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Mapping Colonial Archives as Counter-Practice

Léa Denieul-Pinsky

Concordia University
lea.denieul@gmail.com

Abstract

This paper explores how mapping projects sourced directly from institutional and colonial archival collections can provide interesting avenues of research for Indigenous communities confronted with historical erasure. New counter-archival practices are emerging using cartography to defy government institutions using their own materials. To illustrate this point, I begin by tracing the initial emergence of counter-archives and counter-maps as separate fields and their current joint mobilization. This leads me to argue that colonial archives deserve to be considered for counter mapping practices. Then, I interview researchers, Ana Pulido Rull, Margaret Pearce, Tristan Ahtone and Robert Lee, who have repurposed state-sponsored colonial archives as primary source materials in their counter-mapping projects. Our conversations reveal that colonial land grant maps, registries and land patent records are highly versatile. When recombined creatively, they can offer valuable insights for understanding and reclaiming lands that were taken through settler colonial policies. Spatial analysis can help piece together fragmented narratives by interconnecting individual records and situating them within the territory they claim to represent. This is promising, but leveraging archival materials for meaningful impact requires methodological care. Documenting the mapping process is crucial for understanding how fragmented data is reused to generate specific analyses. Failing to do so risks perpetuating the same power dynamics and harmful narratives present in the original records.

Keywords

archives, colonial mapping, counter-archives, counter-mapping, Indigenous cartographies

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Introduction: why colonial archives deserve a second look in counter practices

As anthropologist Ann Stoler (2002) remarks, the critical approach towards colonial archives has been characterized by the fundamental principle of interpreting them "against the grain". Critical theory has encouraged anticolonial and decolonial scholars to deconstruct institutional archives and write histories from the perspectives of marginalised groups (see Stoler 1985; Schwartz and Cook 2002; Bastian 2006; Terrance 2011; and Mccracken 2019). Consequently, the scrutiny of colonial archives has been focused on a bottom-up analysis of these sources, defiantly responding with alternatives that portray things colonial sources erased. While providing alternatives to the kinds of truth-claims embedded in colonial documentation remains necessary and important, Stoler (2002) warns, these efforts often neglect to acknowledge the authority of colonial systems and the way they have and continue to constrain and shape our understanding of the past and its effect on the present. Creating counter-archives, she argues 'may not only entail attention to new kinds of sources, but also to different ways of approaching those we already have, different ways of reading than we have yet done' (Stoler 2002, 109). This presents challenges and opportunities to be explicit about the ways colonial archives speak to the present and future. The focus is not on the archival document as an object, to be dismissed or taken at face value, rather, it is on archiving as a process. Archives are more than the documents left to us by previous generations, says Brown (2015), they also comprise the techniques we use to investigate them, the perspective that enables us to decipher their meanings, and the creative choices that communicate our interpretations of history.

Cartographic analysis and generation are one such technique that historians, artists, and community organizers have started to apply to investigate colonial archives and reveal their multiple dimensions. While historians have long used maps to enhance the precision and visually communicate the results of their research, there has been a shift away from using maps for illustrating conclusions to mobilizing them as a means of conducting research (Knowles & Hillier 2008). The term 'Spatial History' was defined by Richard White (2010) as the study of movements that occur over time. Given the significance of spatial relationships in historical analysis, it became necessary to develop a cartographic lexicon that can facilitate the illustration and recovery of spatial practices and processes. This requires a new form of historical cartography that is viewed less as a technoscientific observation tool and more as a rhetorical practice capable of defining, clarifying, and advocating for interpretive visual representations of the world (Brown 2015). Cartographic visualizations can serve as a vital component of the historian's analytical process. It enables them to conduct research, pose new questions, and uncover historical connections that would otherwise remain obscure (Knowles & Hillier 2008). Re-examining colonial archival data and presenting them in an engaging interactive visual way can be used to reassess established narratives on which our understanding of the past is based and to create alternative versions of history (Pearce & Hermann 2010). Counter-mapping projects sourced directly from state-sponsored colonial archival collections[1] point us towards new ways of understanding colonial material, new opportunities for mapping projects. What can we learn about Indigenous territorial struggles

[1] By state sponsored colonial archives I mean records created, located and held in institutions such as government, hospitals, prisons, the church and universities among others.

using state-sponsored colonial archives? And in turn what hidden aspects of these archival collections can be revealed by spatial analysis?

To tackle these questions, I review how maps and archives have been reshaped in counter-practices. Then, I zoom in on two Indigenous mapping projects and interview their inceptors[2]. These projects were selected to represent two different methods of creating and presenting maps: paper maps (drawing and designing maps by hand) and digital cartographies (maps using computer software and technology). Ana Pulido Rull interprets paper maps, specifically Mesoamerican sixteenth-century colonial land grant maps, as a medium through which Native mapmakers mediated colonial land distribution policies to secure more favorable outcomes for their kin. Her analysis challenges the story that Indigenous communities were passive victims of Spanish oppression (Pulido Rull 2020). Tristan Ahtone, Robert Lee, Geoff McGhee and Margaret Pearce use digital cartography in investigative journalism. Collaborating with the media organization High Country News, they combine a GIS and Mapbox mapping service with archival records to explore the connection between Indigenous land and university endowments, tracing the Indigenous origins of 80,000 land parcels. Our conversations dissect the fundamental ethical questions, possibilities, and obstacles encountered in their endeavors.

Counter-archives and counter-maps

In my own experience mapping state-sponsored colonial archives (Denieul-Pinsky 2023) and through the research conducted to write this paper, it has come to my attention that Western cartography and institutional archiving share several similarities in their approaches. Both rely on the aggregation and categorization of fragmented information. Both Western cartesian maps and archival catalogues employ a hierarchical structure to organize and present data in meaningful ways. Mapping courses teach students the principle of 'figure-ground' to push some information to the background to enhance overall visibility and understanding, similar to how archivists apply the principle of 'original order' to maintain the structure established by the record's creator. Preserving this order helps retain the meaning of records and provides insight into how they were shared, kept, and used. Moreover, geospatial data and archival records are rarely understood on their own as individual items. Their meaning comes from their relationships with other datasets and the people or organizations that created and used them.

Feminist scholarship has shed light on the structures of power that imbue these relationships (Kelly 2020; Ashton 2017), challenging conventional notions of authority, evidence, and truth. Western cartographic and institutional archiving traditions have been criticized in similar ways because they both rely on traditions of aggregation and classification of information with specific people controlling what data should be kept and how it should be represented. Cartographers and archivists play a role in determining what is considered worthy of representation and remembrance. While such decisions were previously regarded as "white lies" in cartography (Monmonier 1996), Feminist thinkers urge us to embrace the situatedness and partiality inherent in archival and geospatial data sets, as well as the

[2] The conversations with the interviewees were conducted with the clear purpose of writing this paper. Interviewees were made aware of this context when they agreed to be interviewed.

processes and methods that bring these together in evocative and intentional ways (Kelly & Bosse 2022, D'Ignazio & Klein 2020).

The insights and principles originating from feminist activism and critical feminist thought have been incorporated, and sometimes, appropriated, within the broader umbrella of critical, "counter" movements (Kelly 2020). Maps (Wood 1987) and archives (Trouillot 1997) have undergone a critical analysis, transitioning from objective, stable historical facts to processes involving abstraction, selection, control of information, and power. Both maps (Harley 1989) and archives (Stoler 2002) are influenced by the needs, circumstances, and cultural perspectives of their creators. Only certain types of records are selected as archives just as specific kinds of spatial data are selected to produce a map. Their omissions and silences unveil the intentions of their creators. 'Counter-mapping' was coined in 1995 by sociologist Nancy Peluso and has since been used by scholars to describe mapping projects that use formal mapping techniques to challenge the authority of mainstream cartography and existing power relations to create more inclusive and diverse representations of space (Harris & Hazen 2006; Wood et al. 2010). The term 'counter-archive' emerged in the 1990s in response to the institutional collections that safeguard a particular interpretation of history by deciding what is important and should be kept, often to support imperialist and colonial interests (Wallace, Duff, Saucier & Flinn 2020).

Thinking about context and its relationship to data, feminist theories argue that archival maps and records are dynamic entities that can be continually reanalyzed and updated over time, fostering a more pluralistic approach to understanding the possibilities within datasets by incorporating contextual nuances (D'Ignazio & Klein 2020). Maps and archival collections are no longer conceived as static representations but rather propositions within an ongoing conversation. A greater consideration of process and context of production has led scholars of archival science to rethink the ontological foundations or nature of archives. David Bearman (1995, 401) has argued that "archives should not describe records, but, rather, document records-creating activity" this includes "the activity that generated the records, the organizations and individuals who used the records, and the purposes to which the records were put" (Bearman 1995, 45). In the field of cartography, a similar perspective has been put forth by Del Casino and Hanna (2006) as well as Kitchin and Dodge (2007), leading to a "post-representational" approach that focuses on the processes involved in map production, circulation, and use, thereby documenting the contextual circumstances surrounding maps.

Post-representational cartography (Caquard 2015; Rossetto 2021), itself associated with the 'non-representational turn' in geography (Wood & Fels 2008) seeks to understand 'how mappings emerge, circulate and do work in the world' (Kitchin et al. 2013, 483). To theorize the multiple ways in which maps are 'brought into being', Kitchin and Dodge (2007) have proposed to rethink cartography through the mapping process and practices. In that sense, the map is a mutable object that can be made and remade continuously. Maps are always mappings, "a process of constant reterritorialization" (Kitchin & Dodge 2007, 331). From their physical representations (posters, flyers, murals) to their digital iterations (online maps) maps emerge in different ways for different people as they are drawn, interpreted, translated, communicated and in some cases denied outright.

Indigenous communities come to colonial archives because they realize the power that these data provide them in justifying their claims about fraudulent land deals and steals (Six Nations of the Grand River 2010; Kukutai, Whitehead & Kani 2022). Colonial institutions have

historically collected information about Indigenous peoples as objects of study (Terrance 2011), allowing researchers to analyze, interpret, and present this archival data, which frequently reinforces harmful narratives and policies about Indigenous communities. There is a movement to repurpose documents once intended for white audiences and now kept by government agencies to challenge dominant narratives and render other positionalities. This is an opportunity to 'set the record straight' (Gilliland & Mc Kemmish 2015) by opening creative avenues for new forms of collaborative engagement with archival records. Indigenous cultural heritage researcher Kirsten Thorpe (2014) have advocated for Indigenous communities "right to reply" to "challenge the depiction of individuals, objects or events presented in records by providing a self-determined response to both the record itself and the metadata associated with it" (Indigenous Archives Collective 2021, 246).

While it might be tempting to openly share evidence of the forceful removal of Indigenous people from their lands through violence, segregation, and assimilation, proponents of Indigenous data sovereignty (IDS) urge caution against the open reuse and redistribution of such data (Lucchesi 2020; Indigenous Archives Collective 2021). While data from institutional archives may not directly cause harm, they can still be used as tools or catalysts for perpetuating violence (Lucchesi 2022). Legal scholars Bowery & Anderson (2009, 480) stress that "Indigenous people and 'the public' should not be assumed to share a common interest," highlighting that "the ethos of freedom, public, openness, and commons is problematic because it does not properly deal with the baggage of the past." The work of Nipmuck scholars Kimberly Toney and Lydia Curliss (2022) on digitizing early Nipmuck histories from colonial documents challenges us to recognize the difference between merely making information available digitally and curating datasets intentionally to provide alternative perspectives that counter harmful narratives in settler colonial history. Similarly, Farmer, Lacombe, and Pind (2023), who created a digital map compiling archival records of 699 day schools in Canada, acknowledge the risk that the silences, experiences, and perspectives absent from their archival database might not be systematically considered and the data on the map could potentially spread misinformation.

To be sure, state sponsored colonial archives and maps alone cannot give a comprehensive account of history with which to respond to colonial narratives of erasure. The challenge is finding ways to reevaluate these absences, suggesting that they are not just voids but have the potential to be rich with meaning and significance. Maps are multifunctional tools as Pickles (2004, 9) reminds us "the map has served in various roles; as archive for georeferenced data, as picture of the spatial order of the world, as tool for investigating spatial relations, and as an object of aesthetic and historical interest". When used as storytelling devices and not 'empirical truth-divining tools' (Lucchesi 2022), maps are coming to be regarded as promising avenues to visualize the spatial aspects of colonial archives, celebrate Indigenous intelligence and resistance while holding perpetrators accountable. To develop this point further, I now turn to the interviews I have conducted with four researchers around two mapping projects. Our conversations address the opportunities, challenges, and questions that mapping colonial archives raise.

Reading colonial archives and paper maps as sites of contested knowledge: a conversation with Ana Pulido Rull

Ana Pulido Rull is a researcher, teacher and art historian specializing in Indigenous art in colonial Mexico. Her book *Mapping Indigenous Land: Native Land Grants in Colonial New Spain* (2020) brings a fresh perspective to Latin American art history by turning her attention to land grant maps also known as 'mapas de mereced de tierras'. In colonial New Spain from 1535 to 1620, she explains, the Spaniards and native elites wishing to obtain a tract of land had to abide by a legal process called a land grant. As part of the supporting evidence, petitioners had to produce a land grant map, which depicted the surrounding towns, ranches and the land for which the petition was submitted. To do this, Spanish petitioners, engaged the services of the tlacuiloque.

The term "tlacuiloque", derived from Nahuatl, is often translated as "artist-scribe" or "painter-scribe" to reflect the Mesoamerican pictorial script's dual nature (Bleichmar 2019). As Pulido Rull (2020, 66) emphasizes "there was no distinction between painting and writing: those who created manuscripts wrote using images". While Bleichmar (2019) warns against imposing Spanish categorizations, like "painter" or "maps" onto Indigenous practices, Nahua historian James Lockhart explains that "sixteenth-century Spaniards found in central Mexico a society remarkably like their own" (Lockhart 1992, 94). The system of hereditary nobility was firmly entrenched in pre-contact Mesoamerica, with local dynasties, royal intermarriages, successions, and territorial conquests (Gibson 1960). Elite Mēxihcah (Aztec) society for instance, was divided into distinct classes: sovereign monarchs, their entourages in Tenochtitlan (such as the Cihuacoatl, Tlacatecatl, Tlacochcalcatl, and Huitznahuatl); semi-independent monarchs known as Tlatohuani, surrounded by a complex array of local lords (Pipiltin), military officers (Tecuhtli), tribute collectors, priests, and judicial authorities (Gibson 1960).

In May 2023, Ana and I talked about the tension inherent in using state-sponsored colonial archives to render Indigenous territorial perspectives. "What I really wanted to find out was, were the Indigenous communities fighting for their land, how they were fighting for it, and if the map had anything to do with their argument" (personal communication, May 3rd, 2023). We discussed her methodology, the ways she leverages cartography and geospatial analysis to expand the possibilities for her research, the impact and instrumentality of her work by different groups and the trial and errors she when through to produce it.

Land grant maps, Ana argues, offer insights into the pre-existing Native traditions of mapmaking and the appropriation of these traditions by the Spanish for land allocation. Mesoamerican elite families held lands with labourers and kept records of themselves and their land holdings (Mundy 1998). Prior to Spanish arrival the tlacuiloque (singular tlacuilo) were responsible for documenting historical, genealogical, and geographical knowledge. This included large-scale plans of individual land holdings which were used as evidence in land disputes (Mundy 1998). As historian Barbara Mundy argues (1998, 31), "the occupation of tlacuilo was an honored profession, one requiring years of apprenticeship. The rigorous and centralized training of the tlacuilo was necessary to produce a consistent style". Maps of land holdings used standardized linear measurement units (cemmaitl) and were regularly updated to reflect land transfers between Indigenous parties, crop rotation, and changes in land availability due to shifting lake levels (Mundy 1998). "In Indigenous towns, people kept a 'cadaster' of who owned the land and what kind of vegetables they grew in it. When a person

died, they would paint a black face and add the name of the new owner" (Pulido Rull, personal communication, May 3rd, 2023). In response to the evolving political, social, and cultural landscape of the colonial era, the tlacuiloque adapted their cartographic practices by incorporating both traditional and colonial materials, techniques, formats, and iconographies into their maps (Bleichmar 2019). I asked Ana if it was possible that the tlacuiloque intentionally reduced their map's precision for the Spaniards to preserve their knowledge and control of the land. "I didn't think about it that way, but you're right" she answered, "it takes away the control too, because all the documents were sent back to Mexico City, which was the capital, and then the towns never saw those maps again" (personal communication, May 3rd, 2023).

What sets this archival collection apart, according to Pulido Rull (2020) is its rich historical and legal context, as these maps were accompanied by detailed explanations in the court records where they were submitted. One could read land grant maps solely as instruments of colonization because they were essential for legally securing tracts of land for Spanish settlers, thereby substantiating their land ownership claims during Mexico's colonial period, but Ana approaches this archival collection differently. Rather than treating it merely as a repository of information and examining each land grant map in isolation, she reads them sequentially, alongside the court records where they were submitted. This process reveals the various actions and layers that shaped the different versions of the maps. They become sites of cultural negotiation and mediation. Much like Pearce's (1998) use of Western Connecticut's historical town records to understand the roles maps played in Native-settler land transfers, Ana focuses her analysis on process, examining the sequence of propositions and counter propositions that, sometimes, could influence the final rulings of the magistrates. In both instances, their research emphasizes a pragmatic approach to mapping that evolved in response to the particular requirements and strategies that characterized Indigenous-settler relationships.

One of the advantages of using colonial archives as primary sources, she tells me, is that they are rich in material. Spanning nearly a century, this colonial archival collection held at the Mexican National Archives includes hundreds of maps, providing a rich corpus of material for analysis (Figure 1). Their status as administrative documents meant they were complemented by, and in dialogue with, other legal documents. The maps are not standalone objects but things that are performed through their links with other sources which shape how they are interpreted. "There is a very strong connection between the maps and what was happening on the ground" says Ana, "you have to study [the maps and court records] together because that's how they were meant to be" (personal communication, May 3rd, 2023).

Reconnecting these two aspects, which were originally created to be together but became separated during the archiving and restoration process, was necessary she tells me. "It's like understanding the system from the inside. You know that they took their land away, but it's not clear how, until you start reading" (personal communication, May 3rd, 2023). Reading the maps made by the tlacuiloque alongside text penned by a Spanish scribe sheds light on the negotiation between visual and textual elements in the production of knowledge. "Both Indigenous and Spanish individuals produced meaning, for and in response to each other" (Bleichmar 2019, 1367). Reconnecting maps and court records within institutional archival collections, helps us "understand how the system dispossessed people and felt

absolutely no remorse or second thoughts about what they were doing" and in parallel "how the tlacuiloque learned colonial law really well and knew how to use it and knew how to argument and knew how to paint" (Pulido Rull, personal communication, May 3rd, 2023).

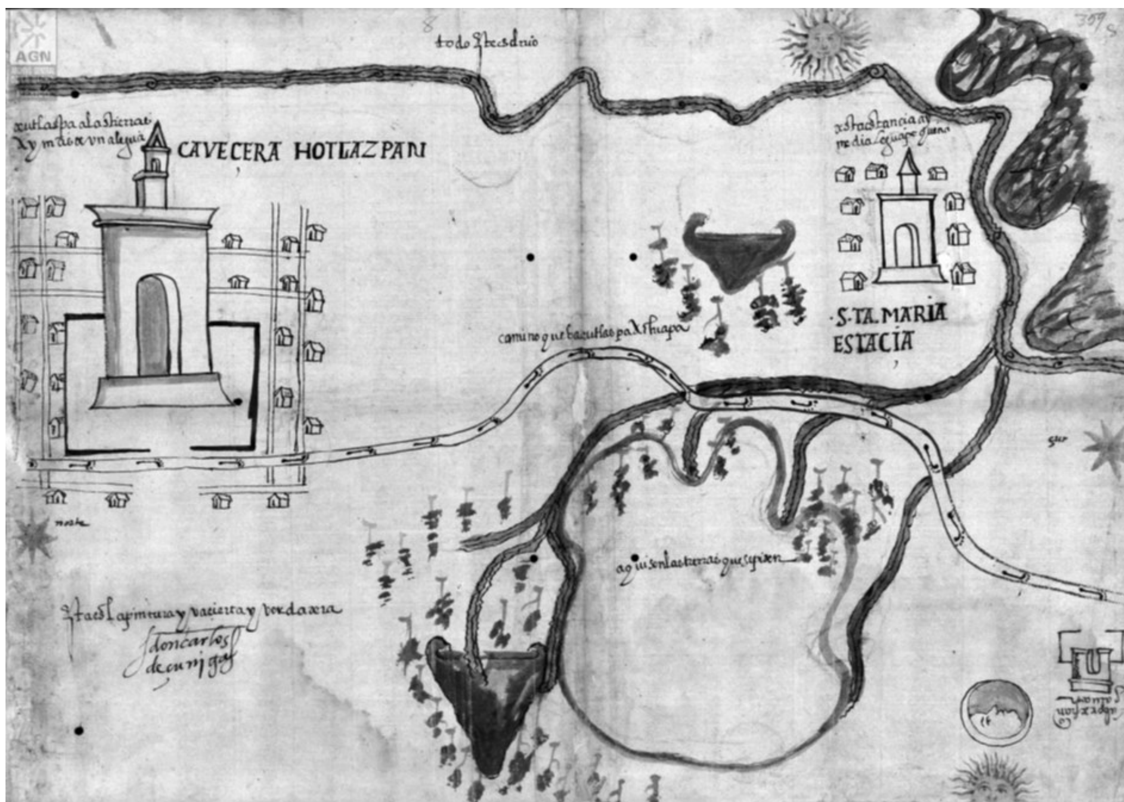

Figure 1: The Hotlazpan y Santa María Estancia (1580) land grant map, from Mexico's National Archives (AGN), features a unique layout dividing church and mountain areas with opposing horizons. Depending on orientation (east or west at the top), viewers perceive the region from Spanish or Mēxihcah perspectives. Reproduced with permission.

The vastness of this archival collection, Ana continues, is another advantage for researchers because it allows for a multiscalar analysis (personal communication, May 3rd, 2023). It is possible to delve into each map's individual story, compare stories, while also examining the broader narrative told by the corpus. What we can glean from colonial archives about Indigenous territorial struggles, she explains, is that as the interests of the Spanish settlers often took precedence over those of the Indigenous communities, maps that were purely oppositional of Spanish land grants were less likely to be considered by magistrates. However, maps that sought to amend Spanish land grants to account for Native houses and crops were often more successful (Pulido Rull 2020). Through this kind of analysis, she uncovers a multitude of other stories: conflicts over land boundaries, biased mayors, land usurpation, secret negotiations, and the importance of Native-Spaniard alliances in resolving these disputes (Pulido Rull 2020).

While the practices of the tlacuiloque were more akin to pictorial writing than painting (Bleichmar 2019), the design and the different uses of these inscriptions make them very interesting objects for art historians because they are layered with different meanings. "In Mesoamerica, people argued with images. How can you highlight distance without using, centimeters? You use colors, you use the composition, you use scale, you create a dialogue using images" (Pulido Rull, personal communication, May 3rd, 2023). Unpacking the different

arguments embedded in these land grant maps required an interdisciplinary approach combining methodologies from history, geography, art conservation and restoration. When I asked how she managed to accomplish all of that, she laughed and said "If I didn't have friends in Mexico, that would've been impossible. They came with me to the archives, they brought their cameras, they brought everything, and we took infrared photos, violet light analysis, and we could see the palimpsest underneath the paintings, and that helped me make a case too" (Pulido Rull, personal communication, May 3rd, 2023).

Ana Pulido Rull makes sense of colonial land grant maps "as they happen or happened in specific circumstances" (Rossetto 2021, 4). She interprets the palimpsest on the map as evidence of negotiations between the tlacuiloque and the Spaniards, peeling back layers of paint to reveal various versions of arguments within an evolving conversation (Figure 2). In San Miguel Tepetlapa Coatepec for instance, she tells a story where the tlacuiloque were trying to oppose land being granted to a Spaniard by arguing that they had already set up their houses there. When the judge dismissed this argument, they decided to accept the grant, contingent upon the judge safeguarding their agave plants. Given their strategical shift, it became imperative to emphasize the agave on the land grant map. To achieve this, the tlacuiloque concealed the houses with a layer of paint and subsequently depicted three prominent agave plants on top (Pulido Rull 2020). The palimpsest reveals how the tlacuiloque modified their argument, to keep some of their holdings while ceding some of the land.

Figure 2: Land grant map (left) from San Miguel Tepetlapa Coatepec (1580) from Mexico National Archives (AGN) and the underlying palimpsest (right) revealed using ultraviolet reflectography. This technique exposes how the tlacuiloque altered their argument, placing a stronger emphasis on agave plants instead of housing. Reproduced with permission.

Our discussion ended with the tensions inherent in using colonial material. First of all, says Ana "going through the archives is physically and mentally demanding" (personal communication, May 3rd, 2023), "you rely on becoming friends with the people who work

there". Secondly, the material can be challenging "I remember leaving the archives sometimes very sad after reading the stories of these people who were losing their land or their families" (Pulido Rull, personal communication, May 3rd, 2023). Moreover, the precision of these archives is also subject to scrutiny as the exact amount of land given away was not recorded, and distances were often roughly estimated by Spanish magistrates. This lack of precision limits the accuracy of the information that can be gleaned from colonial records. Lastly, while land grant maps are Indigenous texts that provide valuable insights into their worldview and the land, the absence of Indigenous voices in the court records leaves a significant gap in our understanding of these events.

For Brown, the key to reconciling the inherent tensions found in colonial sources is to "put in the creative work" (2015, 134). Likewise, advocates of data feminism argue against accepting archival data at face value. Instead, they emphasize the importance of adopting creative approaches that study and understand data from multiple perspectives (D'Ignazio & Klein, 2020). Ana Pulido Rull comes to the colonial archives from the perspective of an art historian. Her analysis of land grant maps focuses on their composition, layers, scale, symbols, orientation, and features which bear witness to the ways Indigenous artists subtly deviated from Spanish guidelines to defend their rights and connection to the land. She uses techniques from art restoration to connect back to local, Indigenous, proximate points of view that come from being situated on the land. Moreover, by studying the maps and archives not as standalone objects but ongoing constructions (Del Casino and Hanna 2006, Kitchin and Dodge 2007), Pulido Rull offers insights into how the tlacuiloque navigated the complex and often oppressive legal system. The monolithic black-and-white narrative of land dispossession is challenged by the diversity of Indigenous-Spaniard alliances and disagreements among Indigenous communities on the best course of action. Through colonial archives, we inherit white perspectives on land appropriation but also the courageous uprisings of the oppressed, their struggles and losses, fostering a deeper connection to their stories. While the words of the tlacuiloque are not recorded in the court records, their maps deserve to be listened to more attentively and creatively (Caquard, Shaw & Alavez 2021).

Colonial archives and digital cartography in investigative journalism: conversations with Tristan Ahtone, Robert Lee and Margaret Pearce

The geoweb, along with new media and digital archives from governments, institutions, and individuals has made the past more accessible to the present than ever before. Historical inquiry seems vital to geographers today, as Van Sant et al (2020, 172) attest "geographers [should] put histories to work (i.e. archival data, oral testimonies, historiography, etc.) as substantive and empirically rich complements to contemporary spatial inquiries". We should explore "the darkest corners of human experience" says Cheryl McGeachan (2014, 824) "so as to learn from the past in present insecure times". Projects described as 'data activist' (Gutiérrez 2022), such as the Forensic architecture research agency, harness the power of hardware and software mixed with raw data, often from public sources (satellite data providers, governments, human rights organizations, witness testimonies etc.) to support cutting edge research and data visualizations.

These new evidentiary techniques in investigative journalism can also draw on state-sponsored colonial archives, as the Land Grab Universities (LGU) project exemplifies. Land Grab Universities (LGU) is an interdisciplinary collaboration between historians,

cartographers, journalists, photographers, app developers and designers to investigate the relationship between Indigenous land and university endowments. They provide a comprehensive visualization of the Morill Act (1862). This legislation expropriated Native communities to distribute federal land grants which enabled states to create public colleges across the United States. Rather than just identifying the parcels that benefited a single university or were located in a single state, they located them all (in so far as it was possible) and tracked down the Indigenous origins of every single parcel to get a sense of the enormity of the wealth transferred from Indigenous nations to university endowments.

I was lucky enough to get three different perspectives on the mobilization of maps and archives in this project. Tristan Ahtone as the journalist and primary investigator, Robert Lee as the historian and Margaret Pearce as the cartographer. In June 2023, when I asked Tristan about the moment he first saw the potential of using colonial archives, he recalled a presentation by Robert which was essentially “a cry for help. His research had all the elements of investigative journalism, albeit in a somewhat historical sense” (Ahtone, personal communication, June 13th, 2023). From Robert’s experiences with the colonial archive, “ US land offices patents are historical in nature but the databases they’re currently housed in are not meant for academic study. They’re used for individual pursuits such as lawyers settling boundary disputes or individual property owners to trace the genealogy of their family property” (personal communication, July 7th, 2023). Robert explained to me that initially he was compiling US land offices patents in a geospatial database for use in GIS. By doing so, he was hoping to illustrate how the land under the Morill Act was taken from Indigenous people and continues to generate resources. Spatial analysis was crucial for this project because it enabled him to locate and map Morrill Act parcels in a systematized way. “In the past, many institutions had undertaken projects to do that, but it was a long, tedious process. They were going through paperwork. Without ArcGIS, I'm actually not sure this project could have happened” (Ahtone, personal communication, June 13th, 2023).

However, Robert notes, “the story produced through the geodatabase using GIS doesn’t handle ambiguity well” (personal communication, July 7th, 2023). This is problematic when we need to question the credibility of records used to document historical events (Lee, personal communication, July 3rd, 2023). For the LGU project, this meant critically examining the legitimacy of property acquired through force, without a ratified treaty, even if it was recorded as legitimate in official land patents. Likewise, the presence of Indigenous names on these patents doesn’t necessarily indicate these people were the true guardians of the land at that time. Yet, “materials from a settler colonial source have the potential of opening up areas of dialogue with non-traditional allies” says Tristan. The facts speak for themselves, “there's the stat, here's the figure, here's the land, here's how you got it, here's how much money it's produced. What conclusion do you draw?’ (Ahtone, personal communication, June 13th, 2023). Robert adds “this potential can be mobilized in alternative scholarly productions aside from the traditional academic article” (personal communication, July 3rd, 2023).

The next step was to actively engage the public by publishing the story in High Country News and compel readers to acknowledge the history of land appropriation through diverse modes of interaction with colonial archives. To do that, they decided to draw on interdisciplinary collaborations, “it's about finding the right people who know how to do the things that you're wanting to do and that have the sort of creative wherewithal to run with it”

(Ahtone, personal communication, June 13th, 2023). By calling on Citizen Potawatomi cartographer Margaret Pearce and multimedia journalist Geoff McGee, their team found a way to provide both the freedom needed for users to construct their own narratives and the cohesion necessary to preserve the integrity of historical material. This careful balancing act is performed through three levels of data curation. First, Pearce's maps presented in High Country News offer an insightful overview of the research, providing historical context and shedding light on the connection between university prosperity and Indigenous dispossession (Figure 3). The second level of data curation is the digital map designed by McGee on the project's website which allows users to zoom into each of the 80,000 parcels and investigate what is currently there from satellite imagery (Figure 4). This process forges a tangible link to the impact of the Morrill Act. Dedicated information pages are linked to each parcel on the map providing comprehensive details on its acquisition history, associated gains, and the United States' complicity in the process. The least curated level of data are the GIS polygons and attributes from the archives, which are all free and open source.

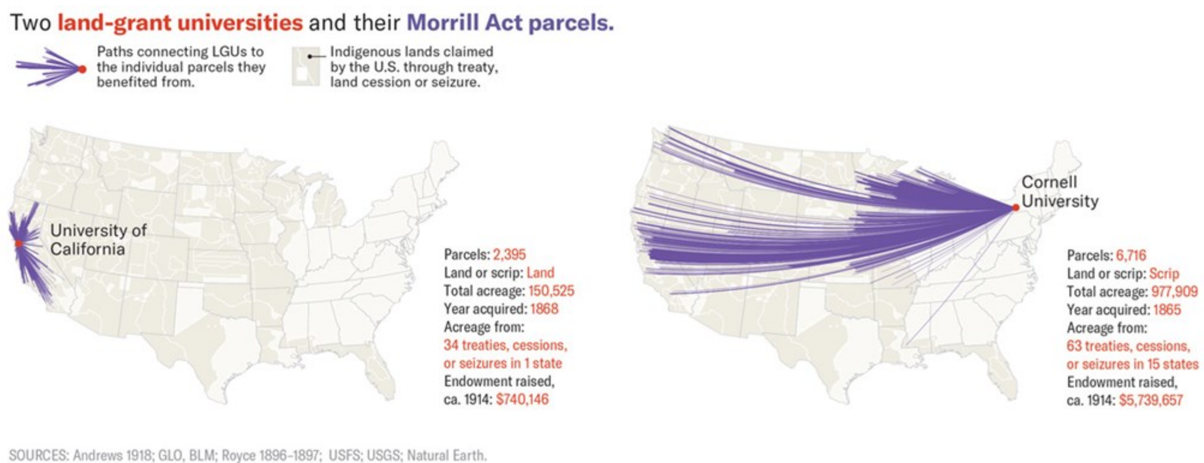

Figure 3: This map shows that Eastern universities, like Cornell, lacking nearby public land, received federal "scrip" coupons for land in the West. In contrast, newly established Western schools, such as the University of California, chose land within their state. Reproduced with permission.

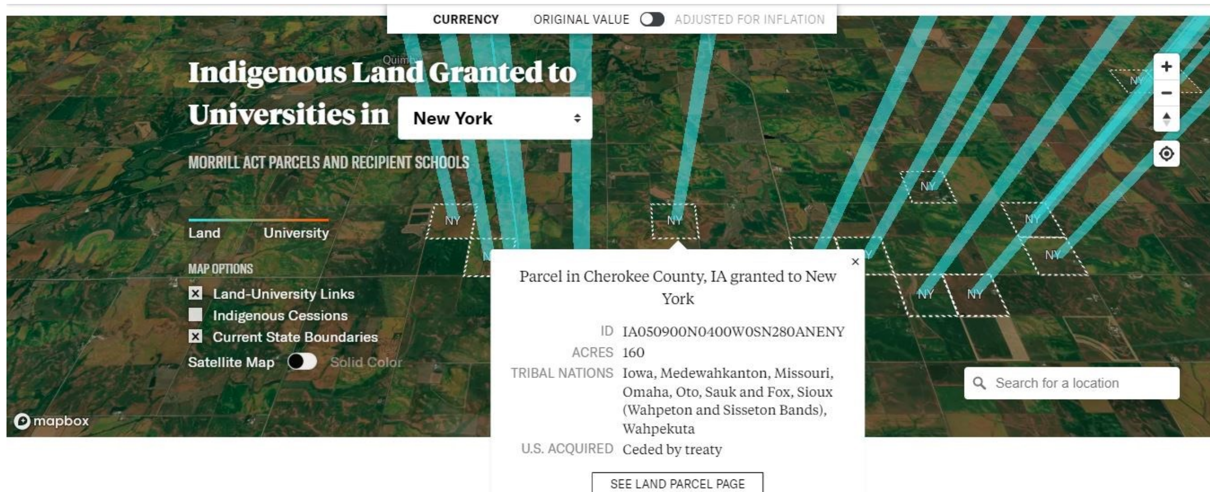

Figure 4: Users can zoom in on the digital map to inspect specific parcels, like those allocated to Cornell University, to check their present status and use. Reproduced with permission.

Illustrating one's process by making all datasets open source is a central ethical component in data journalism and visual storytelling. However, historical geographers who engage with digital mapping tools should more carefully consider the ethical implications that arise from sharing archival materials from colonial sources on digital platforms. On one hand, it is very freeing and empowering to unlock colonial collections, broaden accessibility to individual records, and widen their distribution outside private or institutional collections. Digitizing records suggests that researchers and archivists relinquish any intentions to guide users' navigation through historical records, shattering the fundamental principle of 'original order' of provenance (Hodder & Beckingham 2022). Users can organize, visualize, and understand information according to their own research agenda (Bailey 2013). But, as Hodder and Beckingham (2022,1300) go on to question "how well can we understand [records] when they are decontextualized from their historical site of meaning?" The ability to pick and choose records by relevance tends to exclude historical ideas that may challenge or contradict the assumptions inherent in our research questions. Making sure to document the process, "is an important part of thinking about and explaining how that fractured data is coming together to come up with specific pieces of analysis" (Ahtone, personal communication, June 13th, 2023).

Cartographers may have the best intentions to "make sense of", by aggregating and recombining colonial records into shapefiles and spreadsheets. But dislocating sensitive information from its place-based, historical, and culturally specific context may amplify some forms of violence while sidelining other voices (Lucchesi 2022). By going into institutions to view colonial records, we get a sense of the kind of racial and colonial power that have perpetuated the current arrangement of these records, rather than viewing them safely from the other side of a computer screen. Failing to address these power dynamics inhibits our progress in understanding the full scope of these historical narratives (D'Ignazio & Klein 2020; Hodder and Beckingham 2022). In her various projects mapping the life paths of missing and murdered Indigenous women and girls, Lucchesi (2022) has endeavored to show that mapping state-sponsored colonial archives can be very powerful but requires methodological care. As the digital environment expands, IDS principles demand that we question the ways the data is analyzed and interpreted, how it is mapped, and even what aesthetic choices are made, or we risk reproducing that violence ourselves. The emergence of interdisciplinary tools to recombine colonial archives in innovative ways should be welcomed, but it does demand a different set of critical questions for digital cartography.

How do you convey dispossession from colonial archives, I asked. "I think for simplicity's purpose, we have to put it at the moment the land entered the system, either through a land session in a treaty or a land session through an outright seizure" says Tristan "but it also begs the question then of, do you want to tell the story of how you got to that point? What I'd like to do is be able to tell the stories that are going in the opposite direction [...] into the past that has all the information prior to real estate" (personal communication, June 13th, 2023). In the follow up version of this project, Lee and Ahtone are experimenting with augmented reality (AR) and virtual reality (VR) to map historical descriptions onto present-day landscapes. They hope that integrating technological tools and data modelling can help bridge the gap between past and present, allowing individuals to witness the transformation of spaces over time. We should exercise caution when handling individual documents or parts of documents as this does not provide us with the entire picture "it's

marginalizing" says Margaret "you are not forming a relationship with the material objects of the archives" (personal communication, July 6th, 2023). Instead, she advises that "we should listen to the people whose job it is to care for those collections [...] archivists are some of the most annoyingly snooty people I've ever met, but also some of the most radical activists". Going to libraries and talking to archivists is crucial in this kind of work "someone will say, 'oh a woman came by a month ago to look at that, let me see if I can find her name', and that opens up a whole world" (Pearce, personal communication, July 6th, 2023). There is an interplay between the colonial archive and talking to people on the land today and getting their stories.

When engaging with colonial archives within digital mapping projects, Vincent Brown (2015, 138) observes that we are essentially "taking dead artifacts [...] and giving them artificial life as animated data". By understanding a map as a deliberate, provisional, and even artistic act within historical research, an interface can be designed to highlight rather than obscure acts of interpretation (Olmedo & Caquard 2022). This is important because the sources themselves possess an embedded worldview, shaped by the historical context in which they were created (Ashton 2017). Consequently, there is a risk that their particular vision of the world may unconsciously influence our own interpretations and narratives. In their analysis of the Land Grab Universities project, McCoy, Risam, and Guiliano (2021) note that Lee and Ahtone's choice to talk about dispossession by putting the emphasis on the financial worth of land runs the risk of reinforcing settler ideologies rooted in capitalist valuation, overshadowing Indigenous valuation systems. To keep Indigenous voices center stage in these data-driven narratives, they suggest assessing the value of Indigenous lands based on rights of access, use, and caretaking (McCoy, Risam, & Guiliano 2021). This perspective recognizes that these land transfers fundamentally altered relationships to lands and waters that held deep physical, social, emotional, and spiritual significance for Indigenous communities and guide users to understand the impacts of the Morill Act in terms of those lived experiences and situated connections.

Synthesis and concluding thoughts

In our urge to close the gap between 'what happened' and 'that which is said to have happened' (Trouillot 1995), we must consider the full range of available material (Brown 2015). Archives controlled by settler institutions are often biased towards the perspectives of colonizers and may not accurately reflect Indigenous experiences or perspectives, but they can still offer valuable insights when approached with a critical (post representational, decolonial, feminist) lens. Colonial land grant maps, registries, and land patent records shouldn't be viewed merely as factual records of land holdings, sources for historians to extract data and statistics, or to create their own maps. These records are products and instruments of social and political processes that warrant further examination. This requires revisiting colonial land records "more holistically, as images, as data, and as texts that stand in conversation with other texts both within and outside of government agencies" (Connolly et al. 2018, 152).

What makes the work with colonial archives particularly fascinating and exciting, says Ahtone, is the ability to hold governments and institutions accountable using their own materials. Recordholders often don't realize the power these colonial archives have for Indigenous communities (Pearce, personal communication, July 6th, 2023). Pearce recalls

visiting the town halls and state libraries in Connecticut for her doctoral thesis and casually photocopying documents demonstrating Europeans had no claim to the land. "They don't know what they have. Their ignorance is your power" (personal communication, July 6th, 2023). "Colonial data has the potential to generate public discourse" maintains Lee. "Maps, and other data visualizations are increasingly mobilized to tell the stories in colonial archives that doesn't get extracted but needs to be told" (Lee, personal communication, July 3rd, 2023).

In their investigation on Land Grant universities, Lee and Ahtone had access to receipts and records from universities and government, which allowed them to conduct an analysis and confidently state: we used your archives and information to uncover your actions. This approach highlights the instrumentality of archives as a tool for demanding accountability. However, the question of whether archives can truly hold people accountable is a complex one. While archives can provide evidence of individuals' actions, there are limitations to their effectiveness. Even when presented with clear archival evidence, those who should be held accountable often choose to ignore it, refusing to acknowledge any responsibility. So, "those that can be held accountable aren't accountable to anything, including themselves' (Ahtone, personal communication, June 13th, 2023).

While systemic accountability is difficult to achieve, mapping colonial archives can prompt personal reflections. By presenting factual information like financial assets or diary records associated with specific events, individuals can independently draw conclusions based on evidence. However, as Ahtone warns 'the big thing is you have to be mindful of what system you're continuing to perpetuate on the work and what system you're presenting to your audience' (personal communication, June 13th, 2023). Researchers mapping archival records need to be wary of the ways these archives are mobilized and activated. Curating the material so that it provokes genuine change and thought-provoking conversations beyond media buzz is a challenge. "The temptation to deflect or diffuse responsibility for the past is so strong that it is often challenging to hold the audience's attention and keep them present with what is being said on the map" (Pearce, personal communication, July 6th, 2023). This process is further complexified by the need to present a story that diverges from the expected narrative of despair and instead emphasizes Indigenous resourcefulness and resistance. While attempting to infuse optimism into her narrative, Pulido Rull encountered resistance from reviewers who were quick to point out that ultimately, many of the Indigenous mapmakers' arguments didn't convince the judge, and the land was taken. "I was trying to highlight the effort that was made, you know, the fight" (personal communication, May 3rd, 2023).

Spatial analysis can help explore diverse perspectives and reconstruct fragmented narratives by connecting multiple archival records and situating them within their respective landscapes. The difficulty lies in the fact that historical documents are often dispersed. Despite the portrayal of archival facilities as impartial for research, the preservation of these materials is governed by regulations, protocols, methods, and technologies that dictate how they can be accessed. Patience and perseverance are the rule of thumb. "You belong in those archives" says Pearce "go there and sit at the table" (personal communication, July 6th, 2023). That being said, expectations of finding complete and comprehensive answers to research questions are often cut short by the partial and sometimes incomplete nature of colonial collections. Yet there is hope, Pearce says, "nothing is ever gone […] even though we feel like

it's not enough we have to move forward with that tiny piece" (personal communication, July 6th, 2023). Researchers using colonial archives for mapping projects should consider "who are these archives about and have probably never seen them?", "who else cares about these archives?" (Pearce, personal communication, July 6th, 2023).

Sharing attribute and spatial data used in the map on collaborative open-source platforms can hopefully bolster public engagement by updating databases, crafting personalized maps or repurposing these resources in mediums such as podcasts or social media. In some cases, projects get a lot of visibility, but the public engagement is mainly superficial (Shahamati et al. 2022). However, "there is no necessary correspondence between the interests of the creators and those of the users. While accessibility is a great egalitarian virtue, it is not always a satisfying end in itself" (Brown 2016, 177). Using archival data strategically (Raine et al. 2017) can lead to more consistent, relevant and better-quality outcomes, especially when Indigenous people direct archival data collection and control the resultant data repositories.

Reconnecting the past to the present is sensitive work. It implies attacking people's sense of history, heritage, of themselves. Confronting historical truths sometimes relies on naming specific people, institutions and towns to shame them for what they did. Though, as Ahtone reflects, we must carefully consider the ethical implications of linking vast databases of people and families to events that occurred. By linking the LGU database to platforms like Ancestry.com, it is possible to establish connections between the initial landowners in the US who took the land and their present-day descendants. But is such an endeavor fair? What value does it hold for our storytelling? Are we targeting individuals or addressing a systemic issue? Focusing solely on individuals could expose them to undue targeting and risks. Yet the temptation to pinpoint culprits is real. "I'll bet you most of the people that are original landowners in Minnesota, probably most of their families are fairly rich, and likely a lot of them are involved in large companies or state government. That money moves through the system, and it moves through the generations" (Ahtone, personal communication, June 13th, 2023).

Putting land and lived experiences at the center of the work when all that is available are numerical data, bureaucratic records, and plans has challenged more than one researcher. These sources often lack essential information about the people and places central to historical events. The problem is that "data recovery is poorly studied" (Sorensen et al. 2023, 17). As Sorensen and colleagues point out, even when scientists do undertake data recovery efforts, they "do not always publish on their own recovery and curation practices (preferring to publish, instead, on the scientific outcomes of their analysis of recovered data)" (Sorensen et al. 2023, 15). This paper asked Ana Pulido Rull, Jason Ahtone, Margret Pearce and Robert Lee to be transparent and reflexive about their methods, offering insights into how cartographic tools can be creatively leveraged to address the limitations of colonial archival data and expand mainstream historical narratives. They emphasize that processing archival data and mapping are not solitary endeavors but rather practices that rely on friendship networks and interdisciplinary collaborations. Such collaborations are essential not only for interpreting the diverse perspectives and power dynamics within colonial archives and maps but also for effectively conveying their significance to a broader audience.

To conclude, the first ambition of this paper was to establish a relationship between two separate fields: counter-archiving and counter-mapping and shed light on their current joint mobilization. The second was to demonstrate the mobile and multifunctional character

of maps and records, the way they travel through space and time, shuffled through bureaucratic and archival processes, now to be found in new forms across the world. This leads me to argue that colonial maps and land records are important resources for future generations of both settlers and Indigenous peoples to illuminate the mechanisms dispossession. Indigenous counter-mapping initiatives have emerged as a new approach to preserving, accessing, and valuing colonial archival material (Kukutai, Whitehead, Kani 2022; Farmer Lacombe & Pind 2023).

Lastly, beyond calls to revisit state-sponsored colonial materials, this paper also highlights new opportunities to advance the field of counter-mapping, particularly through the lens of Indigenous Data Sovereignty in archival research (Thorpe 2014; Indigenous Archives Collective 2021). The challenge encompasses not only reading or designing maps that accurately represent Indigenous perspectives or using spatial analysis to engage with, update, correct, critique, or enrich colonial archives held within settler institutions, but also critically rethinking repository practices, either within or outside of institutions, to ensure the maintenance and strategic mobilization of archival geospatial data for the benefit of Indigenous Peoples (Kukutai, Whitehead & Kani, 2022; O'Brien et al. 2024).

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