research is High Risk," *Science*, Vol. 247 (March 1990), 1256-1257. CIMMYT Library, Texcoco.
[124] Ricardo Trinidad Alegre, in conversation with author, June 30, 2023, Illpa, Puno.

avoid the Andes altogether, and some developed misgivings about investing time and money in Peru. In 1988, Shivaji Pandey, a corn breeder from CIMMYT, visited Brazil, Paraguay, and Peru. His report on the first two nations, especially Brazil, was thorough and optimistic. Peru, by contrast, received a brief note about an upcoming Regional Maize Meeting in Chiclayo on the northern coast. "Peru is going through serious problems," Pandey added. "Nothing can be said about the success or failure of the meetings at this stage."[125] On the international level, armed conflict caused Peru to recede in some ways from its place in the region's archipelago of science.

At the same time, research continued. In 1988, the same year that Pandey reported on Peru's problems, Miguel Quino received a six-month training scholarship to CIMMYT. In general, these scholarships were reserved for individuals who held four-year degrees and had specialized in a branch of agronomy. Quino held only a two-year degree and bore the title of technician. Nevertheless, his skills earned him a place. In Mexico, aside from the daily work, he and other trainees visited sites such as the Alvaro Obregón dam as well as the vast grain fields and experimental sites in Sonora. Noting the laser-assisted irrigation, he spoke with awe about what Mexico had accomplished. "I learned a lot," he concluded, "but it didn't apply here."[126]

With this last comment, Quino referred to Peru's agrarian reform. "The cooperatives were good for nothing," he stated bitterly.[127] In his view, land reform had undermined Peru's chance of developing modern, industrial agriculture like Mexico. The devastation of the armed conflict contributed to his pessimism. To be fair, CIMMYT administrators showed off only the best results of the Green Revolution in Mexico. They obviously did not take their trainees to observe

[125] Shivaji Pandey, Trip Report: Brazil, Paraguay, and Peru, August 24-September 6, 1988, Folder T-0175, CIMMYT Library.
[126] Miguel Quino, interview with author, April 4, 2023, La Molina, Lima, Peru.
[127] Miguel Quino, interview with author, April 4, 2023, La Molina, Lima, Peru.

landless migrant workers being doused with pesticides from unregulated spray planes. Despite a kind of inferiority complex, Quino and his colleagues continued working in Peru.

This work carried the Cereals Program through the armed conflict and into the 1990s. By this time, research had yielded several more barley varieties for the highlands, including UNA 8270, Yanamuclo, and Buenavista. "The production of these varieties," reported the program in 1993, "which amounts to 50,000 tons per year, has an estimated value of 15-20 million annual dollars, which benefit [national] agriculture and industry and, most especially, the Andean economy."[128] In just a few years, as Maltería Lima later noted, these varieties would account for "80% of all barley grown in the nation and practically all barley grown in the highlands." Maltería also reported that these varieties produced high yields, resisted diseases, and adapted to different uses. "Resistance to diseases," it added, "has eliminated the use of pesticides, which helps reduce production costs and conserve the environment in the high Andean region of Peru."[129] While not all pesticides disappeared, these Peruvian varieties stand out in comparison to Mexico wheat, which required copious quantities of agrochemicals.

In the mid-1990s, Romero focused even more on highland farmers. As Stephen Baenziger of the University of Nebraska reported, Romero used mutation breeding techniques to change a single gene in Buenavista, which turned the hulled barley to a hull-less or "naked" barley. This new variety, UNA La Molina 95, was ideal for human consumption and, as Baenziger wrote, "has great potential for increasing the nutrition of the poorest Peruvians."[130] J. Perry Gustafson of the University of Missouri added that "through his mutation program," Romero found "a

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[128] "Proyectos de Investigación," *25 Años del Programa de Cereales*, 18; Cereals Program Office Archive, National Agrarian University at La Molina (UNALM).
[129] Letter from Luis Bentín Remy, General Manager of Maltería Lima S.A. to the Cereals Program, Abril 1998, In *Ingeniero Marino Romero Loli, Profesor Emérito de la Universidad Nacional Agraria La Molina*, 2 de octubre, 1999, Cereals Program Archive.
[130] Letter from P. Stephen Baenziger to the Cereals Program, March 1998, In *Ingeniero Marino Romero Loli*.

barley cultivar that not only had higher yields than any previous cultivar, but had naked kernels" which "could be used for the human consumption in addition to being used as animal feed." This development, "significantly changed agriculture in the Highlands."[131]

In the late 1990s, upon Romero's retirement, Gómez became the sole director of the Cereals Program. Under her leadership, the program strengthened ties with bakery organizations, such as the Peruvian Association of Bakery and Confectionary Businesses (ASPAN). As she explained, officials from ASPAN would often travel with the agronomists from the Cereals Program to meet highland communities and begin "establishing a chain" from the fields to bakeries.[132] Around this time, CIMMYT shifted its focus from Latin America to Africa and Southeast Asia. Consequently, the Cereals Program worked more with other organizations, such as the International Atomic Energy Agency (IAEA), the Andean Pact, and the United Nations Food and Agriculture Organization (FAO).[133]

The Cereals Program also took the lead in research on Andean grains, such as quinoa, kiwicha, and amaranth. For decades, experimentation with wheat, barley, and oats had taken precedence over these native grains. Neither the Rockefeller Foundation nor the Cereals Program in its early years had done much with them. However, the general interest in alternative or traditional technologies (see Chapter 3) brought new attention to these grains. With funding from the IAEA and the FAO, the Cereals Program embarked on a project to develop germplasm banks of both quinoa and amaranth.[134] CIMMYT had long maintained such a bank for wheat and

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[131] Letter from J. Perry Gustafson to the Cereals Program, September 1999, In *Ingeniero Marino Romero Loli*.
[132] Luz Gómez Pando, Interview with author, January 6, 2022.
[133] "Proyectos de Investigación," *25 Años del Programa de Cereales*, 15-17; Cereals Program Office Archive, National Agrarian University at La Molina (UNALM).
[134] See *Catálogo del banco de germoplasma de quinua*, eds. Luz Rayda Gómez Pando y Ana Luzmeira Eguiluz de la Barra (La Molina: UNALM, 2019); *Catálogo del banco de germoplasma de amaranto*, eds. Luz Rayda Gómez Pando y Mónica Ríos Alfaro (La Molina: UNALM, 2020).

maize. By adapting the idea to Peru, the Cereals Program helped maintain Peru's biological diversity and invest in future quinoa and amaranth research.

In time, the Program published several manuals on quinoa cultivation, which, as with studies of alpaca husbandry, involved observing and learning from community practices (although the scientists did not always give credit where it was due).[135] One manual, at least, began by acknowledging quinoa's role in precolonial societies and its historic displacement. "The introduction and expansion of crops such as wheat, barley, oats, beans, and peas … relegated quinoa cultivation to marginal zones of the Peruvian and Bolivian *sierra*," it explained. "For centuries, quinoa was [merely] a subsistence crops for people and animals." However, "changes in eating habits and preference for nutritious and organic food at a global level led to recognition and reappraisal of quinoa, which paved the way for an increase in production."[136] As quinoa became an international superfood, the Cereals Program even put together a recipe collection for English readers.[137] Today, a large section of the San Juan de Yanamuclo station is dedicated to quinoa, and across the Andes some fields that once grew wheat and barley now grow quinoa. Unfortunately, these changes seldom mean greater profits for Andean farmers.

Meanwhile, these farmers have continued to grow wheat and barley. In 2003 and 2004, the Cereals Program received copies of a series of letters from communities in the central Andes in which they thanked Maltería Lima for funding the program's research. Letters such as these are rare. Although the context is unclear, the communities clearly wanted Maltería Lima to know that the research it had sponsored had directly benefited them. From Huancavelica, the Cereals Program received letters from representatives of 101 farmers in Santa Cruz; 103 farmers in Vista

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[135] See, for example, Luz Gómez Pando and Enrique Aguilar Castellanos, *Manual del Cultivo de la Quinua* (La Molina: UNALM, 2012).
[136] Luz Gómez Pando y Enrique Aguilar Castellanos, *Guía del Cultivo de Quinua* (La Molina: UNALM, 2015), 5.
[137] These aesthetic collections of recipe cards can be found in the Cereals Program office in UNALM.

Alegre, Pacchapata, and Libertad; 57 farmers in Chucuna, Lauza Grande, and Lauza Chico; 95 farmers in Chilcapata, Alfapata, and Quinta Occo, and, finally, the 76 farmers of Ñahuimpuquio.

Because of adverse environmental conditions in some areas, wrote the leaders of Chilcapata, "barley is the only crop that grows and feeds us as well as our animals." The new varieties, they continued, "are increasingly better," and have allowed to boost yields "from 600 kilos per hectare to 3000."[138] While many communities mentioned production increases along these lines, they also shared additional thoughts. The leaders of Santa Cruz wrote that their relationship with Maltería Lima, which the Cereals Program had facilitated, helped them avoid being "deceived by [market] intermediaries."[139] Leaders of Chucuna reiterated that "barley provides the foundation for feeding our families and provides economic income which allows us to survive the abandonment of the state with dignity."[140] Other letters expressed similar sentiments and asked Maltería Lima to continue funding the research in their communities.[141]

From the Valley of Mantaro, the campesino community of Sincos, where the Cereals Program had helped set up a small mill, wrote that UNA La Molina 96, a successor to the hull-less UNA 95, had improved their barley yields from 700 to 4,000 kilograms per hectare of high-quality grain. "This yield and quality," they wrote, "allow us to have better … incomes … which influences the quality of life of our family and community." They then expressed thanks for Maltería Lima's technical support for "Andean agriculture that is so forgotten and

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[138] Letter from Pedro Inga Ramos, Guido Mauricio de la Peña, and Rosalina Villaverde G. to Maltería Lima, July 2003, Cereals Program Archive.
[139] Letter from Magno Roman Villalva, Preceleano Villalva Castellano, and Pedro Paulino Asto Villalva to Maltería Lima, November 2003, Cereals Program Archive.
[140] Letter from Odina Segura R., Eugenio Quispe Flores, Felix Teodosio Quispe, and Iliceo Procil Canchanka to Maltería Lima, July 2003; see also Letter from Santiago Carhuas Marca, Modesto Allca Pariona, Francisco Gaspar A., Isabel Utus Chicmana, and Alfredo Yauri S. to Malteria Lima, August 2003, Cereals Program Archive.
[141] See Letter from Pedro Inga Ramos, Guido Mauricio de la Peña, and Rosalina Villaverde G. to Maltería Lima, July 2003; Letter from Calixto Condor Villanueva to Maltería Lima, July 2003, Cereals Program Archive.

marginalized."[142] As a final example, farmers from Otuzco in the department of Libertad wrote to the Cereals Program and praised UNA 96 for its "adaptability" to their region.[143]

Since the Cereals Program's research funding had come largely from beer companies, barley saw more breakthroughs than wheat. In 2003, however, the program launched the new wheat variety Centennial, and it reported that experimental stations had yielded 5,500 kilograms per hectare in the highlands and 7,500 kilos per hectare on the coast—an increase that would even make Norman Borlaug proud. This variety also grew well at altitudes up to 3,200 meters above sea level and was ideal for breadmaking.[144] Of Centennial wheat, congressmember Victor Manuel Noriega Toledo wrote in 2004 that it was "becoming the hope of many poor farmers in the high Andean zones that see in national wheat the opportunity for development."[145]

Of course, this success was momentary. Blights and weeds always catch up to new grain varieties. Furthermore, despite scientific innovations, most of the small farmers of the Peruvian Andes never moved beyond subsistence agriculture and modest participation in local markets. With some exceptions, agribusiness has yet to penetrate the high Andes, which, one might add, is not necessarily a bad thing. If the concept of Green Revolution is synonymous with industrial farming in the mold of the United States, then Peru deserves a spot only on the far fringes of discussion. If, however, green revolution refers to agricultural science adapted to local environments and national interests, then Peru certainly has a story of its own. The Andean laboratories of the UNALM Cereals Program provide one more case study.

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[142] Letter from Roque Correa Mandujano, Davis Rivera Ugarte, Dora Izurraga Salazar, and José Flores Alcántara to Maltería Lima, September 5, 2004; see also letter from Roque Correa Mandujano to Maltería Lima, September 10, 2004, Cereals Program Archive.
[143] Letter from Associación de Agricultores la Primavera de Otuzco to Luz Gómez Pando, August 28, 2004, Cereals Program Archive.
[144] "Nuevo Cultivar de Trigo Centenario," Brochure, Cereals Program Archive, UNALM.
[145] Letter from Victor Manuel Noriega Toledo to Luz Gómez Pando, December 10, 2004, Cereals Program Archive.

Conclusion

Rural Development in the Twenty-First Century

This study has examined the rural development efforts of a diverse group of innovating agents: the Rockefeller Foundation, the Velasco administration, the SAIS Tupac Amaru, the Puno-New Zealand research team, the NGO CEDEP, the local and foreign planners of the Majes-Siguas irrigation project, and the Cereals Program of the National Agrarian University. Although these research teams make up only a fraction of the institutions that worked in the Peruvian Andes during the second half of the twentieth century, they each set out to benefit citizens who lived in some of the greatest agricultural production zones of the country. In different ways, each one sought to introduce transnational agricultural technology to Andean landscapes—to achieve, in other words, a green revolution in Peru. Together, their stories points to several conclusions.

To begin, in the context of the Cold War and the grains race of the 1950s, the tremendous investments of the Rockefeller Foundation in agricultural research failed to mitigate the problems of rural poverty because this research exclusively benefited hacienda owners and coastal universities. New technology did not automatically trickle up to Andean communities. By the 1960s, migration from Andean communities, rapid urbanization, and widespread campesino protest had proved the need for reforms in the land tenure system.

The military government of General Velasco tried to answer this need. While critics continue to portray Velasco as a demagogue who forgot the importance of training and technology, the archive indicates his acute interest in agricultural modernization. Through a combined program of land redistribution and green revolution, the Velasco administration sought to produce more food for the growing nation. Besides setting up hundreds of farming

cooperatives, the military government secured foreign aid for livestock vaccines, pesticides, seeds, roads, and ports. Among other initiatives, it inaugurated the International Potato Center, launched the Majes-Siguas irrigation project, imported pedigree sheep for Puno, began the Puno-New Zealand pasture improvement project, and invited Norman Borlaug to help the nation undertake a new wheat production program. In the vision of the Velasco administration, agricultural innovation would support land reform.

Despite these efforts, many cooperatives struggled economically. The autocratic nature of the military government was not conducive to meaningful training. Furthermore, the policy reversals of Velasco's successor, General Francisco Morales Bermudez, left the newly formed cooperatives to their own devices. Finally, invasions from communities and the attacks from armed groups finished off many of these rural businesses. Their demise reduced the potential of innovators to share technology across the Andes. At the same time, a few cooperatives, such as the SAIS Tupac Amaru, survived. More importantly, despite the disappearance of most cooperatives, rural development efforts continued. The long 1980s saw a renaissance of agricultural ideas that all sought to "technify" Andean agriculture. In this context, institutions such as CEDEP and the Cereals Program tried, in different ways, to pick up where the Velasco administration left off by working directly with Andean communities. As it turned out, then, agrarian reform helped democratize agricultural research and technology.

In its pursuit of green revolution, the Velasco administration and researchers frequently overestimated the power of science to overcome environmental barriers to food production. In their view, the pampa of Majes was a barren wasteland that modern irrigation would turn into a farming paradise. The altiplano of Puno was a vast rangeland of non-nutritious tussock that improved pastures would transform into a region of major livestock production. Scientific

experimentation never achieved all the desired results. Over time, however, as they sought to improve Andean landscapes, innovators from government offices, universities, and NGOs often improved the projects themselves. In the 1980s, the trend toward ancestral technologies—from alpaca and quinoa farming to terraced agriculture—illustrates one of the most important adjustments. This approach challenged the long-running colonial mentality in which native species and techniques bore the stigma of being unmodern and fit only for "Indians."

To achieve innovation through either alternative or standard technology, scientists had to work with local Andean communities. In some cases, as with the paco-vicuña, they overlooked local farmers' vernacular expertise and wasted significant time as a result. In other cases, as in CEDEP and the Cereals Program, research teams gradually learned to respect and collaborate with community partners. In Huayllapa and Uramasa, the CEDEP team became familiar with the "personalities" of each community, which included their histories and their interests. The NGO team also learned to better include the women of different communities in project planning. In the *Callejon de Huaylas*, CEDEP technicians observed campesino leaders' opposition to pesticide practices, which led them to experiment with alternative methods of pest control. Meanwhile, in the Cereals Program, agronomists learned to work with communities in the Mantaro Valley and elsewhere to test and produce grain varieties that could thrive in poor soil without the aid of agrochemicals. The role of the communities was crucial. The agronomists may have known the science of grain hybridization, but communities knew their own lands.

The fundamental role of Andean farmers in rural development projects as partners, not mere recipients, renders inaccurate any portrayal of local communities as naturally resistant to change. Time and again, communities sought to be included and have a say in projects that would provide irrigation infrastructure, seeds, electricity, and other technologies. To the extent

that scientists from the coast or from outside the nation circumscribed their efforts within these interests, their projects came closer to achieving their goals. In all these projects, Peru's engagement with transnational trends toward intensive agriculture, which became known as the Green Revolution, was clear. Yet given the central role of local farmers and local environments, it is also clear that Peru experienced its own, unique green revolution. Transnational models of intensive agriculture could not be adopted, imported, or even imposed on Andean communities and environments; they had to be adapted.

With the exception of the Majes-Siguas irrigation works, the projects in this study each suffered significant setbacks because of the nation's internal armed conflict. In fact, the conflict helps explain why the history of innovation in the Andes remains largely forgotten. Some scholars and citizens maintain that scientific and political abandonment of the Andes contributed to the growth of the Shining Path and MRTA. To an extent, this is true, yet the Andes were not as abandoned as some suggest. The fact that the Shining Path targeted researchers and their experimental stations underscores the important role of innovation in rural society. Communities' continued interest in technology throughout the conflict further highlights their resilience.

This study has sought to weave the history of agricultural science into the better-known histories of agrarian reform and armed conflict in Peru. The Andes did not just experience agrarian and Maoist revolutions; they experienced green revolution, too. This less-studied revolution matters because it demonstrates the farming potential of world regions that international sponsors have historically considered ill fit for modern agriculture. Again, it also highlights the crucial role of local, native knowledge in rural development efforts.

Innovation projects in the Andes boosted agricultural production in many communities, at least for a time. For generations, some scholars and policy makers have advocated against

innovation projects in impoverished areas, arguing that they do not work.[1] The history of the Peruvian Andes refutes this charge. Research groups often fell short of their goals, but they also achieved some noteworthy results. These results can serve to inform, encourage, and caution projects in the twenty-first century.

Such projects are numerous. In 2021, a diverse group of research institutions formed a consortium known as PERU-Hub. Participants included Peru's National Agrarian University (UNALM), the University of Oklahoma (OU), Utah State University, Purdue, and the International Center for Tropical Agriculture (CIAT) in Colombia. As director Hugo Villachica explained, this consortium seeks "to train farmers, women, and indigenous communities in the use of improved technologies in current and new crops, in food transformation … [and] in marketing" with the goal of "improving agricultural productivity and profitability."[2]

Additionally, research teams from OU and the National University of San Augustín (UNSA) in the city of Arequipa have now invested five years (and counting) in greenhouse gas modeling, drought simulation, organization of disease data (including Covid-19 statistics), photothermal breast cancer therapy, wastewater epidemiology, and other projects.[3] In 2021, OU Vice President for Research and Partnerships Tomás Díaz de la Rubia declared that "these projects will generate solutions to some of our most pressing global challenges and will support economic development and resilience in a rapidly changing world."[4]

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[1] See: Garrett Hardin, "Lifeboat Ethics: The Case Against Helping the Poor," *Psychology Today*, September 1974, https://www.garretthardinsociety.org/articles/art_lifeboat_ethics_case_against_helping_poor.html (accessed March 10, 2025); Petras, "NGOs: In the Service of Imperialism," *Journal of Contemporary Asia* 29, no. 4 (1999), 429-430.
[2] See "University of Oklahoma Strengthens Latin American Sustainability through $15 Million PERU-Hub," May 18, 2022, https://www.ou.edu/research-norman/news-events/2022/ou-strengthens-latin-american-sustainability-through-15-million-peru-hub (accessed March 11, 2025).
[3] See "OU Launches $9 Million Research Collaboration with Peruvian University," January 14, 2020, https://www.ou.edu/web/news_events/articles/news_2020/peruvian-univ-collaboration (accessed March 11, 2025).
[4] "University of Oklahoma, Peru University Partner on Health, Climate Research Projects," March 5, 2021, https://www.ou.edu/research-norman/news-events/2021/ou-peru-university-partner-on-health-climate-research-projects (accessed March 11, 2025).

Meanwhile, in the city of Puno, other OU researchers have been working with professors and graduate students from the National University of the Altiplano (UNA) to design an insulated, energy-efficient house for the highlands of Puno (4000-5000 meters above sea level) using local materials. As OU project coordinator and native of Puno Víctor Maqque explained, "Homes [in Puno] do not have central heating or air conditioning, but this area gets more than 300 days of strong sunlight." For this project, he continued, "we will integrate traditional Indigenous knowledge, local materials, and state-of-the-art technology to create more sustainable housing and healthy living spaces…. [As] one example, we are looking [for] a way to possibly capture solar energy to help with heating."[5] Maqque's statement reflects one of the main lessons of the twentieth century: to implement new technology, project managers must understand local traditions and interests, and they must blend their ideas of modern science with local expertise. For example, local residents would probably not mind if ideas for things such as the paco-vicuña, which ebb and flow in scientific circles, drifted away entirely, never to be heard from again.

President Pedro Castillo (2021-2022) of the Peruvian government also made notable efforts to help small farmers. In the fall of 2021, Castillo, a former schoolteacher from the rural Andes, began what his administration called a "Second Agrarian Reform." This program, he explained, would not expropriate lands but rather "give tools and technology to small farmers to improve their productivity and the conditions they live in."[6] During the brief term he served before being unlawfully impeached, Castillo put this plan into practice by giving tractors to organizations of small farmers in several Andean states. As Figure 11 illustrates, within the

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[5] See "Architecture Project to Design Affordable, Sustainable High-Altitude Housing," Inside OU, https://www.ou.edu/insideou/articles/2023/march/architecture-project-to-design-affordable-sustainable-high-altitude-housing (accessed March 11, 2025).

[6] "Presidente Castillo: Segunda Reforma Agraria permitirá dotar de herramientas y tecnología a los pequeños productores," 6 de noviembre de 2021, https://www.gob.pe/institucion/presidencia/noticias/552109 (accessed March 11, 2025).

Ministry of Agriculture, officials tried to generate excitement for the new initiative by displaying artwork that celebrated the marriage of traditional farming practices, such as communal labor, with agricultural innovation, such as irrigation systems. Notably, irrigation had existed in the Andes for at least 2000 years. Rather than introducing a new technology, this image suggested that government technicians would help revive and perhaps improve an ancestral practice.

Figure 11. Banner in one Ministry of Agriculture office in Lima that celebrates Peru's Second Agrarian Reform under President Pedro Castillo. Castillo was deposed in 2022, but the artwork remains in place. Photo by Ricardo Trinidad Alegre of the Ministry of Agriculture.

As rural development projects of this kind unfold, the Andean laboratories of Peru's long agrarian reform era can serve as crucial references. Although they did not achieve all their goals, agents of innovation, including agronomists, livestock technicians (Peruvians and foreigners), and their community partners worked to boost agricultural production in areas such as the altiplano of Puno, the Callejón de Huaylas, the pampa of Majes, and the Valley of Mantaro. Their efforts shaped the history of Peru and, amid the ongoing challenges of agricultural production and innovation, left the soil, in most cases, a little more fertile for succeeding generations.

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