

Roundtable: New Narratives of the Green Revolution

Introduction

THIS ROUNDTABLE GREW OUT OF A fascinating and fluid series of panels at the 2016 annual conference of the Agricultural History Society in New York. The forces and stories surrounding the “Green Revolution” mark it as one of the most important moments in twentieth-century agricultural history. As you’ll read below, it may well be “the era’s most significant phenomenon” (Olsson). It is certainly one of the most well-known among non-historians, with “heroes” of the Green Revolution like Norman Borlaug still lionized in Mexico, and pundits and philanthropists calling for a “new Green Revolution” to build on what they see as the uncomplicated successes of the first one (Soto Laveaga, Sackley, Lorek).

It seems like an opportune time for historians to weigh in. And at the conference in Briarcliff Manor, in between Girl Scout cookies and campfires, we heard historian after historian suggesting timely new interpretations. For Timothy Lorek, the new history of the Green Revolution will consider race and reproduction alongside science and agriculture. For Prakash Kumar, it will take into account old regional agricultural histories and subaltern studies on the Indian subcontinent. For Gabriela Soto Laveaga, the story is one of transnational collaboration *between* the nations of the developing world such as Mexico and Pakistan. For Sigrid Schmalzer, the Green Revolution was also Red, as Chinese proponents of agricultural transformation excoriated capitalism and then mimicked many of its effects on the countryside. For Tore C. Olsson, the Green Revolution promulgated by US officials was not unidirectional but emerged out of practical experience with agricultural transformation in the rural US South. For Nicole Sackley, these new histories will look beyond the archives of US philanthropies and pay attention to the materials of agricultural modernization.

What follows is meant to be provocative and suggestive rather than comprehensive. It is also emblematic of what the editors see as a key contribution of agricultural history, and of *Agricultural History*: scholars trained in a variety of subdisciplines engaging in debate and conversation around a

pressing issue. This roundtable is the first of several we have scheduled over the first year or two of our editorial service, and we are eager to entertain ideas for other topics and debates. Talk to us.

The roundtable took place in two bursts of writing and emailing in fall 2016, proceeding in alphabetical order and then reverse alphabetical order. The first prompt simply turned the title of one of the panels at AHS into a question and was intentionally terse: *Why do we need new histories of the Green Revolution?* The second prompt built on the responses and asked them to reiterate the contribution that history as a discipline might have to new understandings of twentieth-century agricultural history: *In view of the collective "historical amnesia" related to the Green Revolution—policymakers and pundits calling the Green Revolution a great success story that we need to repeat in the twenty-first century—what does history as a discipline bring to the study of a phenomenon previously dominated by social scientists? Is a new historical narrative of the Green Revolution possible? Is it desirable? And if so, what shape might that new narrative take?*

The panelists' responses are printed below with only light editing, followed by a bibliography.

Albert G. Way and William Thomas Okie

Contributors

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Timothy Lorek is a PhD candidate in the Department of History at Yale University and an Andrew W. Mellon Fellow at the Humanities Institute of the New York Botanical Gardens. He is also co-organizer of the international conference, "Traveling Technocrats: Experts and Expertise in Latin America's Long Cold War," held at Yale University in October 2016 and

from which he is co-editing a forthcoming volume. His research examines transnational circuits of agricultural science, landscape transformation, and agrarian politics in Colombia's Cauca Valley.

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Sigrid Schmalzer is Professor of History at the University of Massachusetts Amherst, where she teaches Chinese history and the history of science. Her second book, *Red Revolution, Green Revolution: Scientific Farming in Socialist China*, was published by University of Chicago Press in 2016, and a volume she co-edited, *Science for the People: Documents from America's Movement of Radical Scientists*, is forthcoming in 2017 from University of Massachusetts Press. Her current research examines continuities and changes in the politics of food and agricultural knowledge production in socialist and postsocialist China.

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Editors: *Why do we need new histories of the Green Revolution?*

Prakash Kumar: There is a marked degree of divergence between global and regional approaches to the study of the Green Revolution. This is unsurprising for an investigative line that deliberately traces the path of one specific model across well-defined world agricultural regions. In my field of specialty, South Asian Studies, the historiography on the subject is distinct in its modes of analysis and in emphasis, and often marks its rupture from the theoretical concerns and conceptual tools of “global” approaches. Despite efforts to address the concerns of both fields in single-author monographs, the global and regional parts of scholarships often talk past each other. There may be a need to explain the legitimate divergences and tensions between these approaches. The editors asked us to debate the need for writing new histories of the Green Revolution. My submission would be that there is enough justification to address and investigate the insularity of these historiographical approaches rather than to ignore them and leave them alone in their separate trajectories. As a specific suggestion, I would offer that new histories of the Green Revolution should address the interaction between the American brand of modernization and local visions of progress in South Asia on the one hand, and the intransigence or otherwise of non-elites in postcolonial nations to these modernist trends on the other hand.

Prominent accounts of the Green Revolution by historians of American foreign relations have in effect “globalized” this history by broadening the spatial scale on which this narrative unfolds (Perkins 1997; Ahlberg 2009; Cullather 2010; Sackley 2012). Fundamentally, these historians illuminate the context in which American (typically Midwestern) methods and ideals of farming were exported to other parts of the world.

Regional histories of the Green Revolution have reflected the different investigative priorities of national and area studies scholars. South Asian historians incorporate the study of modernist technologies and processes within the framework of “development,” while also invoking postcolonial criticism to get at non-elite visions and priorities in the countryside. The early scholarly assessment of the Green Revolution in India started soon after the launch of the so-called “New Agricultural Strategy” between 1964 and 1966. These interventions considered the nature of social structure and political economy within which the Green Revolution spread in India (Frankel 1971, 1978; Nair 1979; Kohli 1987; Brass 1994). Newer histories

situate the Green Revolution within the framework of a specifically post-colonial development (Gupta 1998). Still others have made a resolute move to turn the focus away from statist projects in order to specifically highlight the experiences of rural subalterns. These studies more or less ignore the core processes of the Green Revolution (Pandian 1999).

The current accounts on both sides of the historiographical divide nonetheless agree that the Green Revolution came to India on account of an externally inspired attack on the problem of poverty, and that it was administered by postcolonial elites. The effort was evidently spurred by a perceived lack of modernization. But that still leaves uncovered much of the historical interaction between social classes and the grand project of modernization represented by the Green Revolution. The postcolonialists in South Asia have been correct in emphasizing the need to highlight non-elite experiences. But they have not followed through on that call by putting American expertise in the Green Revolution under any sustained analysis. A history of agricultural development can justifiably include a treatment of claims to rights and resources from below. Some potential questions include: How was American technical expertise implicated in the process of state formation in India and in the project of postcolonial nationalism? What new possibilities of lower-caste politics emerged as a result of the severing of traditional patron-client relationships by forces unleashed by the Green Revolution? Such questions allow productive framing of the interaction of “modernization” with the Indian countryside. The consideration of rural history and society in all of its complexity can add a layer to the understanding of the global Green Revolution. In other words, a dialogue between the concerns of global and regional perspectives is a sound rationale for writing new histories of the Green Revolution.

Timothy Lorek: In May of 2016, researchers at the International Center for Tropical Agriculture (CIAT—Centro Internacional de Agricultura Tropical) outside the city of Cali, Colombia released a set of interactive maps revealing the geographic origins and global dissemination of the world’s most important food crops.¹ The maps provide a digital platform

¹ The maps are available at <http://blog.ciat.cgiar.org/origin-of-crops/>. The maps came out of the published study by Colin K. Khoury et al., “Origins of Food Crops Connect Countries Worldwide,” *Proceedings of the Royal Society B* 283 (June 2016). CIAT is a research center initially funded by the Rockefeller, Ford, and Kellogg Foundations focused on the study of tropical agriculture, and which comprises one of fifteen such sites around the world that together form the Consultative Group for International Agricultural Research (CGIAR).

based on UN Food and Agriculture Organization data, offering historical answers to fundamental questions about where our food comes from. As the buzz around food security, food sovereignty, food systems, food deserts, local, sustainable, and organic has introduced these terms into a public consumer lexicon, CIAT has picked up on an increasingly mainstream interest in food production. For historians of the Green Revolution, this example not only highlights the contemporary relevance of our subject, it also offers an opportunity to ask, where does knowledge of food production come from and what are its histories?

Historians of the Green Revolution have already contextualized changes over time in the production of knowledge. Nick Cullather's attention to the invention of the calorie as a precedent for twentieth-century agricultural development schemes offers just one excellent example (Cullather 2010). As Prakash suggests, however, we might do better to situate these changes over time alongside changes across space. In this pursuit, we employ certain analytical categories, especially gender, the subaltern, cultural history, and environmental history, to ask new questions and explore deeper connections.

Such questions and connections enhance our understanding of the places and people behind the production of Green Revolution knowledge. These places include Colombia's Cauca Valley, home to CIAT since 1967, but which has a longer history of agricultural science institutions dating back to the opening of a domestically funded experiment station in 1927. The history of this region, like others that host similar institutions, underscores the multilateral negotiations and previously existing institutional capacities behind key international research sites. A longer, place-based history rooted in regional soil adds new actors and new ideas to narratives dug out of foundation and government archives, thereby expanding their political and social contexts and consequences. Such histories answer Raj Patel's call for studies of a "long Green Revolution" by adding as much attention to studying the period before 1945 as he suggests we should for the period after 1970 (Patel 2013).

For Latin America, the relative dearth of such localized studies contending with a Green Revolution is surprising, especially considering Prakash's depiction of the flourishing field in South Asia. Latin American historiography has long steeped in agrarian concerns, and attention to the subaltern and state formation likewise reinvigorated this field in the early 1990s (Mallon 1994; Joseph and Nugent 1994). More recently, scholars have be-

gun to reassess Latin America's experience with international relations by interrogating a "long Cold War" and a "century of revolution," emphasizing regional and national contexts as essential to understanding post-1945 international events (Joseph and Spencer 2008; Grandin and Joseph 2010; Garrard-Burnett, Lawrence, and Moreno 2013). These historiographical trends suggest the rich but still largely overlooked insights to be gained from rethinking the centrality of Latin America to an emergent Green Revolution. Because much work remains for us as Latin Americanists to more fully incorporate the Green Revolution into our historiographical orbit, historians of US foreign relations have constructed narratives that largely ignore Latin American scholarship or the local conditions behind institutions such as CIAT.

Tore C. Olsson: Future historians of the twentieth century may well regard the Green Revolution as that era's most significant phenomenon, overshadowing wars both hot and cold. With the purported goal of feeding the world, an extensive global network of scientists, politicians, businesses, and bureaucrats set in motion two trends that made the twentieth century truly exceptional: the unprecedented growth of global population, and the transition of the human species from being primarily rural in 1900 to being primarily urban by the early twenty-first century. The Green Revolution fueled each transformation, in its vast expansion of grain production and simultaneous uprooting of small-scale cultivators made obsolete by technological change.

Considering those sweeping impacts, it is therefore surprising that until recently, historians spilled little ink on global campaigns of agricultural "modernization." It's still not uncommon for me to meet fellow scholars who have never even heard of the Green Revolution! Thankfully, such admissions are becoming rarer, as in the last decade several influential studies have traced the origins, diffusion, and impact of global campaigns to transform farming and farmers. Prakash and Tim summarize that literature succinctly. As they suggest, much of this scholarship has come from historians of US foreign relations or area-studies scholars of regions such as South Asia or Latin America. Indeed, few national historians of the United States and Europe, the countries assumed to be the architects of the Green Revolution, have engaged in these debates. I believe this silence has skewed our understanding of the campaign in two ways.

First, recent scholarship has created an artificial dichotomy between ag-

gricultural change in the Global South and that in the Global North. Too often, one assumes that programs of rural development and modernization were dreamed up in the First World, but as policies they were solely applied in the Third. In turn, there's a sense that the vocabulary and theoretical containers that scholars use to describe such Global South campaigns are inapplicable to the historical experience of the Global North. This approach disregards, for example, the technopolitical revolution experienced by the twentieth-century rural United States, with social consequences that in many ways foreshadowed those well documented in nations like Mexico and India. Few US or European historians, however, have adopted the insights of influential scholars in this field, such as James Ferguson (1990), Angus Wright (1990), or Akhil Gupta (1998). Venus Bivar's forthcoming book on France's Green Revolution will be an important correction to this trend.

The second problem is the exact inverse of the first: that there's not enough of the Global North's history in Green Revolution scholarship in Asia, Africa, and Latin America. In reading recent works, we learn how a confident and hubristic United States attempted to remake the rural world in its image. We learn how planners drew lessons from an American agriculture they believed to be the world's most productive and stable. Yet in these accounts, "America" comes off as a homogenous and static entity with an unchecked past of success and growth, ready to be transplanted elsewhere. These narratives seem to suggest there was a singular American experience to be exported abroad after World War II. This strikes me as deeply problematic, and I believe scholars need to grapple more seriously with the role that regionalism played in these so-called "Americanization" campaigns. During the middle of the twentieth century, at the dawn of the development project, the United States was a patchwork nation of rich and poor, rural and urban, whose complex history of growth *and* stagnation shaped how the architects of development looked out onto the world beyond. As an example, the Rockefeller philanthropies—long credited as the primary architects of the Green Revolution—pioneered their work in agricultural extension and education in the plantation belt of the American South, which would later play a decisive role in Mexico and elsewhere. Acknowledging such regional complexities will make our understanding of interventions in the Global South far more nuanced.

Nicole Sackley: Over the past two decades, historians of agriculture and

international development have made the Green Revolution a subject of serious scholarly inquiry. They have delved deeply into archives (particularly those of philanthropic foundations) to illuminate the institutional networks, elite debates, and geopolitical contexts that shaped national and international policies and programs (Fitzgerald 1986; Perkins 1997; Harwood 2010). They have examined how scientific discoveries of high-yield seeds have been intertwined with cultural assumptions about race, class, and gender, along with the construction and naturalization of social scientific categories, from “hunger” and “population” to “markets” and “modernization” (Li 2007; Cullather 2010). And they have shown how the postwar constellation of scientific discoveries and policies labeled the Green Revolution is, in fact, a particular episode within a *longue durée* of capitalist agriculture (Araghi 1995; Kloppenborg 2004; Patel 2013).

Has this scholarship made a difference? In a recent *New York Times* op-ed, Nobel prize-winning biologist Phillip Sharp and Alan Leshner, former CEO of the American Association for the Advancement of Science, declared, “History has shown that science can solve the nation’s agriculture and food production problems.”² Sharp and Leshner are not alone in invoking “history” to call for a “new green revolution.” The Green Revolution remains a tale of heroic American scientists and philanthropists saving the world from hunger and overpopulation in the late 1960s (Cullather 2010; Patel 2013). Today, powerful foundations, global institutions, and corporations invoke this mythic past as parable and precedent in shaping our global future.

In the face of such historical amnesia, we need more—and new—histories of the Green Revolution. This conversation has already generated exciting directions for research, from Prakash’s and Tim’s calls for examining the reciprocal relationships between American techne and local contexts in South Asia and Latin America to Tore’s admonition that we must attend to regional variations within the Global North and recognize its contemporaneous history of development with the Global South.

If my colleagues rightly emphasize regional contexts and variability, I’d like to suggest that we also expand the subjects and institutions we study when we study the Green Revolution. Most Green Revolution histories place the development and dissemination of high-yielding varieties of wheat and rice seeds—and the agricultural scientists and US philanthro-

² Phillip A. Sharp and Alan Leshner, “We Need a New Green Revolution,” *New York Times*, Jan. 4, 2016.

pies who championed them—at the center of the story. Yet, as both champions and critics of the Green Revolution have recognized, this revolution was impossible without technological and social transformations in water, land, pesticides, and chemical fertilizers. What would happen if we place these “inputs” at the center of Green Revolution histories? Following fertilizer, for example, might lead us to explore how the politics of agriculture and oil came together in various national and transnational contexts, especially after the oil shocks of 1973.

In a similar fashion, we might consider the role of local, national, and transnational institutions beyond philanthropic foundations—from cooperatives and state factories to global banks and multinational corporations. To date, our histories have reflected our richest archival base: the open collections of the Ford and Rockefeller Foundations. They serve us well when trying to understand the emergence of a particular set of technologies, ideologies, and practices from the 1940s through the 1960s. They have less to tell us about the origins of the neoliberal capitalist order in which we currently live. What kinds of sources, archives, and methods do we need to write the recent history of the Green Revolution?

Sigrid Schmalzer: Many scholars have already noted the origins of the term “green revolution” within Cold War US geopolitical strategy: it was coined by the director of USAID in 1968 explicitly to form a contrast with “red revolutions” (Perkins 1997; Cullather 2010). By increasing agricultural production around the world, technology was expected to raise standards of living and thus prevent peasants from throwing their lot in with the communists. However, we know very little about how the same Green Revolution technologies celebrated by US-funded green revolutionaries came to be embraced in communist countries that held explicit commitments to “red revolutionary” politics.

An exploration of the Green Revolution in socialist China thus presents one clear avenue for the kind of decentering of the United States, and of the US philanthropic model, that Prakash, Tim, and now Nicole have called for in new histories of the Green Revolution, and it further helps disrupt what Tore terms the “artificial dichotomy between agricultural change in the Global South and that in the Global North.” At the same time, China scholars run the opposite risk of failing to see the influence of the US model (“checkered” though its origins were, as Tore reminds us) even in the Mao era, when for political reasons no US model was supposed

to hold sway. The influence can be found at the concrete level in the organization of the extension system, and at the abstract level in the developmentalist assumptions undergirding the drive for agricultural improvement.

In important ways, the Green Revolution in China looked very different from the Green Revolution elsewhere. Where the US vision of the Green Revolution urged faith in technological, rather than political, solutions, the socialist Chinese vision insisted that new technologies could be legitimate only if they emerged from politically and socially revolutionary contexts. The socialist Chinese case will be of interest to scholars who consider science to be an inherently social and therefore also an inherently political activity (Kloppenburger 2004), who favor forms of science that recognize the value of rural people's knowledge (Gupta 1998; Song and Vernoy 2010; Soto Laveaga 2009), and who want to see how agricultural modernization played out in a historical context in which these values were explicit parts of the state ideology. Treating science as a political struggle or "revolutionary movement" enabled many important outcomes for socialist China. To take one example, it opened avenues for girls to work in nontraditional roles; and to take another, the radical principle of self-reliance meant that even the adoption of hybrid varieties could lead to skilling rather than deskilling of local people (Schmalzer 2016).

However, in other equally important ways the Green Revolution in China looked quite similar to the Green Revolution elsewhere, including in the replacement of diverse traditional varieties with smaller numbers of "improved" varieties, increased use of chemical fertilizers and insecticides, increased productivity and simultaneously increased vulnerability to insect pests and diseases, and disruptions of local ecosystems. China has thus enjoyed the same production increases and suffered the same kinds of environmental degradation that we have seen everywhere that chemically intensive agriculture has been adopted. Moreover, the labor abuses that accompanied China's red version of the Green Revolution were just as appalling as what we have seen in capitalist contexts.

These similarities in outcomes suggest the need to explore common problems underlying both capitalist and state-socialist approaches to agricultural transformation in the twentieth century. First, a developmentalist ideology: although Maoists decried technocracy, they did not embrace a sufficiently rigorous political critique of technological triumphalism, and so failed to recognize the environmental consequences of fast-paced development. Second, political oppression: in neither China nor the US have

agricultural laborers achieved the political power necessary to protect their health and welfare, nor have agricultural scientists been fully empowered to pursue research in the public interest.

Gabriela Soto Laveaga: In late September 2016, during an event in Mexico celebrating fifty years of scientific innovation in agriculture and advances in food production, the minister of Pakistan acknowledged Mexico's contribution to his country's agricultural development. In particular, he hailed the collaborative relationship which led to the creation of "Mexi-Pak," as the hybrid wheat seeds are called in Mexico, or, as he referred to them, "Pak-Mex."³ His words served as a reminder of two things: first, the need to examine crop improvement research between southern hemisphere countries to add to our understanding of the Green Revolution; and second, his use of the hybrid seeds' dual name to emphasize the importance of giving equal validity when examining these relationships. I also wish to push for a third point: the need to extend the chronology of the Green Revolution in both directions so that the arrival of the Rockefeller Foundation, for example, is examined as part of a longer tradition of agricultural research for countries that engaged in such a practice. Finally, it is important to return to the spaces where the Green Revolution emerged and examine its impact using the above multiple perspectives.

Prakash's work in South Asia, Tim's work in Colombia, Tore's work in the southern United States, and now Sigrid's in China encourage us to critically incorporate other regions of the world to illustrate how the complexity of the *many* Green Revolutions are working to correct the often linear understanding of a single, dominant narrative. While all my colleagues have called for a broader geography, I wish to also second Nicole's suggestion for a re-examination of techniques and institutions that push us into areas of fertilizers, canal building and maintenance, and water control, for it is in these intersections that we can begin to examine the longer impact of the Green Revolution.

I am typing this mere minutes from the (renamed in 2011) Norman E. Borlaug Experimental Field Station (CENEB) in the Mexican Yaqui Valley. To get here the taxi took the Norman E. Borlaug Boulevard, which runs directly from downtown to the field station. Before leaving the hotel, I walked by the Norman E. Borlaug ballroom. Borlaug's presence in Ciu-

³ "Ministers of Agriculture: Past, Present and Future," panel at Cimmyt 50, Sept. 27, 2016, Texcoco, Mexico.

dad Obregon's streets is a not-so-subtle reminder of the lasting power of a single historical narrative. Historians of the Green Revolution, especially in Mexico, need to move beyond the beloved but long shadow of "the father of the Green Revolution" and instead look to, in this case, the farmers in this region, some of whom remember family members conducting experiments in their fields before the arrival of the Rockefeller Foundation and Norman Borlaug. It will come as no surprise for those who do oral history that the impact of the Green Revolution up close is a lot more intricate and unpredictable than what we might find in the archives. For starters, the United States and the Rockefeller Foundation cease to play a singularly pivotal role and instead become multiple cogs in the country's long history of agricultural experimentation.

When analyzing the origins of the Green Revolution, we often begin in the fields of northern Mexico where semi-dwarf hybrid seeds were developed. Nick Cullather's *The Hungry World* is just the most recent example of this pattern (2010). While agricultural scientists from around the world return every year, rarely have historians revisited the desert field station in Ciudad Obregon, Sonora, especially after the departure of the Rockefeller Foundation. A fresh historical gaze would reveal how changes that have taken place and continue to take place here are defining both the field of agricultural science and in some ways challenging our basic understanding of the impact of the Green Revolution. We need to return, physically return, to the spaces that played a crucial role in the Green Revolution.

Editors: *In view of the collective "historical amnesia" related to the Green Revolution—policymakers and pundits calling the Green Revolution a great success story that we need to repeat in the twenty-first century—what does history as a discipline bring to the study of a phenomenon previously dominated by social scientists? Is a new historical narrative of the Green Revolution possible? Is it desirable? And if so, what shape might that new narrative take?*

Gabriela Soto Laveaga: In reading my colleagues' responses to the first prompt the common denominator is our belief that we don't yet have enough histories of the Green Revolution or rather that the narratives we do have are limited in either scope or design. With our robust call for more focus on local histories we seem to agree that new narratives are possible, desirable, and, indeed, necessary. So what would this look like? For

me this translates into an invitation to complicate—and challenge—the prevalent narrative in two key ways. First, this should no longer be told as a tale principally emphasizing a US-led effort to develop the southern hemisphere. And second, we need to revisit how we understand and explain agriculture-based development projects of the mid-twentieth century. While not removing the United States and its scientific, technological, and financial role in the creation and spread of the practices of the Green Revolution, we must emphasize how most countries had historically been pursuing agricultural innovation well before the mid-twentieth century. The question then becomes: what made the foundational principles of the Green Revolution so appealing in the long path of national agricultural experimentation?

The immediate answer is that on the ground “development” took on a very distinct meaning that varied significantly within regions in any given country. For example, the birthplace of the Green Revolution, Sonora in northern Mexico, is bordered by regions where no Revolution—green, red, social, or economic—ever arrived. These gradations of “green” of the so-called Green Revolution make it necessary to understand how local people understood the arrival of new agricultural ideas and, more important, which locals received the knowledge. The Green Revolution then becomes a history primarily of circulation of knowledge and exchange of technical expertise instead of a history of development aid. And as with most ideas and practices, not all flowed or circulated equally. The expansion of Green Revolution practices was often confined to spaces that fit the profile—particular soils, certain farmers, etc.—that would lead to success. It is in this intellectual space where we need to distinguish between what a “development” project proposed and what was actually achieved.

If we take this as a point of departure, the class, racial, and political divisions that determined how land was distributed and used stand out when we examine which areas embraced new agricultural practices. By focusing on, for example, the seed testing officers commissioned by India’s agricultural research institutes or Mexico’s agronomists the story then becomes a tantalizingly different one.

In short, history points toward the deeper struggles over land, the meaning of land, and the place that those who worked the land have occupied in the national narratives. This emphasis is important because the arrival of Green Revolution ideas often exacerbated these practices. What we find are the multiple layers and multiple players involved in implementing the

Green Revolution. The list is so deep that we find that farmers themselves, as in southern Mexico, were removed from the actual understanding of the Green Revolution. Instead of being an afterthought the conditions of farmers can and should become part of the foreground as Prakash, Sigrid, and others remarked in their first response.

New histories of the Green Revolution would not, I think, have *the* Green Revolution as its point of departure but rather would examine the technologies, technocrats, and farmers of the Green Revolution as actors in a long path of attempts to modernize countrysides around the world. Indeed, if we write these broader histories where the Green Revolution is either viewed as a continuation of projects or even a disruption of previous attempts, we anchor the narrative in national histories. Where does this leave the United States? It is still part of the narrative but has also become part of each nation's attempts to court other means to bring about progress.

An example of what this might look like if we employ this formula is the case of Mexico, where we can examine the life of Pandurang Khankhoje, an Indian agronomist who was influential in crafting Mexico's early agricultural programs in the 1920s. Many of the practices made popular by Norman Borlaug—involving the farmer in controlled experiments of hybrid seeds, farmer field days, and fruitful exchanges between farmers and scientists—were already in place a few decades before the arrival of the Rockefeller Foundation.

In short, agricultural technology is not static. It is remade and reshaped by people—farmers, bureaucrats, soil and seed scientists, and others—and it is to them, decades before the start of the Green Revolution, where our focus should turn.

Sigrid Schmalzer: I want to pick up on a few of the many thought-provoking threads Gabriela has introduced—the complex historical layers constituting what we think of as *the* Green Revolution; the centrality of economic development, farmers' livelihoods, and struggles over land; the significance of national histories; and the importance of locality, especially with respect to the selection of model sites—and use them to address current Chinese discourse on the “next” Green Revolution.

People in China do not usually recognize the term “Green Revolution” as we have been using it here. There, it signifies the recent turn to “ecological” farming, which is celebrated both for its ties to traditional practices and, simultaneously, for its cutting-edge modernity. It has emerged from a

rising middle class demanding safer and more delicious foods, a growing environmental consciousness, and a widespread public antagonism toward GMOs—which have in turn arisen out of a strange tangle of consumer culture, leftist activism, and a nationalist state concerned about competition with foreign agricultural corporations.

Nonetheless, “conventional agriculture” (which is, ironically, what the Green Revolution we have been discussing brought about) remains dominant in China. The modernization of agriculture is widely seen as a necessary factor in the economic growth China now enjoys. Less clear is how much this growth owes to the new agricultural technologies (especially chemical fertilizer and improved seed varieties) introduced during the Mao era, and how much to the Deng-era transformation of the political economy (specifically, the decollectivization of Chinese agriculture and the imposition of market reforms). The latter factor is made still murkier as peasants who were assigned “household responsibility” plots in the early reform era—following a notion that collectivized agriculture is less efficient than family farming—have increasingly been pushed to surrender their land and find employment on corporate farms (which are ironically now touted as obviously more efficient than family farming), in factories, or in the tourism industry.

The many historical layers underlying contemporary Chinese agriculture hit me between the eyes last month when I visited Wangjinzhuang, a site in Hebei Province designated as a “Nationally Important Agricultural Heritage System.” The program, modeled on global efforts spearheaded by the UN, aims to preserve sustainable traditional agriculture; the designation brings economic benefits to Wangjinzhuang through state subsidies and tourism revenue. Historians may also notice echoes of Mao-era policies to preserve, while simultaneously rendering scientific, indigenous Chinese medical and agricultural knowledge so that it might better serve the modern nation.

Wangjinzhuang’s “heritage system” is dry-land terracing: its steep hills are carved into level strips of land, each wide enough for several passes by a donkey-pulled plow and held in place by hand-built rock walls. Farmers plant corn and millet in rotation; they also tend fruit, nut, and Sichuan peppercorn trees and grow medicinal herbs as cash crops. An eagle soaring overhead completed my picture of a spectacular and idyllic agricultural landscape.

But wait: Does it matter that the bulk of these terraces were built during

the Mao-era mass mobilization to “Study Dazhai in Agriculture,” a campaign often remembered as a travesty of wasted energy and ecological devastation? The use of terracing to reclaim hillsides for agriculture was one of model brigade Dazhai’s most influential practices; at the time, it represented neither “tradition” nor the potential for tourism, but rather a grand socialist vision of agricultural modernization imposed nationally, regardless of local conditions. Such landscaping was the first of eight elements (also including seeds, fertilizer, and plant protection) in Mao-era China’s version of what we call the “Green Revolution.” Should the association between Wangjinzhuang and Dazhai lead us to question Wangjinzhuang’s eligibility as a “heritage” site? Or perhaps to reassess our negative view of the Study Dazhai campaign? Or some complicated combination of the two?

Taking another step back, historians know that “traditions” do not always represent environmental sustainability or social harmony: on land farmed for millennia, farming practices can be centuries old and still be the result of desperate measures to exploit land and labor past the margins of endurance. If Wangjinzhuang is to be a model, what is its “heritage”? Which parts of which revolutions deserve celebration, and which should be mourned?

Though the layers of history may not always be as visibly striking as they are in Wangjinzhuang, every place where farming happens has a complicated past. To know how to go forward, we need to understand that past and the intricate relationships between humans and nature, old and new practices, the local and the global, and political and technological forms of change.

Nicole Sackley: What does history as a discipline bring to the study of a phenomenon previously dominated by social scientists? As I read over the insights of my colleagues, I see us collectively answering a call for new Green Revolution histories by drawing on multiple methodologies and approaches within the discipline. Social history comes to the fore in Prakash’s and Gabriela’s exhortations to study the Green Revolution’s impact on the lives of the “dispossessed and the subjugated.” Rather than measure “success” or “failure” with economic or environmental metrics, as many social scientists have done, social historians seek to understand how ordinary people experienced these transformations and how they articulated their understandings of these events. Historians to date, however, have done relatively little to bring subaltern voices into our narratives of the shape, re-

ception, and impact of the Green Revolution. We will need more oral history and better reading of elite sources “against the grain” to do this work.

If social history asks us to attend to ordinary experience, intellectual history reminds us that the very way people understand material changes is shaped by cultural frames and discursive practices. Historians have begun to examine how a particular set of scientific practices became written into, and understood through, the ideological categories of the Cold War and older Western assumptions about quantification, capitalism, and civilization. We need, as well, to write the Green Revolution into a wider frame of visions for rural transformation that circulated globally in the twentieth century. From ideas about community development and cooperatives, to social scientific theories of population control or ecological claims for “small is beautiful” village economics, the Green Revolution constituted one of several imaginaries of rural life. In particular times and places, alternative visions operated hand-in-hand with scientific agriculture, at other times in tension. By documenting changing debates and discourses about rural life, intellectual history as an approach can reveal how the Green Revolution became a dominant idea and ideal for the Global South. To do this work, however, we cannot ignore the regional reception and geographic limits of the “Green Revolution” as a key term. As Sigrid notes, a direct translation connotes something altogether different in the People’s Republic of China. We must be attendant to how different national contexts and different narratives—including those crafted by those who protested the Green Revolution—have reshaped its meaning and significance.

National context matters. As every contributor to this roundtable reminds us, we cannot understand the reception and experience of the Green Revolution without attending to the long histories of agricultural transformation within particular nations. In part, this means a return to the practices of political history that reveal the workings of power in its many dimensions, including processes of state formation and colonialism; class, regional, and party politics; and national support for scientific and expert knowledge. A focus on political history could lead to more local histories of the Green Revolution; it might also inspire historians to re-consider the Green Revolution’s place in wider national and regional histories. For my own field of US history, this might lead us, as Tore suggests, to re-examine the history of the rural United States through the lens of development and the Global South. Or, by focusing on the history of scientific agricultural research projects at home and abroad, US political historians might discov-

er new questions and dimensions in their studies of American capitalism and the American state.

A call for national histories need not neglect the transnational turn. Indeed, to understand how and why a particular set of agricultural practices took hold in particular places at midcentury, we must continue to trace the institutional, intellectual, and financial networks in which they circulated. This means embedding local and national histories of the Green Revolution in longer international histories of the environment, famine and “food security,” geopolitics, agricultural labor, the cooperative movement, and economic systems. While US and US-dominated institutions often sat at the center of such networks, we are just beginning to understand the ways in which ideas, people, and material moved within and across the Global South.

Those attempting to trace these connections are challenged to understand international institutions operating in multiple national contexts while also sorting through multiple national histories and archives. As scholars writing global history, we might ask what forms—other than the single-authored monograph—new narratives of the Green Revolution might take. Having contributed to the social scientists’ understandings of Green Revolution, how might we borrow fruitfully from them? Is there a role, for example, for co-authored or multi-scholar projects? Or, could historians of the Green Revolution draw on the methodologies of the digital humanities to visualize and map these circuits of knowledge, money, and people across borders and over time? In searching for how to narrate these many layers of history, we must be creative and experimental.

Tore C. Olsson: Historians have an instrumental role to play in public and scholarly debates about what the globe’s accelerated agricultural transformations after 1945 might mean for our collective future. The principles that distinguish historical thinking from other forms of critical thinking—particularly, its acknowledgement of change over time, context, causality, contingency, and complexity—make it essential to the work of dispelling triumphalist understandings of the past, like those Nicole cited in our first round of responses.

Yet in writing about the Green Revolution, I predict that historians will diverge in their approach—and whether to call their subject by that name. There will certainly be some scholars who aim to write grand narratives of a singular, encapsulated phenomenon: as Gabriela notes, taking “*the* Green

Revolution as its point of departure,” with its subject explicitly capitalized. Such an approach brings undeniable advantages, in that it imparts a cohesive narrative with set chronological and geographical parameters, familiar protagonists, and an ability to speak to today’s policymakers and practitioners, who are unlikely to read more than a single volume when pondering historical precedents.

Much of the recent historiography has hewn to this path, foregrounding scientists, planners, and policymakers, and seeing the world’s countryside as their stage. Such studies have been essential in revealing the ways geopolitics, economics, culture, race, and gender shaped that campaign. And I’m a firm believer that such sweeping narratives are necessary and will continue to command attention. After all, we still need a global business history of the Green Revolution, foregrounding multinational firms and their intersection with the more familiar scientists and bureaucrats; we also still need a global environmental and energy history of the campaign, as well as a labor history and a history of migration.

But if “thingifying” the Green Revolution allows for a neater, more communicable, and more relevant story, it also casts significant shadows on our knowledge of agricultural change. It privileges the global over the local, the national over the regional, the scientist and bureaucrat over the common farmer. In many ways this dilemma parallels one in recent US history—the debate over how to understand African American struggles for social, political, and economic equality since the end of slavery. For decades, it was conventional to write of *the* Civil Rights Movement, likewise capitalized and understood as having a neat beginning and end with familiar protagonists leading the way. Yet in recent years, historians of US social movements have either rejected such a formulation or stretched it beyond recognition, stressing continuities and foregrounding previously anonymous participants.

It would therefore not surprise me should many future scholars of agricultural and agrarian change entirely abandon the “Green Revolution” as a narrative container. After all, should we really allow the Cold War fever dreams of 1968 to dictate the terms of understanding a far larger phenomenon? Even among this roundtable’s participants, there has been little consensus on whether the term should be capitalized, should reside between quotation marks, or whether it is ultimately flexible enough to contain the new directions of study that we suggest. I imagine that many future historians will eschew the temptations of sweeping global narrative

and dig down to do what historians know best—analyzing change over time in a bounded geographical space, informed by the gathered wisdom of area studies. As long as such histories don't neglect the transnational turn, as Nicole wisely cautions, they will provide a vital counterpoint for understanding the agricultural transformations of the modern world.

Timothy Lorek: Considering the approaches to history outlined by Nicole and Tore, I want to make a pitch for histories that seek out thematic intersections. This should be especially crucial for a phenomenon such as the Green Revolution, which, as we have all suggested, was much more complex than a master narrative might allow. I think the following example demonstrates the rich points of contact in the varied strata of a Green Revolution.

In 1947, an unlikely duo wrote an article that reexamined the history of race and colonialism in the Americas using the language of plant breeding. The authors, Puerto Rican agronomist Carlos Chardón and US geographer Raymond Crist, had long participated in the international circulation of hybrid seeds and scientific knowledge that helped create the conditions for a Green Revolution. They penned "Intercultural Colonial Policies in the Americas: Iberians and Britons in the New World," a treatise on racial hybridity and cultural grafting, at a key moment in the acceleration of international agricultural development.⁴

We might pick apart the entangled themes in their article into four strands. First, the authors served pivotal roles in the growth of parallel Cold War pursuits, namely the Green Revolution and Area Studies. For example, after helping guide Puerto Rico's influential agricultural experimentation, extension, and educational sectors (in which one of the stars of the Green Revolution, J. George Harrar, got his start), each consulted in the application of this model to other sites, such as Colombia's Cauca Valley, that would become laboratories of Green Revolution technologies. The two then returned to the academic sphere and contributed to the flourishing of the United States' first program in Latin American Studies at the University of Florida.

Second, the publication outlet, *The American Journal of Economics and Sociology*, reflected the authors' deep engagement with the social aspects of agricultural development. The journal intended to promote the agrarian

⁴ Raymond E. Crist and Carlos E. Chardón, "Intercultural Colonial Policies in the Americas: Iberians and Britons in the New World," *American Journal of Economics and Sociology* 6 (Apr. 1947): 371–85.

philosophies of Henry George, whose advocacy for a “Single Tax” on land rents inspired the authors’ work in land tenure, as it did many of the Progressive and New Deal forebears to the Green Revolution.

Third, the authors’ owed their traction in comparative colonial histories of the Americas to a distinct intellectual genealogy. At first glance, they seemed to offer little more than a reprisal of the emergent (and cited) ideas of Frank Tannenbaum, whose landmark and controversial *Slave and Citizen* first appeared in 1946. But they also found inspiration in such well-known Latin American intellectuals as José Vasconcelos, Gilberto Freyre, and Fernando Ortiz. All of these writers based their nationalist visions on observations of diverse and fecund (in the agricultural sense but also in the gendered human reproductive sense) agrarian societies.

Chardón and Crist positioned their unique contribution within this Latin American commentary on race and reproduction. The history of colonialism in the Americas, they thought, revealed the strength acquired from mixed breeding. The conclusion to their timely article served as an advertisement for the spread of hybrid plant breeding, toward the incipient global process now recognized as the Green Revolution. For bodies, whether plants or people, hybridity equated vigor and strength and therein lay the future of (capitalist) economic growth and the eradication of poverty (and revolution).

One year before Norman Borlaug and the Rockefeller Foundation’s cast of characters recommended the extension of the Mexican Agricultural Program to Colombia and beyond, this unlikely duo recast histories of race and reproduction under colonialism as a biological model for improving the world’s agricultural systems. Chardón even wrote Crist nearly two decades later to ask him to extend the applicability of their 1947 article to Africa and Asia, in this way foreshadowing Bill Gates, Barack Obama, and other present-day advocates for a “second Green Revolution” in Africa.

The prompt asks us to reflect upon what history, in particular, might still offer to understandings of the Green Revolution. The above example illustrates an assemblage of interrelated processes, including historically situated and transnationally circulating ideas about economics, land tenure, international relations, race, gender, biology, and history itself.

History helps us untangle the intersections of big ideas. William Cronon famously cited historical narratives, even or especially in their multiplicity, as tools for “searching out meaning in a conflicted and contradictory world” (Cronon 1992, 1373–74). It’s not as though we do not already have useful

histories of the Green Revolution. However, if we are to understand the Green Revolution, in Tore's words, as one of the twentieth century's "most significant phenomenon[a], overshadowing wars both hot and cold," then we need *more* histories, *more* narratives, *more* connections. We need more histories that help us piece together plant-breeding, racial theory, gender, or any other thematic intersection that affects our conflicted world.

Prakash Kumar: Since coming to power in 2014, India's Prime Minister, Narendra Modi, has given the call to extend the Green Revolution to new zones that were left behind in the first thrust of expansion in the 1960s, places that have come to be characterized as representing the economic and social backwaters of an otherwise progressing India.⁵ Global philanthropies are working on extending the Green Revolution to new areas in Africa. At no other time could more be at stake in understanding the first wave of expansion of the Green Revolution. It therefore makes sense to add layers of local histories, based on variegated archives, to current understandings. In this I concur with the call given by my colleagues. The decentering of the American role through such local studies serves useful purposes going forward. These histories open up new insights on not just the nature of American power in the global realm, but also on the nature of inegalitarian social relations in the Indian countryside. To South Asianists, specifically, such trends provide an understanding of the identities, selfhood, and meanings in the histories of the dispossessed in neo-liberal times. To focus on different "localities" is not to ignore the role played by the United States, as Gabriela clarified, nor to overlook the evident transnational aspects of this history, as both Nicole and Tore have emphasized. The editors' question seems to encourage us to lay down the outlines of new possible historical narratives on the subject. It would seem that connecting the United States' global development effort with questions of rural inequality abroad provides an exciting agenda for future research.

There is more work to be done within area studies, too. In the Indian context, specifically, one could only desire that the focus on questions of identity does not efface the study of core processes of the Green Revolution. This latter omission in South Asia comes from an assumption of the

⁵ See, for example, "Second Green Revolution Will Happen in Eastern India: PM Modi," *The Economic Times*, May 10, 2015, <http://economictimes.indiatimes.com/news/economy/agriculture/second-green-revolution-will-happen-in-eastern-india-pm-modi/articleshow/47222397.cms> (Accessed June 14, 2017).

intransigence of “subaltern consciousness” to processes of modernization. A better way forward could be to test the whys and hows of the irrelevance of modernization to these agrarian classes. Doing so will cast into relief the nature of agricultural development pushed by external and internal forces.

Additional histories of the Green Revolution in India can consider efforts that were made in India to improve agricultural yield before, aside from, and after the American intervention. South Asian historians can dig deeper in local records with the goal of illuminating the broader engagement of rural India with technology-intensive agriculture and the brand of modernization it represented. New narratives in India can potentially move in several directions. One line of investigation can look closely at regional differences in the implementation of new agricultural strategies. There is a certain assumption in the historiography of a “singular” Green Revolution technology spreading across vast continents. An examination of heterogeneous practices of agriculture across various regions can provide a counter perspective. More accounts from the ground up can add a regional dimension to global histories of development. For instance, land reform was an important aspect of India’s development experience (as it was in Mexico, as Gabriela points out), and a focus on that process can alter current understandings of a Green Revolution spreading unilaterally and unmediated from a single center. Posing the demands of efficient production against the interests of small-scale farming, or farming on marginal lands, can be illustrative. Historians of science can profitably explore how agricultural science intersected with power struggles in the countryside over resources. The ethnographic accounts can add layers of understanding to the actual interaction of communities with agricultural technologies at a micro level. This sort of attention will show the engagement of pertinent agrarian classes in rural India with the Green Revolution model.

There is considerable agreement that a certain type of modernist and resource-intensive agriculture spread globally in the middle decades of the twentieth century. Only some of it goes by the name of the “Green Revolution,” as several participants have pointed out. It would then seem that the Green Revolution was part of a broader trend, and is therefore worthy of even greater attention.

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