

The Aesthetics of Scientific Neutrality

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I.

On February 9th, 1932, the Rockefeller family's new Museum of Modern Art (MoMA), in Manhattan, opened its first architectural exhibition, "Modern Architecture: International Exhibition (1932)," curated by Philip Johnson and Henry-Russell Hitchcock.¹ While the Museum would soon be leveraged to create connections between Latin America and the United States, beginning with Mexico in particular, "Modern Architecture" focused exclusively on designs realized within the Global North in order to challenge Europe's modern architectural hegemony, while shaping the aesthetic choices of US architects and the general public.² Though the exhibition was a resounding success in its time, its co-publication, *The International Style* (1932), conceived by Barr and Hitchcock before the decision to launch the exhibition, has ensured the circulation of the curators' concerns over the intervening decades.

Building from geographically specific examples while proclaiming a certain universality of import, in Part 1 of *The International Style*, Hitchcock and Johnson attempted to establish a historical framework for their arguments to come. Beginning in the eighteenth century, Hitchcock and Johnson argued, stylistic confusion reigned as architecture struggled to reconcile new methods of construction and new materials with older styles of building ornamentation.³ Accordingly, the resulting chaos of eclecticism or, more precisely, the idea *that style could be a choice* nearly damaged the idea of style altogether. Arguing toward what has become Louis Sullivan's now ubiquitous dictum that form should follow function, Hitchcock and Johnson described shifts from mass to volume, regularity over symmetry, and the denunciation of ornament, not as contingent, but instead necessary conditions for modern architecture.⁴ Pairing this now famous injunctive with increasingly fashionable biological terminology, historian and curator together wrote: "The unconscious and halting architectural developments of the nineteenth century, the confused and contradictory experimentation of the beginning of the twentieth, have been succeeded by a *directed evolution*."⁵

What Hitchcock and Johnson thought they had found in the International Style was twofold. For practitioners, they offered guidelines that, when followed with skill, could shape volumes into signifiers of their time. For astute readers of the built environment, they argued, the new style had already begun to shape architectural possibility in line with the functioning of modernity. The cultural impacts of *Modern Architecture* and its sister publication, *The International Style*, are well documented. However, the reach of the aesthetics championed within these twinned cultural touchstones has been limited to studies of modernism, i.e. the impact of modernization on visual culture, per se. Friedrich Nietzsche, Jurgen Habermas, Alexander Nehamas, as well as theorists of the center-periphery debate, have duly pinpointed the makings of the modern period, marked by the turning away from history and tradition in search of something new, bolstered not by the church, monarchies or other forms of deontology. Instead, it is framed by ideas of science, technology, extractive capitalism, and progress. This story and its relationship to the International Style have been endlessly told. What remains to be uncovered in the history of modernism, and what we are currently uncovering as a species, is the degree to which the aesthetics which shaped the International Style exceeded the bounds of art, architecture, and visual culture in the attempt to shape experiments in science, economics, politics, and the humanities by applying the aesthetics of scientific neutrality to more-than-human (i.e. human animal as well as non-human animal, vegetable, mineral, etc.) appropriation.⁶

Drawing from the fields of art and architectural history and theory, along with agricultural history and the environmental humanities, my research pinpoints the commitments of the International Style as they appear within a broader mechanism of modern development in the form of what I am calling the aesthetics of scientific neutrality. In line with the tenets of positivism, the aesthetics of scientific neutrality reveal a way of looking at objects--including humans, plants, seeds, reinforced concrete, and soil--as “resources” or “value-neutral factors,” even undeveloped empty spaces, best handled and optimized through a combination of technocratic and scientific approaches. If architectural modernism, as perhaps most famously practiced by Ludwig Mies van der Rohe, Le Corbusier, and Walter Gropius, is defined as an architectural response to--and

participation within--the twentieth-century inclination to propose scientific and technological solutions to what were often also cultural and political problems, the aesthetics of scientific neutrality precedes these and other modernists' output. It is a mode of seeing shaped directly by the post-World War II Bretton Woods reorganization of global power through the creation of the International Monetary Fund and the World Bank, which reframed previous "colonial" power in terms of the new, purportedly more neutral market-driven forces of industrial production, expertise, and technocracy.⁷ Taking up the mantle of this scientifically neutral reorganization of the First, Second, and Third Worlds, institutions including the United Nations, UNESCO, the US Point Four Program, as well as the Rand, Ford and Rockefeller conglomerates, including Nelson Rockefeller's Office of the Coordinator of Inter-American Affairs, created expanding networks focused on the rationalization of domains ranging from welfare and farming to tourism, urban planning, and economic growth. Yet, as Louis Marin has argued, neutrality is never neutral. Speaking directly to the purported neutrality of a liberal university, Marin describes neutrality as something more akin to dissimulation. It is, he states, "...not simply an inert screening-off of a deeper reality. It is, rather, a means to an end, a means possessed by an end for its own self-realization. It is the mark of a force aiming at a goal, a mask of the violence of this force or, in different terms, its 'reactivity'."⁸ Operating under the guise of neutrality, of dissimulation from its perhaps sublimated intent, the aesthetics of scientific neutrality championed by the International Style, and its adherents appearing in this report represent a forceful attempt to manipulate relationships between objects--be they objects of human thought, microbes or wheat--which both describe and exceed the domains of visual culture, the built environment, and stylistic shifts within the visual arts. If aesthetics are not only the form that ideas take in the world, but also the way that objects reveal and relate to one another, then the history of particular aesthetic choices, or what one might call style, merges both an inquiry into ideology and an ontological investigation into the agency of things, be they seeds or concrete pilotis. Or, in other words, though it could be said that the work of architectural history and criticism is to pinpoint and analyze the embodiment of a given time within the style of its material output, to limit the analysis of the aesthetics of the International Style to the built environment alone is to short-change the strength, impact, and signaling of the

work being characterized. If an arrangement of windows, a reduction of ornament, and a relationship between structure and volume can speak to the workings of a particular set of object relations, why would aesthetics stop signifying outside the traditional fields of visual culture? Analyzing the agricultural history of the Green Revolution alongside the art and architecture at the origins of this Cold War development, the answer proposed in my larger project is that they do not.

II.

The history of the Green Revolution is often told as a series of hero narratives, featuring US scientists in the foreground, with regional agronomists and governments of the Global South in the background.⁹ Yet, when examined from the point of view of its originating nations, the origins of the global industrialization of agriculture are harder to pinpoint, colonize, and romanticize. While the first sites of the Green Revolution emerged through small-scale transnational collaborations between México, Colombia and the Rockefeller Foundation during the 1940s, by the 1950s, these same projects had become tests sites for the convergence of agricultural improvement, nation-building, development theories, and liberal economic policies, consolidated in more-than-human modernization achieved through architectural modernism. Simultaneously, whether raising petitions for land reclamation or pushing back on these same modernization agendas through biological means, indigenous groups in the Cauca Valley of Colombia and student groups at National School of Agriculture at Chapingo, in Texcoco, México joined with other more-than-human entities to resist both national and US attempts to internationalize local cultural and biological existence.

The emergence of the Green Revolution, now known as the techno-scientific transformation of global agriculture, is rooted in the history of México's first National School of Agriculture (*la Escuela Nacional de Agricultura, ENA*), located on the former *Hacienda Chapingo* in Texcoco. Reclaiming one of the nation's expansive and dominating *haciendas* (or plantations) for the agricultural

education of México's indigenous, mestizo and Spanish descendants, the campus' original *casco* (or main house) modeled the redistribution of México's more-than-human resources, including land, water, education, and cultivation, from the elite to the rest of the nation's people.¹⁰ Dedicated by President Obregon in 1924 and celebrated by a series of lesser-known murals by Diego Rivera within the administration building and the *hacienda's* former chapel, the National School of Agriculture was a living monument to the Mexican Revolution. It also became a point of interest for US technocrats seeking ways to overcome the effects of the dust bowl as well as the disenfranchisement, poverty, and homelessness brought on by the stock market crash of 1929.

While relations between México and its northern neighbor were historically tense, given the United States' appropriations of most of California, Utah, Nevada, Arizona and New México through the Treaty of Guadalupe Hidalgo (1848), and Mexican President Lazaro Cardenas' nationalization of oil in 1938, the urgency of World War II brought both nations to the negotiating table. Thus, in 1941, US Vice President Henry Wallace traveled to México City to formally recognize President Manuel Avila Camacho's inauguration, in exchange for México's help in fighting Axis influence at home and abroad. During his trip, Wallace, the former head of the United States Department of Agriculture, met with México's new Secretary of Agriculture and Development, Marte R. Gomez, to discuss ways that the two nations might continue to collaborate to support regional farmers in the fight against drought, insects, and disease in order to escalate domestic production. Avila Camacho's plans to increase Mexican industrialization and modernization through enterprise aligned with Gomez's desire for agricultural modernization through transnational collaboration. Seeking to avoid the hurdles created by involving government bureaucracies, Wallace returned to Washington and reported his conversations to Rockefeller Foundation President Raymond Fosdick.¹¹ Both agreed that the potential for coordinated agricultural development would be in the interest of stabilizing North-South relationships while opening up Mexican research facilities and markets to US agricultural science, technology, and machinery. Shortly thereafter, Marte Gomez was the first state appointee to formally invite the Rockefeller Foundation to collaborate in the interest of modernizing Mexican agriculture.

Thus, contrary to the many teleological histories of this Nobel Peace Prize-winning enterprise, as with many of the world's most impactful scientific discoveries, the Green Revolution was an unexpected result of Gomez's invitation to transnational collaboration. While the name "Green Revolution" now marks a period of techno-scientific agricultural development, beginning in the late 1940s, defined by experimentation designed to increase yields amongst the world's most fundamental commodities, the project began as a way to decrease México's corn imports, which escalated during the Revolution--due to the transformation of farmers and farm regions from agrarian life to war-time reorganization--and had yet to stabilize due to drought and other formidable blights. As Torre C. Olson's history of Mexican and US collaborations during the 1940s illustrates, these early partnerships brought Mexican scientists to the United States and US scientists to México in an effort to improve agricultural methods as well as social and economic support for farmers in both nations.¹²

In Colombia, the second site of the Green Revolution, agronomists in the nation's fertile Cauca Valley (*Valle del Cauca*) were building transnational networks for increased agricultural productivity and exports as early as 1926 when Puerto Rico's Carlos E. Chardón was invited first to Antioquia and then, in 1928, to the Palmira Agricultural Experiment Station to assess and improve the region's agricultural potential.¹³ Laying out fifteen projects to both diversify and augment the growth of agro-industries in the nation's fertile Cauca Valley, the Chardón Plan also recommended the development of a degree-granting institution, focused on training students in modern, scientific methods of agronomy.¹⁴ While regional agronomists sought to implement Chardón's recommendations, Colombian agricultural development in the 1920s was largely tied up by the conflicting interests of wealthy rural *hacienda* owners and the nation's emerging class of technocrats. Caught between the conservative rule of the landholding elite and liberal efforts to diversify wealth and land tenure through largely techno-scientific (rather than expressly political) solutions, the Ministry of Agriculture and the first National School of Agriculture, in Bogotá, were opposed in 1918 and disbanded completely in 1924 and 1925. While national ministries and institutions shuttered, regional agricultural associations responded by forming groups in Antioquia, Caldas, and Cundinamarca in support of the contested

regional normal schools for agricultural training and experimental stations for agronomic improvement.

Though Colombia's relationship to the United States had decidedly soured in 1903, when US President Theodore Roosevelt supported a coup in Panamá which resulted in the loss of former's northernmost territory, throughout the early part of the twentieth century, the Rockefeller Foundation aimed to further the cause of transnational diplomacy through hushed scientific, medical, and educational co-development in the Cauca Valley. Keeping a low-institutional profile, the Rockefeller Foundation hoped to avoid anti-American sentiment while supporting the productivity-through-diversification aims of the Chardón Plan. Partnering with self-taught soil scientist and future Minister of Agriculture, Ciro Molina Garcés, and later, the Valley's own Carlos Durán Castro, who established the Experimental Station at Palmira, the Rockefeller Foundation began sending funds, supplies, and agricultural experts, upon request, to Medellín as early as 1924. The Foundation was, in fact, a financial supporter of the Palmira Station from its earliest stages.¹⁵

In the midst of this struggle between rural and urban interests, as well as conservative and liberal parties, the 1934 election of Liberal Party President Alfonso López Pumarejo sparked a series of modernization projects in both the nation's cities and the countryside known as the Revolution on the March (*Revolución en Marcha*). Instituting women's suffrage while shifting the tax burden away from the poor, the Revolution on the March supported laborers, industrialists, and small farmers, as well as indigenous communal farmers, in order to wrest political, economic, and social power from the landholding rural elite. The National School of Agronomy in Palmira was a key part of Pumarejo's rural modernization projects. While Pumarejo's government donated the land for what would become the National School of Agronomy, previously part of the *Hacienda el Porvenir*, situated on lands formerly cultivated by the many indigenous communal farmers of the Cauca Valley, the Rockefeller Foundation offered to pay for the building, the library, and the laboratory resources needed to execute Pumarejo's plan.¹⁶

From the earliest collaborations to support the National School of Agriculture in Texcoco, México to the National School of Agronomy in Palmira, Colombia, in the 1940s, the Rockefeller Foundation set out to improve health through increased national food supplies, and thus political stability, throughout the Americas. While the Rockefeller Foundation worked quietly behind the scenes, when Nelson Rockefeller became the Coordinator for the Office of the Coordinator of Inter-American Affairs (OCIAA), under US President Franklin Delano Roosevelt, Rockefeller influence expanded to fill each layer of both public and private interest in the Good Neighbor Policy. Overseeing US outreach to Latin America in the fields of education, science, agriculture, film, visual art, archeology, anthropology, and even less savory covert operations, Nelson Rockefeller's Office also contracted with institutions including museums, universities, hospitals, and other cultural entities to bring Latin American science and culture to the United States.

If México and Colombia held the reigns for early agricultural development in each nation, respectively, the Cold War changed the terms of Rockefeller Foundation influence. Internationalizing regional commodity and farming improvement programs through the intensive use of pesticides, fertilizers, and irrigation methods, the Green Revolution is perhaps best known for the 400% increase in wheat yields achieved by the Mexican Agriculture Project's lead genetic agronomist and Nobel Peace-Prize Laureate Norman Borlaug. It achieved increased global cereal yields developed in México and Colombia during the 1940s-50s, as well as in the Philippines and, most famously, in India during the 1960s-1970s. Increasing domestic surplus, while creating saleable commodities for the global market, the project's achievements soon became part of a technology package, leveraged by the US Agency for International Development (USAID), the World Bank, and the United States Departments of State and Agriculture, for geopolitical gains.¹⁷ The Green Revolution's name--which arrived long after the development of the high-yield varieties of the world's most basic food-based commodities for which the project is known--points to this shift from early transnational collaboration to agricultural development's role as a so-called soft weapon of the Cold War. Circumscribing the geopolitical stakes for the program's success and adoption, United States Agency for International Development (USAID) Director William Gaud was the first to give the industrialization of agriculture its peculiar name: "These and other developments

in the field of 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.”¹⁸ While the term “revolution” today implies an overthrow of state governance through a show of force or political will by the people, the Green Revolution is nothing of the sort. Using methods which exceeded the grasp of local and regional farmers, the Green Revolution is an elite and capitalist program which metabolizes regional resources for the sake of market gains. It also currently contributes 8% of humanity’s global carbon footprint. While statistics based on the extension of the Green Revolution’s influence into the late twentieth century show that total food production in the developing world doubled between 1950 and 1985, evidence also shows that hunger grew by approximately 11% during the same period.¹⁹

While the spotlight of modern architectural history is often ceded to the city, my research demonstrates how some of the longest-term implications of both national and Cold War development advanced by Mexican and Colombian governments in partnership with the Rockefeller Foundation converted rural farmland and contingent agricultural campuses into the front line of modernization. Contributing to an emerging body of scholarship on the essential role of the countryside in the history of modernism, this project marks a shift in humanity’s ability to shape its environment as transnational institutions, scientists, technocrats, artists, and architects moved to not only harness nature but to redesign its so-called raw materials, beginning at the scale of more-than-human chromosomes and extending to the reconstitution of vast rural landscapes. At the same time, through visual analyses of the colonial *haciendas* at the heart of México and Colombia’s agricultural modernization projects, my larger book project (in development) argues that the colonial model of brute-force more-than-human improvement found its neo-colonial partner in development discourse, as orchestrated by the MoMA and Nelson Rockefeller’s Office of the Coordinator of Inter-American Affairs. Moving from the aesthetics of the International Style of architecture to the aesthetics of scientific neutrality by examining the design of seeds as well as the architecture of agricultural campuses, my research attempts to rethink the history of modernism by expanding the history of agricultural and architectural development in México and Colombia to

consider the roles--of both resistance and appropriation--played by the more-than-human constituents of each site and region.

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¹ While a Rockefeller family member sat on the board of the MoMA throughout its formative decades, the Museum of Modern Art was founded by Mary Quinn Sullivan, Lillie P. Bliss and Abby Aldrich Rockefeller. Histories of the role of women in creating New York's modern and contemporary art scene are still forthcoming. For an overview of women who shaped the MoMA, the Whitney Museum, and the Guggenheim Museum, see: Alexxa Gotthardt "The Women Who Built the New York Art World," Artsy, July 6, 2017. Accessed April 5th, 2019. <https://www.artsy.net/article/artsy-editorial-women-built-new-york-art>. For archival history as well as spatial mapping which pinpoints the role of women art dealers in fostering the New York art scene, see: Susan Jarosi, "Prima Galleristas: Mapping Female Dealers in Mid-Twentieth Century Manhattan," (Forthcoming).

² Replacing Cold War divisions of First, Second, and Third World denominations, North-South designations attempt to mark both political and socio-economic divisions among contemporary nations. The Global North, for example, containing approximately one-quarter of the global population--namely polities in North America, Europe, Russia, Japan, as well as New Zealand and Australia--controls four-fifths of global earned income as well as 90% of global manufacturing. The Global South, comprised of the nations of Africa, Latin America, the Middle East, as well as China, India, and so-called emerging economies in Asia, thus makes up the remaining three-quarters of the earth's human population. While the economic North and South are contested categories, given discrepancies within each region that defy their given appellation, post-cold war development discourse relied on these distinctions to foster support for modernization projects arising both within and without the regions in question. For more on the North-South divide, see: Mimiko, N. Oluwafemi. *Globalization: The Politics of Global Economic Relations and International Business*. (Durham, NC: Carolina Academic Press, 2012); Jean-Philippe Therien, "Beyond the North-South Divide: The Two Tales of World Poverty," *Third World Quarterly*, 1998. 20 (4): 723-742.

³ Philip Johnson and Henry-Russell Hitchcock, *The International Style*, (New York: W.W.Norton & Company, 1932) 34. First edition. In the introduction to MoMA's *Built in the USA, 1932-1944* catalog, the authors revise their earlier focus on volume to instead

emphasize the influence of the machine age in modern architecture. Built in the USA, 1932-1944. (New York: Museum of Modern Art, 1944) 9-13.

⁴ Sybil Gordon Kantor, *Alfred H. Barr, Jr. and the Intellectual Origins of the Museum of Modern Art* (Cambridge, MA: MIT Press, 2002) 251.

⁵ Henry-Russell Hitchcock, Philip Johnson. *The International Style*. (New York: W.W. Norton and Company, 1966) 34-36. First edition, *Italics, mine*.

⁶ The terms “human and non-human” and “more-than-human” are part of attempts to foster dialogue that includes humans and all other possible things in the broader worlds of ecological, posthumanist, and object-oriented thinking. While object-oriented ontology uses the word “objects” for all entities, including entities traditionally typed as animal, mineral and vegetable, as well as thought-objects, hyperobjects and otherwise, in this dissertation, I am using “more-than-human” to mean all objects, both human and otherwise.

⁷ In 1944, the Bretton Woods Conference, brought together 730 delegates from the forty-four Allied nations to New Hampshire in order to create a new, technocratic means for post-World War II reconstruction, through the creation of the International Bank for Reconstruction and Development (IBRD) as well as the International Monetary Fund (IMF) and resulted in the stabilization of currency by anchoring monetary value in the US Dollar. For the impact of the Bretton Woods Conference for development thinking and architectural production, see: Arindam Dutta and Ijlal Muzzafar, *Systems and the South Colloquium and Call for Papers*, 2017.

⁸ Louis Marin, “‘*Le neutre*’ and philosophical discourse,” *Neutrality and Impartiality: The University and Political Commitment*, ed. Alan Montefiore, (Cambridge: Cambridge University Press, 1975).

⁹ Looking back on Rockefeller Foundation sponsored researcher’s E.C. Stakman, Richard Bradfield, Paul C. Mangelsdorf’s first trip to México for agricultural analysis and data gathering, reports of this trip were published retrospectively in *Campaigns Against Hunger*. In the preface, the authors describe the aptness of the term campaign, as derived from its military definition, for the title of their book. They write, “It does seem appropriate, however, to think in terms of a worldwide war against hunger. However intelligently and vigorously this war is prosecuted, it will take a long time to win it. It may never be won completely...” E. C. Stakman, Richard Bradfield, Paul C. Mangelsdorf, *Campaigns Against Hunger*, (Cambridge, MA: Belknap Division of Harvard University Press, 1967). The book draws upon the authors’ memories, as well as the annual reports of George Harrar, to be found in: Rockefeller Archive Center (RAC), Rockefeller Foundation Archives, 1.1 Projects, Series 323 Mexico, Box 6, Folders 38-40.

¹⁰ For more on the land redistributions under Lázaro Cárdenas, see: Cynthia Hewitt de Alcántara, “The ‘Green Revolution’ as History: The Mexican Experience.” *Development and Change*, 4, 1974, 25–44. For more statistics on the impact of agricultural shifts between 1900 and 1940, see: Leslie Bethell, *Mexico Since Independence*. (Cambridge: Cambridge University Press, 1998) 330.

¹¹ The proposed Mexican Agriculture Project, (MAP), became the first hands-on experience with what Warren Weaver, director of the Division of Natural Sciences at the Rockefeller Foundation called “...a basic experiment in technical cooperation.” Warren Weaver, as cited in Bruce H. Jennings, *Foundations of International Agricultural Research: Science and Politics in Mexican Agriculture*. (Boulder: Westview Press, 1988).

¹² Tore C. Olson, *Agrarian Crossings: Reformers and the Remaking of the US and Mexican Countryside*. (Princeton, NJ: Princeton University Press, 2017).

¹³ Stuart McCook, "Promoting the 'Practical': Science and Agricultural Modernization in Puerto Rico and Colombia, 1920-1940," *Agricultural History*, Vol. 75, No. 1 (Winter, 2001) 52-82.

¹⁴ McCook, "Promoting the 'Practical'" (2001) 62.

¹⁵ Foundation Officers Diaries, Ulysses Grant Diaries, 1948-52, Rockefeller Foundation Archives, RAC.

¹⁶ In 1968, the Colombian government donated the *Hacienda El Porvenir* to the future International Center for Tropical Agriculture. While new facilities would be built on the former 500-hectare coffee plantation, buildings on the old hacienda were immediately renovated for temporary use. "Report to the W. K. Kellogg Foundation; Training and Communication Program, 1968-1969," *CIAT Colección Histórica*, 5.

¹⁷ David A. Sonnenfeld, "México's 'Green Revolution,' 1940-1980: Towards an Environmental History" *Environmental History Review*, Vol. 16, No. 4 (Winter, 1992), 28-52.

¹⁸ William S. Gaud, "The Green Revolution: Accomplishments and Apprehensions". AgBioWorld, (8 March 1968). Retrieved 8 August 2011. See also: Marie-Monique Robin, *The World According to Monsanto: Pollution, Corruption, and the Control of the World's Food Supply* (New York: The New Press, 2010) 308.

¹⁹ For statistics on the amplification of yields brought about by Green Revolution methodologies, see: Conway, G. 1997. *The Doubly Green Revolution: Food for all in the twenty-first century*, London, New York: Penguin Books. For more on the increasing percent of hungry people during and after the Green Revolution's transformation of agriculture, see: Gosset, P. 2000. "Lessons from the Green Revolution". Oakland: Food First. [online]. Available here: <http://www.foodfirst.org/media/opeds/2000/4-greenrev.html>

See also: Lipton, M. 2007. "Plant breeding and poverty: Can transgenic seeds replicate the 'Green Revolution' as a source of gains for the poor." *Journal of Development Studies*, 43(1): 31-62.