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Abstract

The maps produced by Indigenous peoples refer either to the appropriation by Indigenous peoples of the language and cartographic techniques of the modern State for the purposes of political self-determination, or to geographical knowledge and territorial ontologies which are specific to Indigenous societies. This chapter examines the political, social and epistemological issues involved in this twofold use of maps and mapping by Indigenous peoples.

Key words :

Indigenous peoples, participatory mapping, counter-mapping, decolonization, territory, land.

Chapter 7

Indigenous Mapping: Reclaiming Territories, Decolonizing Knowledge

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7.1. Introduction

In the 1970s, the Indigenous peoples of the North and South of the Americas made their voices heard on the international scene to claim collective rights that they were denied at the national scale. The term “Indigenous” was coined to designate the peoples who felt they had not been able to achieve formal decolonization. In order to determine who is Indigenous, reference is generally made to the following criteria established by the United Nations (UN), and adopted by Indigenous peoples themselves: anteriority in a territory in relation to the colonial invasion; a non-dominant social or political position (regardless of demographic importance); the fact that a group considers itself distinct from the majority of society and wishes to preserve its collective identity and territory; self-identification (Martínez Cobo 1986, paragraph 379).

The Politics of Mapping,
coordinated by Bernard DEBARBIEUX and Irène HIRT

The historical relationship of Indigenous peoples and their lands, territories and resources is also considered to distinguish them from other cultural minorities (Daes 2001). Finally, the International Labour Organization (ILO) has extended the word “Indigenous” to groups marginalized because of their livelihood activities (hunting, gathering, slash-and-burn agriculture, etc.) in Asia and Africa, where the issue of ancestry is complex and controversial (Adivasi of India, San of Namibia, Batwa Pygmies of Central Africa, etc.). Today, a growing number of peoples undergoing forms of (neo)colonial domination consider being Indigenous as a political resource for defending rights that have been violated on a national scale. According to international organizations, 4–5% of the world’s population considers itself or is considered Indigenous (between 370 and 500 million people), spread over 90 countries and five continents, and occupying 22% of the planet’s land¹.

While it is impossible to speak of a single “Indigenous culture”, common characteristics can be identified (Dobbs and Louis 2015, p. v). The same is true of cartographic knowledge and maps made *by* or *for* Indigenous peoples (hereafter “Indigenous mapping”²): contextual, cultural and historical differences do not preclude global trends. Overall, these cartographies refer to a dual reality that we will examine in turn in this chapter: on the one hand, they refer to Indigenous peoples’ appropriation of the language and cartographic techniques of the modern state for the purposes of political emancipation and recognition of land or territorial rights from the 1960s–1970s onwards; on the other hand, they refer to knowledge traditions, forms of representation and cultural practices that are part of the ways of being-in-the-world of Indigenous peoples. Today, both types of processes, knowledge or practices coexist and interact with each other, mutually enriching each other in a dynamic perspective. Both are also profoundly affected by recent transformations in mapping and geographic information as a result of the rise of digital technologies, the Internet and multimedia.

1 The recognition of the rights of Indigenous peoples was enshrined in the *ILO Convention No. 169 Concerning Indigenous and Tribal Peoples* of 1989 (hereinafter ILO Convention No. 169) and in the *UN Declaration on the Rights of Indigenous Peoples* of 2007. ILO Convention No. 169 is the cornerstone of international law on Indigenous rights, since once ratified by states, it is binding, unlike the 2007 Declaration.

2 Different terms are used depending on the geographical or linguistic contexts or the approaches favored by cartographers: community-based mapping, “ethnocartography”, *cartografía social* (in Spanish), etc.

7.2. Conceptual and theoretical milestones

The first part of this chapter proposes some conceptual and theoretical milestones, discussing the word “counter-mapping”, which is frequently associated with Indigenous mapping. It then situates them in the field of academic thinking.

7.2.1. *Indigenous counter-mapping: a struggle for concrete and symbolic spaces*

When our elders were blockading against the logging activities, the authorities and the people were destroying the forest. They told us to show them the maps of our territories and prove our claims. The Penan looked around and said, “This is our land!”, only able to point at the surrounding area with their hands. But in their mind, they knew the exact traditional boundaries that their ancestors used a long time ago. The outsiders and the government did not understand the Penan culture nor did they recognize their land claims. When the Penan said, “This is our forest,” they answered, “This is not Penan forest.” That is when the Penan gathered together to brainstorm how to produce their own map of their land.

Komeok Joe, Penan community leader and mapping coordinator³.

One of the major challenges of mapping for Indigenous peoples is to demonstrate their historical presence on their territories, and thus to be able to fight against the fiction of *terra nullius*, as illustrated by the statement quoted at the beginning of this section, from a video recounting the production of maps by the Penan of Malaysia since 2002. This work was supported technically and financially by the Bruno Manser Fund, and awarded the “Prix Carto 2019” by the *Société suisse de cartographie* (Swiss Cartographic Society). The Penan have identified more than 5,000 river names, named more than 1,000 other geographical objects (mountains, villages, etc.) and georeferenced more than 600 poisonous trees (see Figure 7.1). In recent decades, the absence of this type of information on official maps has allowed the state of Sarawak (Malaysia) to make the existence of the Penan and their occupation of the land invisible, and to grant concessions to logging and palm oil companies in areas presumed to be empty of inhabitants.

³ Video excerpt from the Bruno Manser Fund (Bruno Manser Fonds BMF 2018).

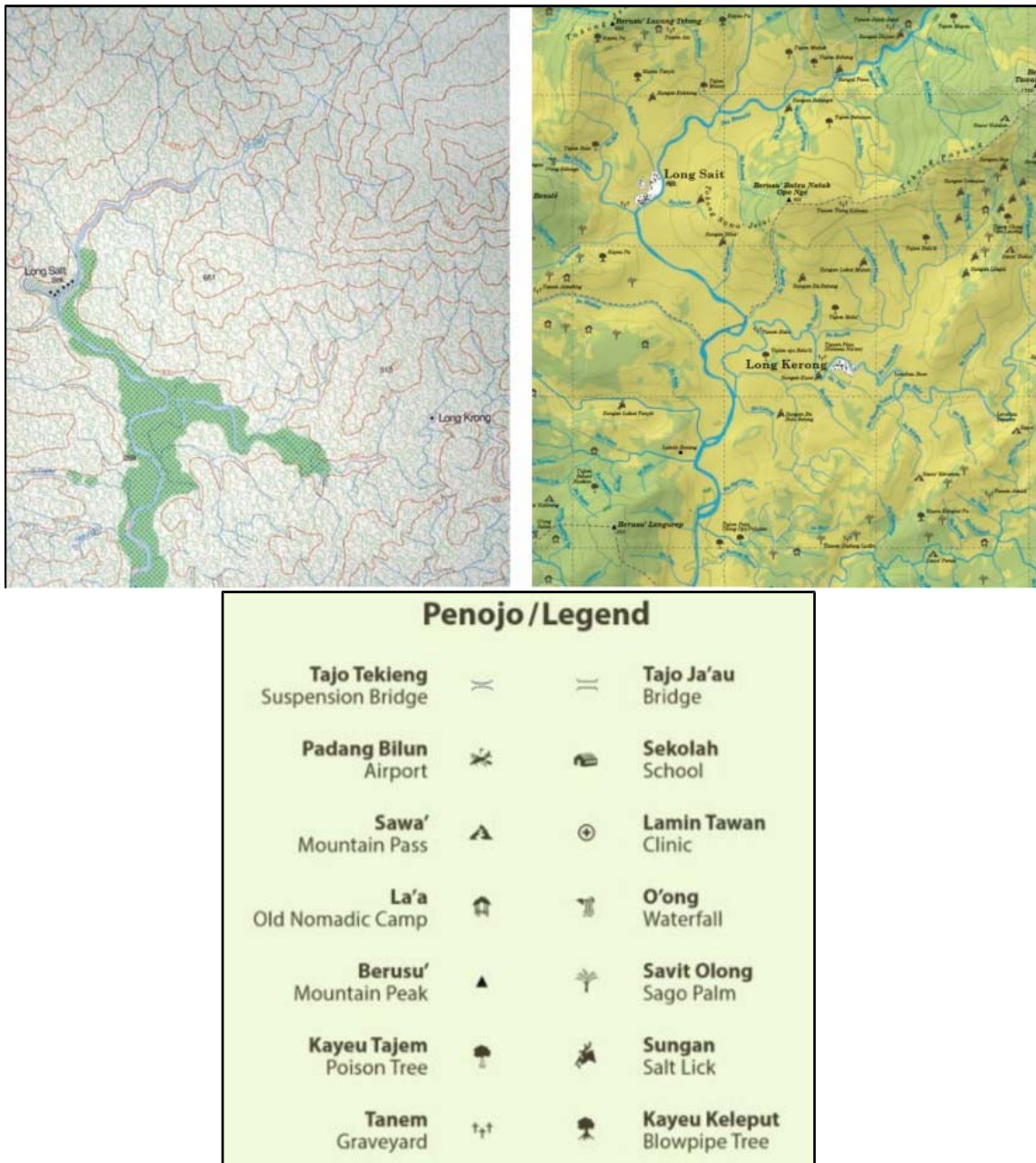


Figure 7.1. Map of Penan territories before and after the inscription of Penan place names, with an extract of the legend (source: “Penan community maps for the rights of the Indigenous people of the Sarawak rainforest, Malaysia”, Arcgis Storymaps, <https://storymaps.arcgis.com/stories/7635a7357d264b558c46564f53443925>, accessed November 13, 2020)

This situation is far from unique. In the second half of the 20th century, many Indigenous peoples around the world became aware that their territories were not, or were poorly, represented on official maps, either because of a lack of knowledge or

historical discrimination by governments, or to justify land grabbing (Herlihy and Knapp 2003).

In this context, Indigenous communities and organizations have appropriated the state's cartographic techniques and language in order to strengthen the legitimacy of their claims and to influence state-dominated land-use planning and land policies. Nancy Peluso describes the Dayak's production of alternative maps to those of the Indonesian state to defend their rights to territory and forest resources. She calls this strategy "counter-mapping" (Peluso 1995, p. 384). Other authors have spoken of "counter-hegemonic" or "counter-point" maps (Sparke 1998), "protest maps" (Wood *et al.* 2010) or "map insurrection" (Rundstrom 1991, p. 10). Peluso has compared the importance of this "vernacularization" of maps in the 20th century with the secularization of the language of print in the 15th and 16th centuries: both processes have made techniques for inscribing knowledge that was previously reserved for elites, accessible to the masses (Peluso 1995, p. 387). Counter-mapping is thus characterized by a political objective, namely the desire of Indigenous groups to challenge the exclusive power over maps of historically dominant actors (states, large corporations, etc.) and to increase their ability to represent themselves. According to Denis Wood, such radical attitudes take maps and mapmaking in a far more novel direction than new digital technologies do (Wood *et al.* 2010, p. 111). The word "counter-mapping" is now also associated with the struggles of other marginalized groups claiming sociospatial justice (see Kollektiv Orangotango (2018) for a range of such practices).

Indigenous peoples' counter-mapping practices aim to appropriate the tools and devices that have contributed to the dispossession of their lands, territories and resources over centuries of colonial rule. Their premise is summed up in Bernard Nietschmann's famous statement reversing Brian Harley's (1988, pp. 277–312) assertion that maps have been weapons of imperialism: "More Indigenous territory has been claimed by maps than by guns. This assertion has its corollary: more Indigenous territory can be reclaimed and defended by maps than by guns" (Nietschmann 1995). It echoes another well-known phrase repeated over and over in the literature: "Map or be mapped" (Stone 1998).

The political dimension of Indigenous counter-mapping practices is often reinforced by participatory mapping methodologies. In Indigenous contexts, these methodologies tend to emphasize the cross-cultural dimension of co-constructed knowledge by taking into account Indigenous epistemologies, ontologies and methodologies. For example, in some Mapuche communities in southern Chile, dreaming practices to communicate with the spirits of ancestors and those of the territory are common. In a mapping project carried out between 2004 and 2006 by

the Mapuche-Williche⁴ of Chodoy Lof Mapu, some participants thus considered dreams as a legitimate source of geographical information to map their territory, and that they complement other sources of knowledge (Hirt 2008, 2012). Furthermore, while counter-mapping is generally a collective process, it can also be an individual endeavor, as illustrated by the map of the Southern Cone of America in the 19th century, drawn in 2002 by Mapuche historian Pablo Marimán (see Figure 7.2).

This cartographic representation shows the territory from a Mapuche perspective. The map is oriented along an east-west axis according to the rivers, and shows the Andes not as an impassable barrier, but as a link between the two regions of *Wallmapu* (name given since the 1990s by the Mapuche to their ancestral territory, which extended on both sides of the Andes before the foundation of the Argentinian and Chilean States in the 19th century). The presence of the Mapuche in this territory is reasserted by place names in *Mapudungun* (Mapuche language). This representation is a counterpoint to the Chilean national imaginary which, since independence, has perceived the country along a north-south axis, reinforced by the construction of the country's main railway line and the Pan-American Highway. This example shows that counter-mapping as an alternative production to dominant maps does not only contribute to struggles for concrete spaces (land, territory), but also to struggles unfolding in the symbolic spaces of representations, imaginaries and knowledge production (Hirt 2017).

In this broad sense, Indigenous counter-mapping is challenging the “Great Divide” between Western science and Indigenous knowledge, and consequently also between modern scientific cartographies and Indigenous maps (Turnbull 2000). By “modern Western cartographies”, we mean the scientific cartographic techniques, practices and representations developed from the European Renaissance onwards, which, in the words of Robert Rundstrom, have tended to impose a “Cartesian-Newtonian” and homogenizing vision of space (Rundstrom 1995, p. 45); the cartographic techniques and language of the state being only one way, among others, of practicing this modern cartography. However, as Annita Lucchesi rightly points out, Indigenous societies did not wait for scientific cartography or the modern state to produce maps. Historically, they have had their own knowledge and devices for understanding and codifying space (Lucchesi 2018). However, the recognition of these as “cartographies”, along with modern Western cartography, was, until late in the 20th century, challenged by Western hegemony over the determination of what is considered legitimate and valid knowledge. For this recognition to occur fully, approaches arguing the symmetry of knowledge (Turnbull 2000) and inclusive definitions of mapping had to be developed, as we will see in the final part of this

4 The Williche are a regional sub-group of the Mapuche people.

first contemporary production of maps by Indigenous peoples in the context of advocacy or development projects. For Rundstrom, this time lag between social practices and scholarly thinking can be explained by the fact that researchers have long considered mapping in Indigenous contexts as a practical exercise, limited to drawing up an inventory of successes, failures and working practices (Rundstrom 2009, p. 315). Furthermore, as they frequently work for NGOs and international cooperation agencies, publishing their work in an academic format is not usually a priority for them. It is therefore hardly surprising that the first special issue on Indigenous mapping (see Poole 1994) was published by *Cultural Survival*, an American Indigenous rights NGO.

Academic work on Indigenous mapping is at the intersection of critical cartography, geography, anthropology, development studies and, more marginally, law, the sociology of knowledge and post- or decolonial critique. Most of the publications are in English, and the most complete corpus concerns Canada, because of the pioneering use of counter-mapping by the Indigenous peoples of that country, as we shall see in the next section of this chapter. The publication of several special issues over the past 25 years on the subject (Poole 1994; Herlihy and Knapp 2003; Sletto 2009b; Louis *et al.* 2012; Dobbs and Louis 2015; Desbiens *et al.* 2020) is a sign of scientific vitality, although it remains a niche with a small community of researchers. Remarkably, since the 2000s, Indigenous geographers, mostly university-educated North American women, have entered the field of Indigenous mapping: Renee Pualani Louis of Hawaii (Louis 2004, 2007, 2017), Annita Lucchesi Hetoevêhotohke'e of the Cheyenne people (Lucchesi 2016, 2018), Mark Palmer of the Kiowa Tribe of Oklahoma (Palmer 2009, 2012), Margaret Wickens Pearce of the Citizen Potawatomi Nation (2008, 2014) and Stephanie Pyne of the Anishinaabe people (Pyne and Taylor 2012; Pyne 2013). Although still underrepresented in academics (Lucchesi 2018), these authors, all geographers, have contributed to the research on Indigenous mapping in three ways: first, by taking up the conceptual and cultural expansions of maps made by critical cartography in the 1980s and 1990s (see section 7.4); second, by drawing on Indigenous conceptions of cartography; third, by responding to Maori scholar Linda Tuhiwai Smith's (2002) invitation to decolonize knowledge and research methods.

In addition, cartography has been one of the areas used by the Indigenous Peoples Specialty Group of the American Association of Geographers to help Indigenous youth enter into academics (Louis *et al.* 2017).

7.3. Using maps to claim rights and reclaim territories

The second part of this chapter presents the history and the main debates related to the use of maps by Indigenous peoples in order to decolonize their relationship with the state and the actors of the dominant society. It also analyzes the limitations of the political use of maps.

7.3.1. *Brief history of the political use of maps*

Historians have shown that in Central America, the use of maps as a language of resistance to the colonizer, although marginal, was already a strategy of Indigenous peoples at the beginning of the European conquest (Harley 1992, p. 527). However, it was not until the 20th century that the use of maps by Indigenous peoples to defend rights to land, territory and natural resources became widespread. Initially sporadic in the 1950s in Alaska and Canada, it took off in Canada in the 1960s and 1970s before spreading in the rest of the world at the end of the 20th century.

The distribution of these practices across the globe, as well as the material conditions for their implementation and success, are uneven. In 2005, Chapin *et al.* identified three geographical regions. The first concerns Canada and Alaska and projects carried out with hunting, gathering, fishing and trapping societies, having developed a coherent set of methodologies and approaches. The second encompassed Asia, Africa and Latin America, and projects relating to both hunting and fishing societies and small farmers. Characterized by a diversity of terminologies and methodologies across countries or regions, the mapping projects of this second region are marked by development ideologies and goals. The third region coincides with the 48 US states south of Canada where, from the 1990s onwards, the Bureau of Indian Affairs (BIA) imposed a “top-down” mapping approach on Indian reservations, marked by advances in geospatial technologies but long lacking in participatory methodologies (Chapin *et al.* 2005, p. 622; Palmer 2009).

This regionalization, although still partially valid today, needs to be updated by including northern Europe (the Sami) and Oceania, especially Australia where maps are mobilized by Aboriginal peoples in their land and territorial claims (Chatwin 1988). However, a comprehensive inventory on a global scale has become an impossible task in the face of the proliferation of mapping projects, and due to the abundance of information about them, especially digital and online sources.

7.3.2. Indigenous mapping in the Americas: similarities and differences between North and South

The case of the two Americas deserves to be studied in greater depth, especially because this goes beyond North–South divisions. In Canada, the mapping of Indigenous territories was systematized in the 1970s by First Nations and Inuit, whose survival was threatened by the race to grab the still untapped resources of the North (gas, oil, hydroelectricity, mining resources). For these nomadic or semi-nomadic hunting, fishing and gathering societies, demonstrating their land use and occupancy became an urgent task. Following legal decisions in favor of the recognition of the “Aboriginal title”⁶ the Canadian government introduced a new northern development policy, known as “comprehensive land claims”. It is aimed at reducing legal uncertainty over territories claimed by Indigenous peoples and for which Indigenous rights had not been extinguished by treaty. In order to negotiate new treaties, the federal government financially supported Indigenous organizations from the second half of the 1970s onwards, to carry out studies (land use and occupancy studies) proving their historical continuity on their territories (Freeman 2011, p. 21; Bryan and Wood 2015, p. 57). The Inuit Land Use and Occupancy Project (ILUOP) (1976) is the most comprehensive of these studies. It was conducted by the Inuit Tapirisat of Canada, an organization founded in 1971 by Inuit leaders who believed “it was time to speak with a united voice on various issues concerning [the] development of the Canadian North and the preservation of Inuit culture” (Freeman 2019). The ILUOP aimed to document Inuit environmental practices and representations over a land and marine area of more than 2.8 million km² within what was then the Northwest Territories and northeast Yukon (Freeman 2011). Together with the Nunavut atlas (Canadian Circumpolar Institute *et al.* 1992), which specified the area that the Inuit would be able to concretely control, the ILUOP was used to support the negotiation of agreements leading to the creation of Nunavut in 1999, a new Inuit-governed administrative entity within Canada (Rundstrom 2009, p. 315).

The ILUOP inaugurated map biographies, an aggregation of individual hunting, fishing, gathering and trapping itineraries drawn on topographic maps, collected through oral testimonies (see Figure 7.3). These maps showed that far from being empty, as suggested by colonial imaginations, Inuit territories were full of place names, food caches, camp sites, and human and non-human migration routes. They have become a methodological standard in Canada (Chapin *et al.* 2005;

⁶ “Aboriginal title” refers to Indigenous rights recognized by the Royal Proclamation of 1763, but *de facto* ignored for a long time by the governments in Canada.

Freeman 2011) – framed by a manual (Tobias 2000, 2010) – and an inspiration for other Indigenous peoples around the world.

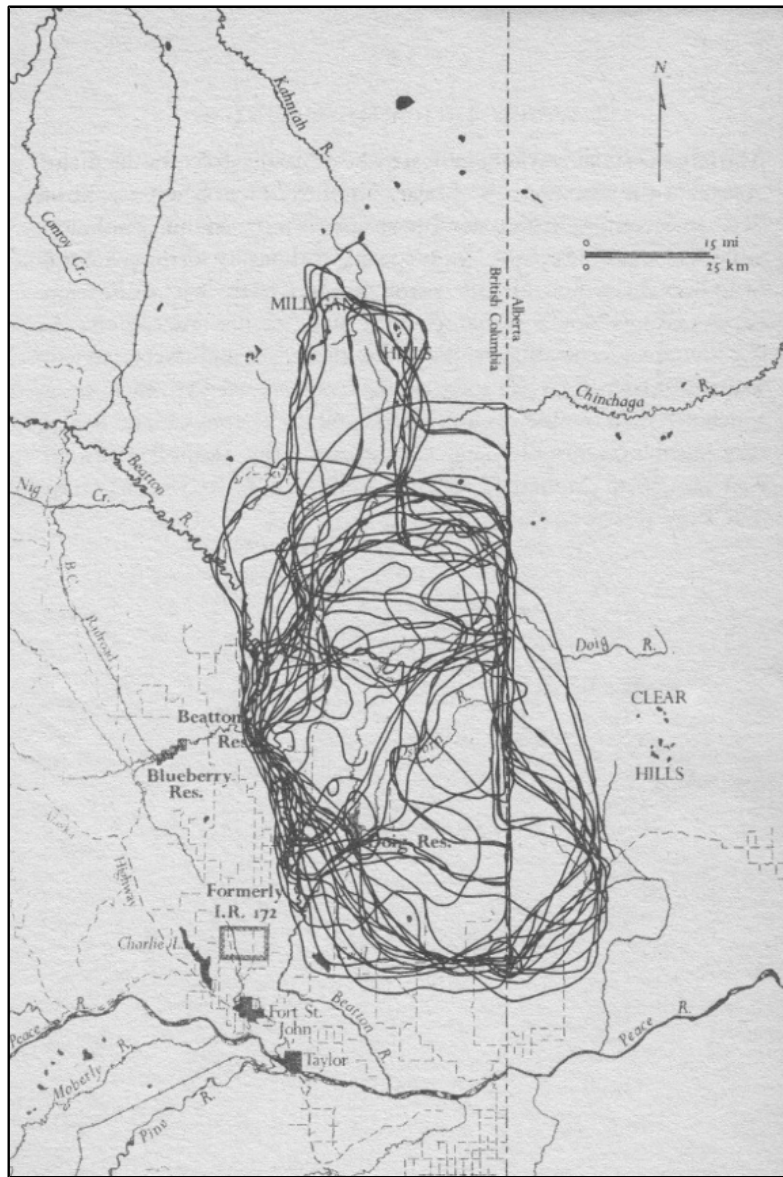


Figure 7.3. Example of a map biography overlaying individual hunting routes (source: "Doig River Reserve: Hunting". Published by Faber & Faber. © H. Brody, 2002, p. 161. Reprinted with permission of the author c/o Rogers, Coleridge & White Ltd. in London)

Anthropologist Hugh Brody helped bring these maps to a wider audience with his book *Maps and Dreams* (2002 [1981]). Alternating ethnographic accounts and research data collected in the context of a land use and occupancy study in the

1970s, Brody recounts the struggle of the Dunnez-za (Beaver) people against plans to build an oil and gas pipeline on their land.

In Latin America, the mapping of Indigenous lands and territories has been massively developed from the late 1980s onwards, in an explosive context combining recognition of rights, environmental protection, political decentralization and new areas of colonization linked to resource exploitation (Hale 2018). Many Latin American countries have recognized territorial rights for Indigenous peoples: first, by ratifying ILO Convention No. 169⁷, and second, through constitutional recognition of the multicultural – or even multi-national (Bolivia and Ecuador) – characteristic of countries that thus broke with the two-century-old project of a homogeneous, mestizo nation. Some constitutional reforms have recognized the collective rights of Indigenous peoples (and Afro-descendants) over their ancestral lands and the natural resources they contain. In some cases, this has been accompanied by land restitution programs and even further agrarian reforms for Indigenous peoples. Mapping has not only been used to delimit newly recognized lands, but also to implement resource management plans.

Beyond these trends, the diversity of situations makes any exhaustive review difficult. In Central America, demarcation projects have been carried out by Indigenous organizations with the support of NGOs, research institutes and national or international foundations⁸, thanks to research contracts and funding obtained from states or the World Bank. The World Bank has played a central role in conditioning the granting of loans to states on the recognition of Indigenous rights and the implementation of “development with identity” (Hale 2005, p. 17; Kymlicka 2013, p. 109). These experiences are examined in numerous publications by geographers (Joe Bryan, Peter Herlihy, Bernard Nietschmann) and anthropologists (Mac Chapin, Charles Hale, Anthony Stock), mainly from North American universities. They have been involved in Honduras and Nicaragua (Mosquito coastline), especially among the Misquitos, Garifunas, Pech and Tawahka, and in Belize, among the Maya (Chapin 1995; Nietschmann 1995; Chapin and Threlkheld 2001; Herlihy 2003; Stocks 2003, 2005; Bryan 2011; Hale 2018)⁹.

7 15 Latin American countries (out of 23 worldwide) have ratified ILO Convention No. 169.

8 These include Cultural Survival, Native Lands, Right & Resources, Oxfam America and the World Wildlife Fund.

9 In 1992, Chapin *et al.* also produced a map with the National Geographic Society, showing the relationship between Indigenous peoples and the remaining forests in Central America, entitled *The Coexistence of Indigenous Peoples and the Natural Environment in Central America*, which can be found here: https://www.eli.org/sites/default/files/images/report-covers/10806_i1262-2.jpg [Accessed December 4th, 2021].

In several Latin American countries, the mapping of Indigenous lands and territories was developed by activists before being institutionalized or even state-run. In Bolivia, for example, at the end of the 1980s, Indigenous demands for the decentralization of power and the recognition of their own political and territorial organizations were heard by international cooperation actors. The latter became aware that giving priority to agrarian unions and state territorial divisions to the detriment of the Indigenous divisions would doom their development projects to failure. The European Union, Danish cooperation and the United Nations Food and Agriculture Organization (FAO) then financed the production of maps of the *ayllus* and *markas* (Aymara and Quechua territories). This initiative was the first time that the Indigenous peoples' views on territory were taken into account in Bolivia and, as a result, in the 1990s, Indigenous lands and territories (local forms of autonomy) gained legal recognition. This led to their cartographic demarcation throughout Bolivia (Hirt and Lerch 2013).

In contrast, Chile has remained outside these developments. Lacking constitutional recognition of Indigenous peoples and their territories, and despite Chile's belated ratification of ILO Convention No. 169, the mapping of Indigenous territories there still remains marginal¹⁰.

Some ideas have been circulated between the North and South of the continent. Chapin, Nietschmann and Herlihy drew on the Inuit model for their projects in Central and South America (Wood *et al.* 2010, p. 132). Canada's mapping innovations were further disseminated to the South through the involvement of Indigenous leaders in international networks. Between 1975 and 1981, Secwepemc (Shuswap) leader George Manuel (1921–1989), president of the World Council of Indigenous Peoples, traveled to Argentina, Chile, Guatemala and Peru to promote land and occupancy studies as a means of struggling against state land grabs. Mapping ideas and strategies were probably also shared within the Working Group on Indigenous Peoples (WGIP), established in 1982 at the United Nations (Rundstrom 2009, p. 315). The WGIP brought together Indigenous delegates from around the world (including Manuel) for 25 years to draft the 2007 Declaration, serving as a melting pot for the development of a pan-Indigenous identity (Morin 2011). It can also be assumed that at the scale of the Americas, the existence of organizations such as the International Indian Treaty Council (IITC) may have fostered the circulation of ideas about mapping. The IITC, when it was founded in 1974 at Standing Rock, South Dakota, brought together representatives of 98 Indigenous nations from the Americas, the Caribbean and the Pacific.

10 See Hirt (2012) and Mansilla *et al.* (2019) for participatory mapping projects with Mapuche people's organizations or communities.

Finally, the advent of the Internet in the 1990s saw the proliferation of websites or networks for sharing mapping resources, methodologies or “best practices” online. The website “ppgis.net” focuses more broadly on participatory mapping methodologies or geographic information systems (GIS); others are specifically dedicated to Indigenous mapping, such as the Aboriginal Mapping Network (nativemaps.org). Moreover, others have held countless international conferences and workshops training Indigenous peoples in mapping tools.

7.3.3. The aporias of the “cartographic-legal strategy”

Indigenous counter-mapping practices have been celebrated as a form of revenge on colonial history and as an act of empowerment for Indigenous peoples. And undeniably, they are exactly this in several ways: they make Indigenous peoples and their territories visible, as in the earlier mentioned case of the Penan of Malaysia; they contribute to political processes that enable Indigenous groups to establish themselves as legitimate stakeholders and to sit at the negotiating table; and finally, they are part of the mechanisms and expertise that enable them to obtain financial compensation and resolve territorial conflicts. As the map by the Mapuche historian Marimán shows (see Figure 7.2), Indigenous cartographic representations also help challenge the hegemonic narrative of the origin and development of the state and the nation by conveying alternative meanings of space, territory and sovereignty (Sparke 1998). Finally, cartographic processes foster dynamics of cultural revitalization, providing opportunities for several generations to share knowledge and experiences, and to strengthen the sense of belonging to a collective (Éthier 2020, p. 46; Tobias 2000, pp. 1–2). And while these positive effects may not always be true, we have seen that, in many cases, Indigenous peoples must make maps if they want to make their existence and that of their lands and territories known and recognized.

Nevertheless, in a global context that is unfavorable to Indigenous peoples, maps reveal their double-edged nature. Peluso points out that counter-mapping is a “highly territorialized” strategy, since it takes place within states, which set the rules of the game according to their own legal and territorial principles (Peluso 1995, p. 394). Thus, the paradox of such a strategy is to go “against” the state while doing “the same” as it¹¹. In other words, the “cartographic-legal strategy”, to use Joel Wainwright and Joe Bryan’s term, traps Indigenous peoples in the “state trap”. In doing so, rather than reversing colonial relations, it may reconfigure them, reinscribing state power in Indigenous spaces, and leading Indigenous peoples to

11 I thank Pierre Lemonnier for this formula.

adopt the state's vision of territory and property rights (Wainwright and Bryan 2009, p. 167). Canada provides a good example of these contradictions: while the comprehensive land claims policy allows Indigenous peoples to produce their own maps, the state remains both judge and party, since land-use studies are funded by government loans. Moreover, for Indigenous peoples, proving the historical continuity of their presence on the territory is a headache when the spaces concerned have been deconstructed by colonization (Desbiens *et al.* 2015, pp. 191–208). They are thus confronted with a discrimination that is twofold: the denial of otherness, expressing the majority of society's refusal to recognize alternative forms of territoriality, and the "denial of coevalness" (Fabian 1984), through an injunction to authenticity which obliges Indigenous peoples to prove "traditional" ways of life that relegate them to a frozen past and "assign them to territoriality" (Hancock 2007, p. 73) in mostly rural spaces¹².

In Latin America, researchers question the ambivalence of the Latin American multiculturalist model (Gros and Dumoulin Kervran 2011). According to them, the success of the map depends on the effective application of constitutionally recognized Indigenous rights. The example of the 2001 Inter-American Commission on Human Rights (IACHR) ruling in favor of the collective land ownership rights of the Mayangna (Awas Tingni community, Nicaragua) is emblematic of these ambivalences; their victory remained symbolic for a long time, in the face of a state that did not feel obliged to implement the IACHR ruling, and in the face of a conservative bureaucracy, recalcitrant to initiate land demarcation (Hale 2005, 2018). And as in Canada, the map is seen in Latin America as part of a means of social pacification in resource-rich regions where the state wishes to promote economic investment, but which proves to be threatened by resources, land or territorial conflicts. From a state perspective, the legal and cartographic demarcation of Indigenous lands and territories would then function as a governmental rationality to instill a new sociospatial order under the guise of recognition (Bryan 2011, pp. 41–42).

In concrete terms, this reconfiguration of colonial relations obliges Indigenous peoples to translate their conceptions of space-time into that of the state (Thom 2014). This often amounts to a reformulation of a relationally structured socioterritorial organization – similar to an airline route map, with hubs and destinations – as a mosaic of discrete and contiguous entities (Thom 2009, p. 197). Thus, the cartographies accompanying the establishment of Indigenous property

12 Ironically, a study like ILUOP also serves Canada's geopolitical interests, mobilizing it to justify its sovereignty over Arctic lands and waters in the face of other nations' ambitions (Freeman 2011, p. 28).

rights do not so much reflect a past spatial order than they do reflect negotiated contemporary spaces (Bryan 2011, p. 40). One consequence of this is the profound transformation of group structures and identities, but also of relations between groups (Rundstrom 2009, pp. 314–318; Sletto 2009a). The act of social and spatial delimitation being deeply cultural (Thom 2009), it is particularly affected by this process of state “domestication” (Wainwright and Bryan 2009, p. 163). Moreover, belonging to more than one group and shared spaces between neighboring groups are particularly problematic. While the state generally ignores the former, it invariably views the latter as “overlappings” that Indigenous actors are required to resolve in order to achieve territorial entities controlled by a single group. According to Thom, the polygonal representation of state territory, based on stable residence (villages, “reserves”, etc.), tends to break down broader territorial affiliations, particularly those of the kinship group (Thom 2009, 2014). Frequently, this process of land demarcation exacerbates already existing conflicts between neighboring or related groups, or creates new tensions (Chapin 1995; Fox 1998; Rundstrom 1998; Tobias 2000; Fox *et al.* 2005). In response to such problems, the Miskito of Honduras, perceiving the resolution of overlappings as impossible but tactically necessary to legally protect their lands, proposed a map that allowed for multiple possible readings: on the one hand, the communities drew “exclusive” lines in order to obtain property rights from the state; on the other hand, they signed agreements with each other to maintain ancestral practices of sharing territory and the reciprocal right to cross the mapped boundaries (Bryan 2011).

7.3.4. Controlling the flow of geographic information

While becoming visible is a decisive issue in proving the historical presence of an Indigenous peoples in a territory, it also makes mapped spaces more easily identifiable, and therefore potentially appropriable by third parties. This is particularly tricky in the case of natural resources that are necessary for the survival of Indigenous peoples, or of sites that have spiritual meaning for them but are coveted by third parties for their economic value. Controlling the flow of geographic information is therefore a crucial issue, made even more complex by the rise of digital technology, which facilitates the copying and distribution of data. For this reason, the decision to publish or to not publish maps is generally taken by researchers with the involved Indigenous communities (Birraux 2017). Producing and disseminating maps of Indigenous territories is not without risk, both for researchers and for Indigenous peoples, especially in countries where states consider these representations as subversive (Chapin *et al.* 2005, p. 620; Rundstrom 2009, pp. 314–318). Rundstrom reminds us that in Sarawak (Malaysia, Borneo) in the 1990s, a Penan with a map could be arrested. In such contexts, the alternative

(“map or be mapped”) is understood by Indigenous peoples according to a “cost-benefit” calculation (Rundstrom 2009, p. 317). Pierrette Birraux, for her part, recounts that when she mapped Yanomami territories in Brazil in the 1980s, she saw her work confiscated by Brazilian authorities (Birraux 2017). Some First Nations in Canada or tribes in the United States have their own economic and technical resources, and degrees of political-administrative autonomy that allow them to hire cartographers directly, or to have their own mapping service. They can then more easily control the potentially confidential dimension of the geographic information and maps they produce (Gagnon 2020; Éthier 2020). However, this is not the case for the majority of Indigenous peoples around the world, who depend economically and financially on the assistance of external actors to produce their maps.

The controversy surrounding *México Indígena* in 2009 was a reminder of the ethical and political issues surrounding geographic information in an Indigenous context, and its possible instrumentalization by third parties. This participatory mapping project, carried out by geographers and anthropologists from Kansas University (USA) and Oaxaca (Mexico), had the official objective of contributing to the empowerment of several Indigenous communities in Oaxaca through the demarcation and titling of their lands. Tacitly, however, it was also about collecting information on a region considered strategic by the US military (Bryan 2010). However, the Indigenous communities involved claimed that they had not been clearly informed that the funding was coming from the US military; they denounced what they saw as an attempt at “geopiracy”, a neologism referring, by extension with biopiracy (Shiva 1997), to the collection and use of geographical information without the free, prior and informed consent of the main stakeholders (Ribeiro 2009; Bryan and Wood 2015; Hale 2018).

7.3.5. The ambiguous role of the digital giants

In conclusion, the rise of the Web giants since the 2000s appears to be transforming the evolution of relations between states and Indigenous peoples. Google Maps is becoming increasingly popular with Indigenous peoples, mainly because it is free to access its technology. In Canada, the company sponsors training workshops and partnerships with Indigenous peoples (CBC 2014). No critical work has yet systematically examined how these private actors are reconfiguring state–Indigenous relations: to what extent do digital giants contribute to the political empowerment of Indigenous peoples? In what ways do they promote new forms of colonialism (Pinto 2018)? There is no doubt that in the near future, the question of Indigenous peoples’ sovereignty will no longer be posed only in territorial terms, but also in digital terms.

In June 2017, Google Maps partnered with Firelight, an Indigenous consulting¹³ group, to add 3,000 Indigenous communities to its online map of Canada (CBC 2017). While this move is a first step toward decolonizing representations of territory by including Indigenous peoples on the Google Maps map of Canada, it only replicates the country's narrow, colonial geography (the "reserves" created in the 19th century in which Indigenous peoples were forcibly settled). Other maps would have to be drawn taking into account all the spaces occupied¹⁴ or claimed by Indigenous peoples, as well as the spaces lived in and traveled by individuals. Today, the cartographic invisibility of Indigenous peoples in Canada also concerns their growing presence in urban spaces, the movement of people between these spaces and the reserves, and the continuity of trajectories and practices on ancestral lands. Cartographic representations have contributed to crystallizing the processes of social and spatial "reduction" (Simard 2003) caused by the creation of "reserves" in the 19th century. Can they now reverse these dynamics by showing the real extension and nature of contemporary Indigenous territorialities?

7.4. Decolonizing maps and cartography

So far, we have seen how Indigenous peoples have seized upon modern cartographic languages and tools to decolonize their relationship with the state. We will now examine how maps and cartography themselves have been decolonized at an epistemological level since the 1980s, in light of the revaluation of Indigenous peoples' own cartographic knowledge and the new possibilities offered by digital technologies and multimedia.

7.4.1. *Toward an inclusive definition of maps*

According to Matthew Edney, between 1830 and 1980, the history of cartography distinguished between Westerners producing "maps" and non-Westerners making "map-like objects". By 1980, a new history emerged that moved away from this ethnocentric viewpoint to focus on the diversity of "mapping modes" (Edney 2018, p. 72), that is, the cultural variations in the act of codifying

13 Firelight has been running an annual mapping workshop since 2014 (see : <https://www.indigenousmaps.com/>) training Indigenous communities in new digital and online tools (Google, Esri, QGIS, OpenStreetMap, etc.).

14 Other areas are administered or owned by First Nations and Inuit in Canada (e.g. treaty territories).

and representing spatial knowledge. This conception of history thus distanced itself from the colonial ideology according to which there would be “mapless” societies, in the same way as there would be “historyless” societies.

The cornerstone of this cultural decentering is the voluminous collection of books *The History of Cartography*, edited by David Woodward and later Edney, which Harley then contributed to¹⁵. One of the assumptions of the collection is that the cartographic impulse is both universal and particular (Harley 1987, pp. 1–42): what makes a map depends on the context, and the social and cultural needs it serves. Its functions are not limited to facilitating spatial orientation and wayfinding. They can also, among other things, highlight the prestige and power of the members of society who control its production and use it for political or religious ends (Woodward and Lewis 1998, p. 6)¹⁶. In the fourth volume, Woodward and Lewis distinguished three categories of mapping: mental or cognitive constructions; the oral translation of these mental constructions or their expression through performances and rituals, and finally, the materialization of this spatial knowledge in the form of an artifact (Woodward and Lewis 1998, p. 3).

This conceptualization has made it possible to consider artifacts that were previously ignored due to their non-conventional medium (from a Western perspective) as maps: ceramics, textiles, woodcuts, petroglyphs, bamboo and shell wefts, etc. From this perspective, the stick charts (Marshall Islands) or an Inca *kipu*, though with different forms and functions, are all ways of understanding and codifying space (Woodward and Lewis 1998, p. 1). This conceptual expansion has also allowed for the recognition of ephemeral forms of geographic inscription (e.g. drawings in sand or snow) as maps, and cartographic knowledge transmitted through oral language or performance (e.g. poetry, songs, dances, paintings, rituals, dreaming practices) (Woodward and Lewis 1998, p. 3). The songlines of the Aboriginal peoples in Australia thus constitute genuine spatial orientation and wayfinding devices (Chatwin 1987), as do the oral descriptions of hunting routes through the pack ice in Arctic communities (Aporta and Higgs 2005).

15 Carried by the Department of Geography at the University of Wisconsin-Madison, the project has six volumes, published between 1987 and 2015. The fourth, devoted to “African, American, Arctic, Australian and Pacific traditional societies” (Woodward and Lewis 1998), is the most interesting for this chapter.

16 This conceptualization is in dialog with non-representational approaches to mapping, seeing mapping as a set of social performances, practices and processes rather than as a final product (Kitchin and Dodge 2007).

7.4.2. “Reconstructing” maps

In the 1980s, the adoption of an inclusive definition of maps and mapping went hand in hand with the reevaluation of Indigenous knowledge. In the following decade, researchers also examined the cultural effects of Indigenous peoples’ mobilization of the tools, techniques and graphic language of modern cartographies.

Rundstrom launched the debate in 1995 in an article entitled “GIS, Indigenous Peoples, and Epistemological Diversity”. He characterized GIS as a Western “techno-science” that profoundly transforms the Indigenous societies it reveals by (among other things) imposing a homogenizing and standardized vision of space (Rundstrom 1995, p. 45). This argument was then extended to geographic information technologies (GIT)¹⁷. This critique identified a series of antinomies between Indigenous knowledge and worldviews on the one hand, and GIT knowledge and worldviews on the other hand: for example, the opposition between “relational” Indigenous ontologies (LaDuke 1999) (characterized by continuities between humans and non-humans or the dead and the living) and the “naturalistic” ontology (Descola 2005) (which fragments and separates “nature” and “culture”), or the differences between oral knowledge systems, which are context-based and dynamic in opposition to inscribed and static knowledge, independent of their speakers, which Bruno Latour has designated as being “immutable mobiles” (Latour 2005 [1987]). Because of these differences, the translation of Indigenous knowledge and worldviews into the GIT’s characteristic system of representation would run the risk of misinterpreting Indigenous geographies and assimilating them into modern cartographic epistemologies (Rundstrom 1995; Louis 2004).

In the 2000s, Indigenous cartographers both strong in their mastery of modern scientific cartographies and aware of the value and legitimacy of Indigenous mapping traditions sought to overcome these antinomies. Firstly, by linking oral tradition or performance-based forms of Indigenous mapping expressions with post-representational and performance-based approaches to critical cartography. Secondly, by showing that GITs are not *inherently* inappropriate for representing Indigenous knowledge and territorialities; on the contrary, they can be open to other uses and modalities of representation, and thus limit the possible misinterpretations of Indigenous geographies (we return to this point later, when we discuss the new potentialities of digital and online mapping and multimedia devices).

17 GIT encompasses GIS, web mapping services, remote sensing and GPS (Mericskay 2011).

Thirdly, by seeking to move beyond the debilitating critique of Indigenous peoples' uses of modern cartographies to an approach that advocates the self-determination of knowledge.

In a major text, "Facing the future: Encouraging critical cartographic literacies in Indigenous communities", published in the journal *Acme* in 2005, Jay Johnson, Renee Louis, and Albertus Pramono acknowledged that modern scientific cartographies and state cartographic manners of representation are valuable in aiding their communities' overcome their struggles (described in the first part of this chapter), provided that they were used reflexively and with an awareness of their potential cultural assimilation effects (Johnson *et al.* 2005, pp. 91–94). Many Indigenous researchers have also argued that knowledge and techniques need to be adapted to suit different contexts, needs and objectives. For Annita Lucchesi, there is a need to reject injunctions of authenticity or identity assignments ("traditional" versus "modern", "Indigenous" versus "scientific", etc.) (Lucchesi 2018, pp. 22–23) in order to "reinvent" maps (Lucchesi 2018, p. 22). Others have emphasized the need to "reconstruct" them (Pyne and Taylor 2012, p. 93) or to create "hybrid spaces" (Palmer 2012) in the image of their own diverse identities.

7.4.3. Representing "Indigenous depth of place"

Over the past 15 years, these new perspectives have fostered a novel production of maps that seeks to creatively reveal Indigenous knowledge and territorial ontologies. Pearce and Michael Hermann have experimented with narrative and graphic techniques for including the multiplicity of experiences of place in maps (Pearce and Hermann 2010). As part of a reinterpretation of colonial maps in terms of "encounters" between the colonized and the colonizers (Harley 1992; Warhus 1997; Lewis 1998), both cartographers have traced, through ethnographic or historical sources and imagined information, Samuel de Champlain's travels in Canada, adding to the explorer's voice those of the Indigenous peoples who accompanied or met him (Pearce and Hermann 2010). In 2018, Louis published a book on Indigenous cartographic knowledge systems in Hawaii, describing performative practices such as *hula* (a Polynesian dance accompanied by songs from the Hawaiian Islands) as an encoding of spatial practices (Louis 2017). Finally, from a feminist perspective, Lucchesi (2016, 2018) has expressed, through maps and art, issues related to Native American genocide, sexual and domestic violence against Indigenous women (which she herself experienced), and the disappearances and murders of Indigenous women in Canada. Lucchesi has thus mobilized narrative cartography to imagine forms of restorative justice and to begin her own healing process (Lucchesi 2018, p. 24).

Much work has been inspired by what Pearce and Louis (2008) have called “Indigenous depth of place”. Both cartographers used this term to show the dynamic, holistic and spiritual understanding of Indigenous space in Hawaii. Using GIS, they mapped the Ahupua’a of the island of Kaua’i¹⁸ from a diachronic perspective, showing their evolution in relation to day and night light, the seasonal and tidal cycle, and the appearance of the Milky Way (Pearce and Louis 2008). Other researchers (both Indigenous and non-Indigenous) refer to an “Indigenous depth of place” to express a spiritual or time experience of a place, its invisible dimensions, memory of place, relations between tangible and intangible dimensions of territory and its ability to showcase Indigenous knowledge. Dreaming practices by Mapuche-Williche participants in a community-based mapping project in Chile are an example of this (see section 7.2.1) (Hirt 2008, 2012). With the aim of decolonizing territory and landscapes, geographer Justine Gagnon worked with the Innu of Pessamit in Quebec to represent their memory of place and their emotional connection to their territory, despite the latter’s being flooded by the impounding of the Manic 5 dam in the 1970s (Gagnon and Desbiens 2018).

Interactive and online mapping has also made a significant contribution to renewing the cartographic representation and narration of Indigenous territorialities. The Geomatics and Cartographic Research Centre at Carleton University (Canada) has been developing cybercartographic atlases since 2003, led by D.R. Fraser Taylor, using open source software (<http://nunaliit.org/>) (Pyne and Taylor 2012). Four of these were produced with Inuit and First Nations people¹⁹. Their objectives, in addition to transmitting knowledge between generations, is to account for traditional Indigenous knowledge by linking together different forms of Indigenous expressive culture (oral traditions, material or visual culture, historical documents) (Caquard *et al.* 2009, p. 83). These atlases are also narrative tools for spatializing the history of colonial relations (e.g. relating to treaties and residential schools) for better mutual understanding between Indigenous and non-Indigenous peoples in North America (Pyne and Taylor 2012). Their interactive nature allows users to create their own content, and to determine how they wish to recount their relationship with the land and places. Taking advantage of the multimedia format, the atlases combine texts, photos, videos and audio with maps. In the *Kitikmeot Place Name Atlas*, each point on the map corresponds to a place name with an

18 Ahupua’a comprises land units divided according to resource distribution, ranging from the mountains to the ocean (Pearce and Louis 2008, p. 115).

19 *Atlas of Arctic Bay* (with Nunavut Arctic College); *Kitikmeot Place Name Atlas* (Kitikmeot Heritage Society); *Cybercartographic Atlas of Indigenous Perspectives and Knowledge of the Great Lakes Region* (Anishinaabeg communities), which includes a module on the 1850 Lake Huron Treaty.

associated audio file so that one can listen to its pronunciation in Inuktitut and/or a video of the Inuit speaker explaining the meaning of the place name in their own words. Figure 7.4 is a screenshot of the atlas examining the place name Ikpigyuaq. A video shows Inuit Elder Frank Analok describing Ikpigyuaq as “being a place where caribou were hunted in blinds with bow and arrow”.

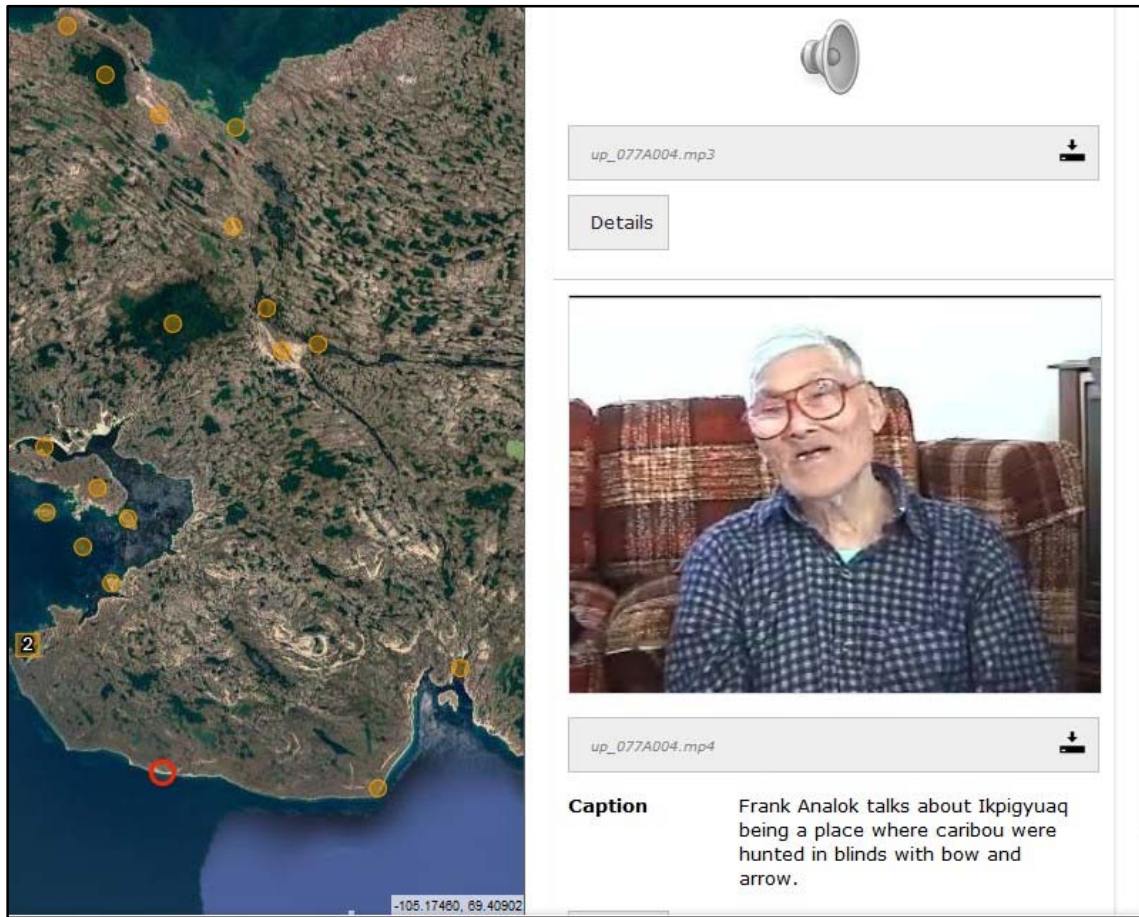


Figure 7.4. Screenshot of the *Kitikmeot Place Name Atlas* (source: <https://atlas.kitikmeotheritage.ca/>, accessed November 13, 2020; reproduced with permission from the Geomatics and Cartographic Research Centre, Carleton University, and the Kitikmeot Heritage Society)

It shows that the development of multimedia mapping has made it possible to overcome at least one of the criticisms voiced in the 1990s concerning the potential for cultural assimilation of modern Western cartography for Indigenous knowledge and worldviews. Indeed, such a multimedia device, by giving voice to Indigenous knowledge holders, makes it possible, on the one hand, to minimize the decontextualization of knowledge caused by the shift from oral to written forms, and, on the other hand, makes it possible to promote the direct expression, and

therefore the most accurate possible, to promote the direct expression, and therefore the most accurate possible, of Indigenous worldviews and territorialities, thanks to the absence of an intermediary or translator (Pyne and Taylor 2012, p. 94).

However, Indigenous mapping in the era of interactive and contributive Web 2.0 is not spared from new factors of marginalization of Indigenous peoples. While there is not yet much work that has been done in this field, several authors examine the logics of exclusion of Indigenous knowledge in light of the universalization of contents and the constraints of data interoperability (Wellen and Sieber 2013; Noucher 2017; Reid and Sieber 2019). Matthieu Noucher traces the flow of *Teko* and *Wayãpi* place names (French Guiana), produced with participatory methodologies: from the Géoguyane portal to the *Geonames* global toponymic index, via open data portals located in France. At each stage, this dissemination has been synonymous with disassembly, loss and fragmentation of information, both because of the imperatives of interoperability and standardization, as well as the legal aspects related to open data. All of these factors have contributed to the misplacement and invisibilization of Indigenous place names “in the limbo of the Internet” (Noucher 2017, p. 56, Author’s translation).

7.5. Conclusion

This chapter reflects the range of approaches and debates in the scientific literature on Indigenous mapping. We have seen that the latter term refers to two types of mapping processes: first, the contemporary appropriation of state cartographic language and techniques by Indigenous peoples to obtain recognition of their political, cultural, land and territorial rights. While these uses of maps by Indigenous organizations and communities are now well known and have been analyzed (particularly with regard to their effects in terms of empowerment or, on the contrary, the reinforcement of colonial relations), less is known about the consequences of the entry onto the scene of these new, extremely powerful private actors, the GAFA (Google, Amazon, Facebook, Apple). Their ability to reconfigure the relations between Indigenous peoples and states is yet to be understood. Second, we have shown that, in the broadest sense, Indigenous counter-mapping practices refer to the symbolic spaces of the decolonization of the imaginary, representations and knowledge. These practices contribute to a “new narrative” that (re)affirms the legitimacy of Indigenous cartographic knowledge and visions of the world and territory. It is in the digital and multimedia world that the future will undoubtedly hold the most surprises. This is all the more likely because the creative uses of these devices by a growing number of Indigenous cartographers run counter to any technological determinism. Clearly, as this chapter has argued, cartographic

technologies do not *in themselves* lead to the cultural and political assimilation of Indigenous peoples, which is primarily caused by the imposition of the language and territorial principles of the modern state.

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