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Largo dislocare: connecting microhistories to remap and recenter histories of science

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ABSTRACT

This brief essay uses Pandurang Khankhoje, an Indian scientist and political refugee in Mexico, as an example of the value of using a *largo dislocare* approach to write histories of science. *Largo dislocare* is an invitation to dislocate known histories not just geographically but also chronologically to better understand the motion of people, ideas and objects. By examining the *largo* (long) trajectory of science in spaces that do not conform to traditional history of science markers we acknowledge that our established chronologies are in need of expansion. For the where with which we begin these histories is as essential as when we begin them. In addition, this approach challenges us to consciously and constantly search for evidence to write about how those on the fringes of society – migrants, refugees, members of ostracized ethnic groups, etc. – in the so-called global margins produce science.

KEYWORDS

Largo dislocare; Pandurang Khankhoje; Diego Rivera; Green Revolution; Mexico; India; hybrid seeds; Rockefeller Foundation

Standing in the courtyard of Mexico's Ministry of Education one is surrounded by 124 fresco panels that together make up three floors of murals. These murals serve the dual purpose of narrating the history of Mexico while instructing the viewer on a specific vision of the nation's past. Enveloped by colonial architecture and across the street from the Templo Mayor, the main temple of the Aztecs, it is easy to dismiss references to innovation in science, technology, and medicine contained within these images. Instead the focus tends to be on the artistic prowess of Diego Rivera or his searing and overt social critique. Indeed, the visual stimulation is such that it might be easy to skip past one particular fresco near a staircase. The image shows nine individuals, of varying ages and ethnicities grouped around a modest wooden table, as they gaze at a man seated at the head of the table. The man, in turn, stares directly at the viewer while in the act of breaking a loaf of bread. The mural, *El Pan Nuestro* (Our Daily Bread, Fig. 1), and the space it occupies – the building itself and also its surroundings, downtown Mexico City – act as an entry point to illustrate how history and geography, our discipline's measure of time and space, need to be expanded when analyzing histories of science in a place like Mexico.

A clue to understanding this fresco is found in the Nehru Library in Delhi, India where a series of letters written in the 1920s by a league of agrarian communities from Veracruz, Mexico are archived. Written shortly after the conclusion of the Mexican



Figure 1. Diego Rivera, *El Pan Nuestro*, circa 1928. Reproduced with permission from 2018 Banco de México Diego Rivera and Frida Kahlo Museums Trust. Av. 5 de Mayo No. 2, Col. Centro, Del. Cuauhtémoc C.P. 06000, Mexico City.

Revolution (1910–1917) these letters frame the pragmatic goals of a group of peasants tired of fighting and yearning to return to toil the soil and harvest crops.¹ The documents eloquently describe the passion of the farmer and his place in forming a nation after a period of devastating violence. Yet for these farmers it was not enough to wrest control of the land from landowners. The organization's leaders understood that this was only the first step. One of the earliest dated letters acknowledges the need of farmers to partner with scientists to make the lands yield more. An 'organized campesino' was also a more educated campesino and, as the letters explain, scientific agriculture *was* pivotal for social justice reforms. The letters also named the expert who would lead them in this nation-rebuilding endeavor: a foreigner, an Indian sympathetic to the dreams of oppressed Mexican farmers.

I want to use the figure at the head of the table and the subject of the above described letters, Pandurang Khankhoje – an agronomist, political refugee from India who did not speak Spanish yet managed to secure a position teaching in Mexico’s National School of Agriculture – as the means to push for a focus on historical examples, often in plain sight, that help destabilize known histories of science. Khankhoje is not the figure that readily comes to mind when one thinks of food aid or development schemes of the twentieth century – yet, maybe, he should be.

This short essay builds on the pioneering work of scholars who have urged displacement, dislocation, a re-examination of knowledge flows, and the importance of microhistories as the means to enrich and expand existing histories of science.² This is not a push for comparative histories of the south – though similar in structure, one cannot compare, say, British and Spanish postcolonial spaces.³ Instead I advocate a concerted effort to examine how and when distinct microhistories among nontraditional protagonists intersect. In my short contribution, I propose a methodology that takes this into consideration and insists that in the cases of innovations emerging from what is often termed the formerly colonized or developing world, histories are not factually complete without the attempt to seek protagonists who do not fit comfortably in that title. In other words, such histories require that we consider locals who were *always* there – and who were forced to forge geographic paths that do not map nicely on to colonial/postcolonial divides. In this case, I consider the role of a little acknowledged agronomist, Khankhoje, and the interactions he had with equally disenfranchised Mexican peasants.

Put differently, my proposed large dislocare approach relies on chronologies not framed in the West and intentionally seeks linkages that do not tread on worn north-south or tired imperial networks. To expand those frames we must burrow deep into local histories, both in content and in time. For the *where* we begin these histories is as essential as *when* we begin them. If we use this approach to re-examine examples of innovations emerging from the formerly colonized and, as later termed, developing world we can find robust exchanges of ideas – but usually not in the guises that we expect.

It is when writing histories from these spaces that we most have to be aware of what Michel-Rolph Trouillot termed the ‘various layers of silences’ in order to describe the unequal power of historical production. The reminders of this power ‘provide us with a concrete example of the interplay between inequalities in the historical process and inequalities in the historical narrative, an interplay which starts long before the historian (qua collector, narrator, or interpreter) comes to the scene.’⁴ Figures such as Khankhoje evoke how the dominance of culturally specific timelines and geographic linkages reinforce what can be called science and/or scientist. Yet a figure like Khankhoje also reminds us that to understand the history of the events in a place like Mexico we must delve into microhistories of other spaces in this case, British India.

To write histories from here, about here, necessitates contending with individuals whose racial, social, and cultural roles placed them on the fringes of society in life. This truism seems to, however, be obfuscated – like the meaning of the above mural – by how we choose to tell histories, especially histories of science. Figures such as a Khankhoje in Mexico demand, by their very existence, that we find new descriptors to analyze history in the Americas.

Khankhoje in Mexico

The development of hybrid seeds in rural Mexico has long been celebrated as a Cold War success story between the Rockefeller Foundation via a partnership, called MAP (Mexican Agricultural Program) with the Mexican government. In this well-known version, the Mexican government invited the Rockefeller Foundation to aid in developing new strains of disease-resistant seeds. Yet, as others have shown, at the time Mexico was not in the midst of a food crisis, it was in fact exporting food.⁵ Nevertheless the events of World War II encouraged American foundations, such as the Rockefeller Foundation, to seek food supplies closer to home. As the story continues, it is from these experimental stations in northern Mexico where hybrid dwarf wheat seeds were developed and, later, exported to initially India and Pakistan as a part of a quintessential pro-capitalist, Cold War project. These seeds' ability to yield more wheat and resist disease launched what came to be known as the Green Revolution, or dramatic changes in the way we farm worldwide using fertilizers and intense irrigation. The existence of Khankhoje in Mexico two decades earlier not so subtly contests this chronology and our understanding of development projects often linked to U.S. mid-century foreign aid.

Khankhoje was born in British India in 1883 but fled his homeland after his efforts to overthrow the colonial administration became known.⁶ For years Khankhoje had an itinerant existence taking odd jobs in Japan, Russia, and Prussia, before eventually ending up on the West Coast of the United States, where he enrolled briefly at Berkeley.⁷ Khankhoje's time in California helped cement his idea about the need to transform society by transforming the lives of farmers for it was in the outskirts of Berkeley where he first encountered Mexicans who toiled in the fields of neighboring valleys. Khankhoje himself, close to destitution, also worked those fields alongside Mexican laborers and began to perceive similarities between their condition and that of his fellow Indians under British rule. Not surprisingly, his convictions as an anti-imperialist allowed him to see how knowledge contained in nearby centers of knowledge might subvert the social order.⁸ With news that the British colonial administration knew of his whereabouts Khankhoje again fled, eventually making his way to Mexico City where a friendship forged in California with Marte Gómez led to a job at the National School of Agriculture at Chapingo.

In 1924, Gómez, then director of the National School of Agriculture (though he would later become Minister of Agriculture), requested that studies be conducted on the betterment of crops in and around the National School. Initially Khankhoje relied exclusively on crops produced by local farmers but it quickly became apparent that crop yield and the crops themselves were of poor quality in great part because of the 'lack of technical knowledge among the farmers of the region.'⁹ Relying on the wide berth given to him, Khankhoje drew up a detailed tally of the region's crops and began experimenting on them. His thorough plant census yielded disheartening findings. To improve the region's crops new seed varieties resistant to diseases, frost, and drought were needed. In addition, there were issues with the ground nutrients, water supply, and how the lands were allowed to lay fallow. He presented this as evidence for the need to establish an experimental camp. For the next few years the (initially) three-acre camp became the vibrant center of scientific activity that brought together some of the era's leading plant and soil scientists and, curiously, artists and social activists. By the late 1920s the camp

had grown 20-fold to 60 acres and was a vital teaching tool. Soon thereafter Khankhoje began publishing his results. An article in the journal of the influential Mexican scientific society 'Antonio Alzate' appearing in 1930 and innocuously titled 'Some new products from the Experimental Agriculture camp in Chapingo, Mexico by Prof. Agr. Khankhoje,' focused on the significant creation of new strains of corn.

At the National School of Agriculture, Khankhoje immediately availed himself of a laboratory and set about creating new lines of hybrid corn. Most importantly he paired scientific work with the creation of dozens of free schools of agriculture taking care to insure that peasants had a 'scientific upbringing' and close ties to scientific production. Additionally, he began to work with hybrid wheat, determined to find new ways of producing more staple crops. Pandurang Khankhoje rose up the ranks in Chapingo and was teaching there when Diego Rivera was hired to paint murals at the national school. Rivera and Khankhoje struck up a friendship that led Rivera, already internationally known, to lend his name and financial support to the creation of still more free schools that would go against 'bourgeois ways of teaching.'¹⁰

By 1930 when the director of an agricultural program, Ing. Juan A Gonzalez, wrote to the Minister of Foreign Relations evaluating Khankhoje's work, the Indian agronomist had already made a name for himself as a deeply 'honest' and 'hard working' individual who had managed to create a 'great variety of cereals' aimed at helping Mexico develop.¹¹ In Spring 1931, sponsored by the Mexican government, Khankhoje set off on a European, Asian, and U.S. tour of experimental stations with the goal of 'applying techniques to our experimental camp and aiding the nation's agricultural problems.' In 1932, correspondence from Mexico's legation in Belgium remarked that Khankhoje had spent five months working 'with great effort' in agriculture studies as part of Mexico's Ministry of Agriculture and had additionally traveled to Spain, France, Holland, and Germany studying among other topics 'genetics and vitamins.'¹² Furthermore, Khankhoje frequented tropical crop stations at Tervueren and Laeken as well as the Ministry of Agriculture's library to research the best means to experiment on plants. Never losing his anti-imperialist zeal, upon his return Khankhoje continued his work in creating free schools of agriculture for Mexican peasants.

From 1936 to 1940 Khankhoje's approach spread via rail for, in addition to his work at the National School of Agriculture, Khankhoje was manager of the Agricultural and Industrial Department of the Southern Pacific Railway (*Ferrocarril Sud Pacifico de Mexico*). The department's mission was to 'increase crops along the railway line so that the freight of the Railway would be increased.'¹³ It is unclear how Khankhoje's social justice goals merged with the railway's agriculture-based economy. What is clear is that this was an ideal conduit for the spread of ideas.

Despite his active role in redesigning the nation's agriculture, revamping the curriculum at Chapingo, and his invention of several lines of hybrid corn and wheat strains, as a refugee, noncitizen Khankhoje had a precarious existence in Mexico. His appointment at the University was a political appointment that with the vicissitudes of government made him especially vulnerable to any change in power. In fact, when the Rockefeller Foundation arrived in Mexico ready to begin work on hybrid crop seeds Khankhoje, recently unemployed, sought out the foundation. Despite his obvious command of the subject and his unquestionable experience he was perhaps deemed too political and was not considered by the

foundation.¹⁴ Khankhoje would then try his luck in a series of ventures – mining and steroid hormone production – constantly writing to India and awaiting the moment when he could return to his homeland.

Late in life Khankhoje would return to India. Celebrated for his attempts to end the British Raj he was nonetheless already in his sixties and was passed over for key jobs in independent India's new government. As most individuals with dubious claims to citizenship and belonging, Khankhoje was an assiduous collector of any published mention of his work as concrete proof of his place in a foreign society. Today, this evidence of his existence is spread in public and family collections in Mexico and India – and of course survives in artistic form in murals. It is these documents and images, often surviving both outside of and within 'official' archival venues, which bear the importance of a *largo dislocare* methodology.¹⁵

An indian agronomist in the ministry of education

Rivera worked for five years, between 1923 and 1928, on the murals of the Ministry of Education. Concurrently, he completed more than three dozen murals in the National School of Agriculture in Chapingo in the outskirts of Mexico City. He would toggle back and forth between these two sites and, not surprisingly, for an agrarian nation, several agricultural themes emerge in the Ministry of Education images. Working between two spaces that reflected the nation's twin goals of modernizing education and agriculture invariably led to themes mingling and echoing each other. But Khankhoje's presence in the *Our Daily Bread* mural is especially poignant: at the center of the halls of education, the person who feeds the world is not a Mexican.¹⁶ In the midst of this nationalist project one needs to acknowledge the importance of Khankhoje in Mexico and the seat at the head of the table given to him. Why does this matter? If we stretch our story of hybrid seeds and education of farmers in new farming technologies to go farther than its alleged Cold War roots then we have instead a socialist project steeped in anti-(British)imperialist ideology and co-mingled with Mexican revolutionary ideals. In other words, not a foreign development project but rather a mingling of agricultural traditions and political ideals. Roots which may have remained de-linked had we not purposefully sought to elucidate connections beyond a fascinating microhistory rooted in Mexico.

While Khankhoje's impact on the Mexican countryside caught the attention of Diego Rivera he is not the usual protagonist one thinks of when we analyze the exchange of scientific knowledge. His peripatetic existence defied usual routes of transmission because, as a political refugee he could not travel well-worn routes. His political status, however, allows us to move beyond institutional reach and beyond key scientists of the time to focus on the impact of scientific ideas fueled equally by the fervor of independence, hunger, and poverty. Once in Mexico he could have stayed within the institutional confines of the National School of Agriculture yet instead he sought to create an educational system outside of the official one devoted to teaching science to peasants. Similarly, the peasant organizations that reached out to him were themselves re-envisioning a different, postrevolutionary Mexico in which they circumvented known norms of behavior to acquire expertise knowledge.¹⁷ It is precisely in these moments of rupture when the *largo dislocare* approach is the most useful – for it is in these times that social roles and

institutional aims are up for redefinition. Yet today many South-South histories of science continue to replicate known histories by focusing on, say, physicians, scientists, geneticists, or geographers who are part of official institutions or delegations.

Largo Dislocare is an invitation to revisit – dislocate – known histories with the intent to purposefully examine time and space without using, say, core-periphery structures as the governing model to understand motion of people, ideas, and objects. In addition, we must accept the challenge to consciously and constantly search for evidence and write about how those on the fringes of society – migrants, refugees, members of ostracized ethnic groups, etc. – produce science. In so doing, we enrich and expand our understanding of an interconnected globe. For it is those who forge winding paths, often by necessity, who can best teach us how to reconceptualize borders, describe redefined social roles, and speak about layered time in history of science.

I, of course, borrow my proposed notion of *largo dislocare* in part from Fernand Braudel's notion of *longue duree* in which he proposed a 'multiplicity of social times.'¹⁸ In borrowing from Braudel I reference the temporal need to expand the borders of history (of science) and in adding *dislocare*, I wish to more concretely speak about space. For, the place we begin these histories is as essential as the chronological bookends we give our tales. The need to dislocate or 'put out of place' has to be intertwined with our spatial understanding of the places in our current histories of science. This is especially important when writing histories about Latin America. We cannot untether our history from our Spanish and Portuguese colonial experience yet this poses an especially interesting challenge for writing histories of science. Historians of Iberian Science have had their own problematic experience inserting their countries' place within the production of histories of science. Latin America is hence in a double-bind: contending with a colonial experience that often overlooks or mislabels construction of knowledge in its territories because of its link to Spain and, once independent, attributes much of its technological innovation to the action of development projects, usually from the United States.¹⁹

Scholars of Mexico, Central and South America, the Andes, and the Caribbean find themselves joining the ranks of those who demand that Spain's (and Portugal's) contributions be acknowledged while at the same time insisting that the imperial narrative is incomplete for it does not acknowledge local contributions as domestic innovation. If we examine works by early modernists and colonialists, the decades-long drum-beat has hit an insistent crescendo in recent years.²⁰ Additionally, but crucially different, demands from those working in the nineteenth and twentieth century are focusing on placing the United States (or for early nineteenth century, England) in the imperial position when it comes to scientific production. So, we find ourselves rethinking these imperial parameters and writing stories of cases that did not have to pass through the metropole (colonial or U.S.) to find validity. They are submerged in this history but their experience is independent of it. I find myself in this latter camp.

Final thoughts, or how largo dislocare helps us understand global historical conditions

What does the figure of Khankhoje, a vibrant agent of connection across times and places, tell us about crop research, hunger, and development? By pushing back the beginning of the story of, in this case, the 1960s Green Revolution and its Mexican birthplace to 1920s

Mexico we find that hybrid seeds as part of a larger ‘development’ project was in fact socialist and anti-imperialist in nature. Anti-British sentiment and post-Mexican Revolution zeal melded together to redefine the role of science in farm fields.

Indeed, it is in spaces where pre-Hispanic, colonial, national and postcolonial aims are not simply interwoven but are visible, layered, and material manifestations of a complicated past that one can touch – that is, government buildings that share walls with shrines to Christian and Aztec deities – where one can truly understand the importance of alternative timelines. Indeed, this visible confluence of times invites one to constantly re-imagine the world from someone else’s point of view. In fact, this blending of eras is often so common that it remains unexamined or, more problematically, falls into simpler chronologies espoused by Western measurements of time and space. The call is to remap, to dislocate, our known histories.

Notes

1. Nehru Library, “Manuscripts, P.S. Khankhoje”, subfile 6.
2. To cite only a few: Cañizares -Esguerra, *Nature, Empire and Nation*; Quijano, “*Coloniality of Power, Eurocentrism, and Latin America*,” 533–580; Secord, “Knowledge in Transit”; Turnbull, “Local Knowledge”; Chambers and Gillespie, “Locality in the History of Science”; Anderson, “From Subjugated Knowledge”.
3. As Walter Mignolo reminds us in his eloquent piece “Coloniality of Power and Subalternity”, 424–444.
4. Trouillot, *Silencing the Past*, 45.
5. Cullather, *The Hungry World*, 43–71 and *Stretching the Surface*, 107–109.
6. Sawney. *I Shall Never Ask*.
7. He would eventually obtain his agronomist degree from the University of Oregon.
8. See note 6 above
9. Khankhoje, *Algunos productos*, 359.
10. “Re-apertura de la Escuela Agrícola”.
11. Nehru Library, “Manuscripts, P.S. Khankhoje”, subfile 4, 67.
12. *Ibid.*, 70–71.
13. Handwritten comments on inside cover of book belonging to P.S. Khankhoje dated October 1974 found in the Nehru Library. The book appears to be a bound compilation of the circulars the Khankhoje wrote and published for peasants as he traveled the rail line. The spine of the book identifies it simply as: Pandurang Khankhoje, “Circulares S. P.M”.
14. Rockefeller Archive Center, RG 6, Series 1.1, Box 33, folder 366:26.
15. He was also photographed with his hybrid crops by the famous photographer Tina Modotti.
16. Art historians have described the person at the head of the table as Carrillo Puerto but this version has been disputed for as Uschmany and others note the red star on the lapel. Moreover, Khankhoje’s daughter and biographer, detailed in an oral history how her father sat for Diego and helped him mix the paints for the fresco.
17. The excellent *Alabama in Africa*, for example, examines the impact of African-American scientists in German Togo. Zimmerman. *Alabama in Africa*.
18. Lee and Wallerstein, *The Longue Duree and World Systems*.
19. In a recent issue of *Colonial Latin America* Pimentel and Pardo put forth that we need to “deproblematize” Iberian Science in order to move forward. Pimentel and Pardo-Tomás. *And*, 133–147.

20. To cite a few: Norton, Marcy. Subaltern technologies; Gómez, *The Experiential Caribbean*; Bauer and Norton, “Introduction: entangled trajectories”; Portuondo, Maria. *Secret Science*; Bleichmar. *Science in the Spanish*; de Vos, Paula. *Methodological Challenges*.

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