



Seeing rivers otherwise: Critical cartography as a form of critical pedagogy

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ABSTRACT

Counter-maps have become an increasingly important practice for social movements to claim their rights and to articulate emancipatory actions against extractive intervention plans and dominant territorial reconfiguration projects, especially in the contested field of water governance. Yet the emancipatory nature of these counter-maps should not be taken for granted: much depends on the way in which power relations and different knowledges are negotiated in the critical process of map-making. In this article we therefore investigate how counter cartography, and in particular counter-mapping processes by water justice movements, may benefit from insights from the field and praxis of critical pedagogy. We argue that there is great potential to be unlocked in exploring critical cartography from that perspective. Rather than dissecting the outcomes produced by a critical cartographic practice, we turn our attention to unveiling the transformative and actionable potential that can be found in the mapping process itself. We explore this topic within the context of the grassroots movements that have water as one of their central issues given its relevance and potential for the promotion of more just and sustainable river practices. To this end, we analyse two social arenas in Ecuador where local collectives are engaged in river struggles: the Amazonian Napo province and the Andean district of Licto, Chimborazo province.

1. Introduction

Maps are among the most widely used and powerful instruments through which we represent, understand, enlance, and intervene in nature and society. Throughout history, maps have contributed to creating images that portray nature as an entity to be dissected, conquered, and controlled (Mignolo, 2003). Rivers and the human and more-than-human lives that are intimately related to them have been no exception to this. Cartographic techniques have been largely deployed in the service of a dominant narrative that places rivers as resources to be tamed and exploited, ultimately contributing to processes of river domestication and degradation (Blair et al., 2023; Duarte-Abadía, 2023). For instance, hydrological maps have served as the basis for the development of canalisation projects, construction of dams, development of large-scale irrigation projects (Hommes & Boelens, 2018). Maps have provided the spatial information needed for navigation, facilitating the commodification of nature through the river network (Edney, 1997). Governments, elites and largescale businesses have used maps to

demarcate land and enclose river commons, often favouring environmentally impactful activities and alienating rights of indigenous peoples and small farming communities (Bakker et al., 2018; Moreno-Quintero et al., 2021; Sletto, 2015; van Teijlingen 2023).

In this context, the field of critical cartography has emerged based on the understanding that maps are neither neutral nor objective, but reproduce particular ways of seeing the world (Harley, 1989). Critical cartography considers maps as social constructions and sites of struggles embedded in power relations that produce them and reverberate through them (Crampton, 2001; Harley, 1989; Oslender, 2021). As put by Acselrad & Nuñez Viégas (2022), every cartography implies affirmations of belonging and exclusion. From this vantage point, critical cartographers have examined how maps reproduce hegemonic narratives that may often perpetuate injustice and inequality, reinforce colonial legacies, build up gendered spaces, and silence marginalised voices (Brackel et al., 2023; Collective et al., 2012; Harris & Hazen, 2006). Through counter-mapping and social cartography, both critical cartographers and social movements have sought to develop maps that

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challenge hegemonic discourses of colonialism, racism, and capitalism by making visible alternative ways of understanding and relating to territories that have been rendered invisible or oppressed, thereby destabilising power relations, oppression, and displacement (Blair et al., 2023; Harris & Hazen, 2006; Oslender, 2021).

Critical cartography and counter-mapping have been, therefore, an increasingly important practice for social movements to claim their rights, especially in the contested realm of water governance. For instance in Latin America, indigenous and afro-descendant communities have been able to express through maps their cosmovisions and life worlds in which rivers and waterways are often central elements of a relational ontology that integrates humans and nature in myriad ways, quite different from capitalist views that fragments the experience of space and separates body and territory (Hoogesteger et al., 2023; Moreno-Quintero et al., 2021). Critical cartography has also been widely used in an integrated way with participatory research methodologies in order to articulate the views of riverine and coastal communities on the water management of their territory (Chuenpagdee et al., 2004; Velez Torres et al., 2012; Hohenthal et al., 2017). These alternative mapping practices have furthermore been used by grassroots movements resisting the emergence of projects that impact rivers and creeks, particularly extractive projects (*Geografía Crítica del Ecuador*, 2018). These movements are multifaceted and bring together grassroots groups and initiatives, as well as regional networks and non-governmental alliances, to protect and regenerate rivers while challenging dominant ways of ordering and exploiting them (Boelens et al., 2023; Hommes et al., 2023; Vos, 2024).

What stands out in the literature on counter-mapping is its avowed potential for eliciting emancipatory processes among groups subject to oppressive power relations. The emancipatory nature of counter-maps should, however, not be taken for granted: much depends on the way in which power relations, knowledges and positions are negotiated in the very process of map-making (Anthias, 2019; Mollett, 2013). Thus, in order to harness the full potential of counter cartographies to advance democratic and liberatory processes, we must look not only at the maps, but at the processes of mapmaking and their performance in relation to wider community-led social struggles (Sletto, 2012). This shift in focus—from *map* to *mapping*—has become increasingly prominent in the field of critical cartography (Kitchin et al., 2013; Sletto et al., 2023), and compels us to reflect on the transformative knowledge production that takes place among the multiple actors involved in making, engaging and harnessing the map.

We argue that insights from critical pedagogy as a field of thought and praxis can assist us in this task of dissecting the emancipatory knowledge production processes that potentially emerges from counter-mapping processes. Critical pedagogy emerged as a response to systems of oppression; as an educational approach that strives to make dominant modes of knowledge and their harmful effects of exclusion (or adverse inclusion) explicit while supporting initiatives that struggle to rebalance power dynamics and produce knowledge otherwise (Kincheloe, 2008). Despite implicit parallels of these fields' origins, aims and practices, there is relatively little research exploring critical cartography practices from the perspective of critical pedagogy. Therefore, the aim of this paper is to combine these two fields within the context of grassroots movements that have water as one of their central issues. The central question thus guiding this study is: How can critical pedagogy provide innovative insights concerning the transformative potential and limitations of counter-mapping?

To answer this question, we will first discuss the tenets of both fields, highlighting their emphasis on power/knowledge dynamics and transformation of power relations. We then present two cases in Ecuador—one in the Amazonian Napo province and one in the Andean district of Licto, Chimborazo province—involving local communities who engaged in counter-mapping to foster more just and sustainable ways of relating to the water systems of their territories. We consider the domain of water governance and water struggles particularly suitable

for this analysis because of its highly contested nature; water, as a vital common good, is subject to divergent interests, overlapping claims, ontological representations, and power dynamics that regulate its use and management.

2. Beyond the map: mapping as a process

The often cited dictum “the map is never the territory” by Korzybski (1933) has provoked many geographers to break with the notion that maps are faithful and neutral representations of space. Instead, they started to approach maps as social constructions, that seek to advance representations of space and place according to the worldview and interests of the maker. One influential author that pushed the envelope in this direction was John Brian Harley. In the article *Deconstructing the Map* (Harley, 1989, p. 4), he traces how cartography emerged as a science that sought to produce maps that functioned as “a mirror of nature”. Engaging Foucault, Harley (1989) criticizes the “mask of a seemingly neutral science” behind which cartography operates, and reconceptualizes the map as a discourse that both reflects power relations in society, and further reinforces them. In different ways, therefore, critical cartography has developed in conversation with other critical sciences that endeavoured to ‘open the black boxes’ of dominant (positivist) approaches, such as those rooted in Critical Theory and later in STS, and critical technology and modelling studies (e.g. Pfaffenberger, 1988; Winner, 1993). In line with these critical perspectives, Harley (1989) proposes to examine the cartographic discourse through the deconstruction of the map and its implicit assumptions and silences (Harley, 1989).

Although Harley’s invitation to approach maps as political and socially constructed marked an important shift in the field of (critical) cartography, his work also garnered considerable critique (Crampton, 2002, 2011; Kitchin & Dodge, 2007). The critique of most relevance to this article concerns Harley’s overemphasis on the map as a representational artifact imbued with power. As various authors have argued, the power of the map does not only reside in what it shows or erases. Power/knowledge is also at play in the practices and relations through which maps are made, ‘come to live’ and create effect. What is more, a map cannot be properly appreciated if the processes of map-making and performance are not examined. In this vein, maps should rather be understood as unstable and processual—as *mappings* (Kitchin & Dodge, 2007; Kitchin et al., 2013; Del Casino Jr et al., 2005; Sletto, 2015).

This processual, post-representational turn in Critical Cartography and the concomitant reconceptualization of the map as *mapping* suggests that our analyses should go beyond deconstructing maps as artefacts or ‘texts’, to include the mapping’s genealogical “lines of becoming” (Kitchin et al., 2013, p. 482) and the situated, relational and unfolding practices through which mappings unfold and are deployed (Sletto et al., 2023). It includes critically examining the actors involved in mapping; the worldviews, valuations and interests they bring to the process; the practices and technologies that are used; and the wider context (of power and struggle) in which it was created. The ‘lines of becoming’ of maps evolve around modes of knowledge and intervention that are legitimized, or delegitimized, in accordance with the power configurations that accredit dominant truth claims; so actively producing forms of knowing and of ignorance (van Teijlingen, 2023). A strong emphasis on the way in which (racial, patriarchal, class-based, and colonial) power/knowledge relations structure the process of map making is therefore required (Anthias, 2019; Harris & Hazen, 2006; Parker, 2006; Sletto, 2015).

The post-representational turn in cartography requires paying careful attention to how people engage the map and to what a maps ‘does’ (Kitchin & Dodge, 2007; Sletto, 2015). Because a map performs, it does work in the world: it codes, draws borders, separates, inscribes meanings onto the landscape, incites actions and by doing so generates material effects (Pickles, 2004). Socially speaking, a map performs by producing new social imaginaries, bringing together different actors, shaping

discourses and constituting the formation of subjects. Yet, the ways in which maps come to live and ‘do work in the world’ are multiple, contingent and continuously unfolding: the performances of a map depend on the interests, contexts and knowledges of those who engage the map, and may (unexpectedly) shift over time (Del Casino Jr et al., 2005). Again, these performances are ridden with power as some actors may be better positioned than others to curb the authority and impact of a particular mapping to their advantage (Harris & Hazen, 2011).

Counter-mapping emerged in part to subvert the power relations that shape the process through which a mapping is produced, what it represents and the ways in which the mapping is performed in order to generate effect. Counter-mapping promotes participatory map-making processes by social movements, grassroots activists and marginalized groups, using unconventional mapping practices and techniques (Acsegrad and Nuñez Viégas, 2022; Sletto et al., 2021; Tubino de Souza et al., 2024). Counter-mappings often emerge from a context of oppression or conflict, and are generally set up to serve a broader process of socio-ecological struggle which also involves other forms of claim-making (Collective et al., 2012). As spatial representations, counter-maps seek to make visible or otherwise support subaltern territorialities or knowledges that are erased from hegemonic (state) maps, including peasant and indigenous land-claims, water theft and pollution, relational ontologies, body-territory connections, oral histories, visceral geographies and collective memories (McWeeny, 2014; Moreno-Quintero et al., 2021; Sletto et al., 2023; Zaragocin & Caretta, 2021). They often defy Cartesian understandings of the world and shake up cartographic conventions of what can be mapped, how it is mapped, by whom and the form a map can take (van Teijlingen, 2023).

In terms of performativity, counter-mappings are generally aimed at supporting emancipatory and decolonial struggles of marginalized, ‘othered’ communities and groups (Contingente, 2023). The work the mapping does in the world is nonetheless varied. For instance, to the grassroots movements, counter-mappings serve to strengthen their organizations, define shared norms, rights and values, and create the foundations for new alliances and political subjectivities. Also, counter-mappings often support the visualization of extractive encroachment practices, transformation of oppressive power relations, and guide interventions in every-day politics (Geografía Crítica del Ecuador, 2018; Martini, 2021; Oslender, 2017).

Whether these subversive aspirations are realised in practice is, however, ambiguous in the vast literature on counter-mapping. Many authors report on its potential, but also recognize the many pitfalls. They argue that counter-mappings may as well reproduce the violence of erasure exerted by Cartesian cartography, reaffirm western epistemologies and as such reinforce existing (colonial and patriarchal) power relations (Mollett, 2013; Oslender, 2017; Parker, 2006; Sletto, 2015). Others have pointed out the risks of making subaltern geographies visible through mapping, for this may divide grassroots actors, fix these actors spatially or render them legible to powerful actors (Anthias, 2019; Martini, 2021; Wainwright & Bryan, 2009). Most authors agree that the extent to which the transformative potential of counter-mapping may be harnessed depends on the way in which power/knowledge relations are identified, negotiated and challenged throughout the mapping’s process of becoming and performing (Sletto et al., 2021; van Teijlingen, 2023). To provide insights into how this can be achieved, we place the literature on counter-mapping in conversation with another field of praxis and thought that is concerned with transforming power/knowledge relations: that of critical pedagogy.

3. Our view of critical pedagogy

Critical pedagogy is a pedagogical approach and practice that is constantly evolving. At its core, critical pedagogy challenges forms of knowledge production and subjectivity that are claimed to be universally valid and lead to forms of oppression that renders other, grassroots types of knowledge void and social equity undermined (Apple & Au,

2009; Kincheloe, 2008). Critical pedagogy approaches education as an inherently political act as it sees no single form of knowledge as neutral. So it strives to reveal and comprehend the intricate power/knowledge dynamics that characterize any form of knowledge in order to catalyse transformations towards justice and equity (Giroux, 2004; Kincheloe, 2008).

Manifestations of critical pedagogy can be traced back to, among others, social mobilisations of African American and Afro-Caribbean communities that challenged social and power relations, calling for increased justice and equality through a radical critic of existing forms of education (Apple & Au, 2009). It was in the 1970s that the tenets of critical pedagogy were widely disseminated through the work of authors like Paulo Freire (Pedagogy of the Oppressed, 1970) and Ivan Illich (who innovatively amalgamated critical pedagogy and critical technology studies in Celebration of Awareness, 1971; Descholling Society, 1971; Tools for Conviviality, 1973). In their own ways, both authors challenged an educational process based on the mere passive transmission of knowledge and hierarchical relationship between teacher and student, and proposed one grounded on a more horizontal dialogue that could allow people’s critical thinking to flourish (e.g. Freire, 2000). From that standpoint, subjects could become agents of their own history through the conscientisation that arises out of the critical realisation of their own situation in the world. Such approach is centred on the notion of praxis, which stands for the fusion of critical reflection and critical action. Other important developments in critical pedagogy follow for instance through the works of scholars such as bell Hooks (1981, 1994), Patti Lather (1991), Michael Apple (1995), Ira Shor (1996), Henry Giroux (2004), Peter McLaren (2002), and Joe Kincheloe (2008).

Despite presenting a goal that at first glance may be widely accepted—transforming the social order in the direction of justice and emancipation—the theoretical foundations from which various proponents of critical pedagogy articulate it have been the subject of various critiques. For instance, critiques from the standpoint of postmodernist theories problematise critical pedagogy’s focus on challenging power structures and its aspiration to ultimately liberate society from power and hierarchy, suggesting that this very rationale can become a dominant ideology that suppresses alternative viewpoints (Biesta, 1998; Gur-Ze’ev, 1998). Another critique, more specific to the Freirean approach, concerns its reliance on the assumed knowledge of the oppressed as a safeguard of a route to emancipation (Gur-Ze’ev, 1998); or its focus on ‘inclusion’ and ‘participation’ which are precisely the building-blocks of disciplining, normalisation, and governmentality in post-structural scholarship (Foucault, 1980, 1991). From a feminist perspective, critiques rest on the theoretical formulation of critical pedagogy from a Marxist account of history which revolves around male waged labour, ineptly privileging an idealist and gender-blind perspective (Luke, 1992). It is argued that it seriously limits the possibility of embracing identity politics to advance the broad emancipatory aims that critical pedagogy pursues. As a response, critical pedagogy has been pushed further through its articulation with feminist, poststructural, postmodern and postcolonial theories (Apple & Au, 2009; Biesta, 1998; Luke, 1992; Gore, 1992; Hooks, 1994).

Taking heed of these critiques and articulations, we conceive of critical pedagogy as a useful approach to discern how power/knowledge is negotiated throughout the mapping’s process of becoming and performing. For critical pedagogy, key in the negotiation of power/knowledge is the way dialogical interactions unfold between involved actors towards the production of emancipatory knowledge aimed at transformative change (Freire, 2000; Kaufmann, 2010; Kincheloe, 2008; Taylor & Hikida, 2020). To critical pedagogy, it is essential that these interactions realise a space of radical reflection and co-creative action, allowing the critical appraisal of the context at stake and reformulation of perspectives whilst supporting the generation of emancipatory knowledge and action. This implies that those involved in the dialogue do not impose pre-established visions that may prevent the exposure of the limits and structures that are inscribed in society and within which

actors may be operating, thereby leaving a wide open field for other ways of being and doing to emerge and for other possible limits to be co-constructed (Biesta, 1998).

To gain more in-depth understanding of how power/knowledge negotiations take place within dialogical dynamics, we look at Foucault's notion of power. Central to this notion is the understanding that power "is never localised here or there, never in anybody's hands, never appropriated as a commodity or piece of wealth" (Foucault, 1980, p.98). Rather, it enables an examination of the norms, rules and morals through which power is exercised and which come to circulate among actors. Of our interest, dominant but ever changing codes of conduct for morally 'good and appropriate' thinking, behaving and social action inform, in our case, the mapping (and corresponding thinking and acting) concerning rivers and socio-ecological territories. From this standpoint, an individual or group does not possess power but is subject to it and turns her/himself into a subject (i.e., 'subjectification', or subject-making): through self-correction in accordance with these standards of dominant mapping normality and their legitimate/legitimizing ways of seeing rivers.

Critical pedagogy enacted through counter-mapping requires consciously deviating from these codes of conduct. Therefore, 'mapping as counter-conduct' is not a matter of presenting 'better grounded' socio-ecological river maps or just involving side-lined actors and alternative river knowledges. Its core challenge is seeing rivers otherwise: to curb the dominant mapping epistemes and its river ontologies, the very river-knowledge-production processes and hegemonic river-truths themselves (Boelens et al., 2023). This perspective of critical pedagogy and the fundamental notion of 'critique' (Foucault, 2002) becomes essential when analysing the dialogue interactions that take place between actors through alliances formed in counter-mapping processes. In the contested domain of water governance, where myriad actors are engaged and diverse river worldviews and configurations compete for recognition, this perspective highlights the emancipatory knowledge that emerges through mapping and that has the potential to transform power relations and catalyse political action. Critical pedagogy through 'mapping as counter-conduct' will aim to bring the side-lined epistemes to the fore, to engage them in the making of river realities and to enact alternative water governance.

From this perspective on critical pedagogy, dialogue is not conceived though as a harmonious and rationalistic conversation that should lead to a kind of Habermasian consensus—something which is quite unlikely to happen in strongly hierarchical, multicultural and decolonizing contexts (Mouffe, 2005). Rather, it is to take place as and in a field of critical interaction among involved actors in which opposing views are expressed and contested and the power imbalances at hand affect the very possibility of expression and contestation. Here, conflicts and conflicting perspectives can and should not be "reasoned or facilitated away" but should be considered as an inherent part of emancipatory struggle. Beyond presumed rational and participatory consensus-seeking (which commonly suffocates behind a veil of dominant commensuration and 'facilitation'), debating social and political differences is key to achieving what Mouffe (1999) calls "agonist pluralism". Agonistic pluralism joins and engages adversaries in expressing their political contests over purpose, meaning and power, seeking new outcomes that disavow claims to 'established knowledge', 'authoritative rules', 'fixed universal principles', or 'rational, participatory and deliberative consensus'. Analysing a dialogical process through the lens of critical pedagogy, as conceptualised here, means examining how this process unfolds along the lines of *becoming of the map* (map-making) and the *lines of performing of the map*; who speaks to produce the map, and under what conditions this conversation is constructed and whether or not it may bring forth counter-conduct and agonistic configurations to produce alternative river realities.

4. Licto and Napo: counter-mapping through diverse methodological approaches

In this section we present the cases of Licto and the Napo River located in Ecuador, where counter-mapping was used to strengthen the claims of local communities. These two cases have been selected because they illustrate two different approaches to the counter-mapping process thus presenting the potential to uncover different possibilities of this process. In Licto, over twenty indigenous peasant communities have drawn their irrigation water and flows to revitalize their territory from the faraway Guarguallá river. It was the result of a decades-long struggle against the Ecuadorian State and the white-mestizo elites. For this, mapping their hydrosocial territory has been and continues to be a battlefield shaping their hydraulic culture and territorial reality (Boelens, 2015; Boelens & Gelles, 2005). Along the Napo River, several grassroots groups formed an alliance to combat mining activities that were causing serious social and environmental impacts in the region. As the need for a counter-map of these impacts emerged, they called on the Critical Geography of Ecuador (CGE), a collective of action-researchers based in Quito. The mapping that resulted from this collaboration played a key role in the legal battle against mining and generated new articulations between grassroots movements as well as strengthen local identities.

The methodological approach used in these cases was action-research, conducted by the third and fourth authors in the communities of Licto and Napo respectively. More details on the mapping process will be included in each of the case descriptions, but both involved extensive field visits along with grassroots activists and community members, co-creation of maps, participant observation, field notes, and informal interviews in order to gather rich, contextual data. Using these sources, the authors conducted a retrospective case analysis, revisiting, reinterpreting, and critically examining previously collected data to generate new insights within current theoretical lenses. The first and second authors are also involved in the cases: the first by being currently engaged in an action-research project involving counter-mapping in Licto, while the second author plays an active role as a member of the CGE in counter-mapping in the Ecuadorian Amazon. The authors share a commitment to supporting community struggles against mining, exploitation, environmental degradation, and livelihood disruption.

4.1. *Struggling for water: mapping a dignified future in Licto*

The 22 communities of Licto district are located at 2700 to 3600 m.a.s.l. Most community inhabitants self-identify as indigenous while Licto's central-town people commonly identify as *mestizo*. Licto's history is one of violence, discrimination, exploitation, and marginalization, in which white-*mestizo* landowners, district governors and clergy forcefully subordinated the surrounding communities.

4.1.1. *A history of struggle and 'unmapping'*

Since the late 1970s, a large irrigation system was projected that would bring water from the Guarguallá river to the dry, deeply impoverished region. From the start, the designs and maps were made by the Ecuadorian state agency in close coordination with Licto's dominant groups. The military-institute base maps used to elaborate the engineering maps neatly reflected dominant powers structures: the main canal and head facilities, designed in a top-down manner, would prioritize watering the well-to-do sectors. Peasant-indigenous families were excluded from decision-making. Hydro-territorial maps were based on pre-established physical-technical criteria, ignoring any social structures or community boundaries.

From the early 1990s, however, on the waves of national indigenous resurgence, Licto's communities started to challenge the status quo and the elite-based reality mapping. Community leaders joined forces with the subordinate families of the lower classes in Licto town, particularly

the women: they realized that the large irrigation project could become an instrument of power to transform the local landscape. The Ecuadorian NGO CESA (Ecuadorian Agricultural Services Centre) joined and supported their claims. During five years (1992–1997) this paper's third author worked, through CESA, as an action-researcher and interactive designer with the indigenous-peasant communities. Trained in both social and natural sciences, he supported the leaders to, first, critically and collectively decipher the formal river designs as well as core issues as irrigation project calculations, water and land property rights proposals, plot mapping, cropping patterns, organizational structures and class, ethnicity and gender relations.

With the CESA team, indigenous peasants and women groups together decided to establish a strong water users organization, uniting 22 previously divided irrigation communities. When, in the mid-1990s, neoliberal withdrawal weakened State agency's intervening powers, the indigenous communities took over water development. With the support of the action-researcher and CESA, the community organization scrutinized the social and political norms embedded in the government's hydro-technological designs and water allocation proposals to adapt design, management and water rights to local demands and capacities. This included 'campesino-to-campesino' visits to Ecuadorian water user organizations; design workshops and collective mapping; peasant radio debates on water (in)justice; local-provincial-national platform discussions and networking; but also street protests, even occupying the offices of the Ministry of Finances in Quito. With this, the indigenous-peasants' counter proposal implied a fundamental change to the State policy: water rights cannot be purchased through capital or top-down state concession; families acquire them through grassroots collaboration.

4.1.2. Counter-mapping: new imaginaries, new grounds

Counter-mapping was core to transform the conflicts with the State and elites, but also the internal community conflicts, in particular gender-based contradictions, by creatively unveiling pluralist needs and insights. A co-devising among action-researcher, CESA, and peasant families the tools to facilitate dialogue, communities criticized State engineering biases and identified existing knowledges and needs among communities, meanwhile shaping new hybrid ideas to build and strengthen the inter-community water system. They found how these biased water and technological benefits towards the well-to-do sectors while ignoring and invisibilizing many peasant-indigenous sectors omitted from the State's mapping process; as revealed in the speech of Antonio Laso, peasant-indigenous leader.

Our irrigation system will never be like the one our neighbors have. The engineers did everything over there and the peasants had no right to decision-making. There, the State decides who will irrigate, how they must irrigate, when the canal will close down for cleaning, how much they have to pay for the water, and all that. Actually, they have no peasant irrigation organization, no struggle to claim their rights. We are fighting for an irrigation system controlled by peasant and indigenous families! (Antonio Laso, May 1996)

During the workshops in which dialogue has unfolded, it was particularly salient to find that a large part of the population, mostly illiterate women, could not comprehend the project's blueprint designs and leaflets. Therefore, a new sequence of tailor-made events was devised by the action-researcher, CESA and the women leaders. These comprised 'farmer-to-farmer' debates and 'educación popular' based capacity-building (inspired by the principles of critical pedagogy), as well as additional exchange visits with riverine territories facing similar challenges.

Discussions among the Licto communities intensified when the action-researcher suggested the leaders and NGO to collectively build and deploy a 'portable three-dimensional map' of the current territory, and prospective components modelled to scale (Fig. 1). Female irrigation leaders took the model and facilitated the debate on territorial design among all 22 communities in the local Quichua language. This dialogue process took place throughout the territory, across a wide time frame. For many families without transport, especially women, it was difficult to get around: many had not seen the distant *páramo* communities and main river intake, or even visited the last communities at the end of the river, many walking hours away.

Families were able to dialogue about how the overall system would benefit or affect their community (Fig. 1a, 1b). Contextual analysis and decisions were made at each community level and brought to the monthly inter-community organizing level for final joint decisions across the 22 communities. The dialogue with the scale models collected ideas, suggestions, complaints and claims about the foreseen design: which irrigation areas and communities were excluded but should be included; which infrastructure needed to be added or system layout changed. Outcomes in terms of technological dimensions (e.g. water flows, irrigated areas, canal capacities), normative dimensions (e.g. water rights, access criteria, irrigators' obligations and contributions) and political-organizational dimensions (river governance agreements, inclusion of upstream river communities, inter-community board powers) disrupted the established State legal, hydraulic and political mapping. Water access and decision rights for female and poor irrigators



Fig. 1. a,b,c: Portable model of licto's existing territory and future system, in 1995–1996.

Guarguallá river, Licto, Ecuador



Fig. 2. Timeline illustrating key stages of the local initiative in Licto, Ecuador.

prominently figured among the core agreements. For instance, women added the inclusion of community night reservoirs to store water at night time and irrigate at daytime, otherwise they could not irrigate and materialize their rights.

Scale-models were also used to co-decide about intra-community designs, and by effect renegotiate power relations. The 'maqueta viva'—as called by the peasants—enabled users to be at the steering wheel of design discussions and decision-making (Fig. 1c). These portable scale models and hydraulic mapping tools were to be compounded collectively inside each of the communities. They enabled active mapping on the basis of what was vernacularly known and imagined to become the community's collective future. In particular, they strengthened the knowledge and leadership positions of female water users; as put forward by Rosa Guamán, local irrigation leader. Female irrigators, historically often denied access to 'public' water decision-making, became irrigation leaders, inter-community presidents, as well as technical masonry leaders directing younger male fellows to construct the canals.

We have seen how women have been discovered here, women who never had a chance to demonstrate their capacities, women who begin to organize, who become leaders. More than just participation in the labor tasks, our struggle is to become more aware of our role as women, as mothers, but especially as thinking persons! (Rosa Guamán, June 1996)

The rising of female irrigators challenged unequal gender relations within the communities and the irrigation organization, as well as towards the state agency and rural development institutes. Breaking free from historical domination by white-mestizo elites (but amidst the ever existing intra-community power imbalances, the inter-community

rivalries, and the State trying to regain control over and obedience of water users' bodies, minds, resources and votes), the communities profoundly realized that despite their differences and quarrels they had to 'materialize their inter-dependence': they developed a hydro-territorial system which they could manage collectively, from the river to the field level. The Licto's counter-mapping process also fostered broader territorial bonds, through barter relationships with the upstream Guarguallá river paramo communities. These would conserve and provide the river's territorial waters; and in exchange receive products that could not be grown in the cold-temperature highlands. The timeline in Figure 2 highlights key moments in the mapping process: context, mapping and performance (revealing how past transformations have shaped the current situation, as explained in the next subsection).

4.1.3. Contemporary counter-mapping, to re-unite

Since 1997, water has been flowing in Lictiño territory. The performance of the 3D counter-mapping has been harnessed into a new way of engaging with the landscape, managing water and building social relationships around it. But water battlefields never have harmonious endings; they remain agonistic arenas. In recent years, short-term profitability logic and neoliberal 'Payments-for-Environmental-Services' discourses have ruptured the reciprocal barter relationships among Guarguallá River's highland and lowland communities. And all this in a time of changing natural and social climates, when riverine bonding is more urgent than ever. Currently, three decades after they first started working together—years in which they have continued solidary bonding and friendship relations—, CESA, the action-researcher, and Licto's community leaders, have gathered again to identify and face the new threats. With the action-research team of the



Fig. 3. Recent counter-mapping initiatives are addressing new challenges faced by the Licto communities, in 2023–2024.

international Riverhood water justice coalition (www.movingrivers.org) they have engaged in new counter-mapping endeavors. The challenges of reciprocal relations between highland water guardian communities and lowland water user communities are now being mapped, discussed, and acted upon (Fig. 3). ‘High’ and ‘low’ Licto-Guarguallá communities, ‘elder’ and ‘younger’ leaders, and grassroots and critical academia are intertwined in counter-mapping.

4.2. Counter-mapping of alluvial gold mining in Napo

Napo is one of the six provinces of the Ecuadorian Amazon region, and is called after the Napo river crossing the province. The province is home to Kichwa indigenous people and mestizo settlers, who predominantly make their living with (subsistence) farming and jobs in the (eco-) tourist sector. Cartographic representations have been instrumental in the colonization and exploitation of the Amazonian province of Napo since the 16th century. They have initially been used for the demarcation of spaces for Catholic missions, haciendas and resource exploitation (Muratorio, 1998). In the 19th century, the emergence of open pit alluvial gold mining further amplified the exploitative role of maps. Using a grid-based system to delineate areas rich in metallic resources, government maps demarcated mining concessions. Today, these mining cadasters are still prominent in the State’s cartographic gaze upon the Ecuadorian Amazon region. But such cartographic interventions were and still are narrowly focused on extractive objectives and lack consideration for the region’s indigenous populations, non-human beings, and ecological relationships. These reductionist Cartesian cartographies do not remain without effect: across the region, extensions and approvals of mining concessions and projects have proceeded without due consideration of these complex socio-environmental dynamics (van Teijlingen, 2023).

4.2.1. Mining expansion in the Napo watershed and counter-mapping inspections

In the Napo province, the Ecuadorian state has handed over to the mining corporations concessions of areas that are highly biodiverse and of great importance to local peoples. Alluvial gold mining has increased by 316 % between 2015 and 2021 (MAAP, 2023), causing a series of impacts such as river contamination, environmental degradation and the disruption of local communities’ traditional practices (Fig. 4). These mining activities also reveal structural socio-economic problems, in that they capitalize on the deep-rooted inequalities and pervasive poverty among the local population, which ultimately leaves certain sectors of the population with no alternative but to engage in this type of activity.

These actions by the Ecuadorian government have been the cause of a deep environmental crisis in the region. In February 2020, social collectives in Napo and organizations of indigenous peoples and nationalities such as FOIN (Federation of Indigenous Organizations of Napo), CONFENIAE (Confederation of Indigenous Nationalities of the Ecuadorian Amazon) and CONAIE (Confederation of Indigenous Nationalities of Ecuador) presented the “Manifiesto in Favor of Water and Life and Nature [...]”¹ against the Chinese capital company Terraeearth Resource S.A. The manifesto denounced illegalities in the licensing process, such as the lack of prior and informed consultation with the local communities and the approval of the Environmental Impact Study after mining had already been initiated and caused several environmental and social impacts, particularly on the region’s rivers. This motivated an coalition of indigenous organizations, grassroots groups, inhabitants and local companies involved in riverine tourism (kayaking and rafting) to form an alliance and prepare a court case against the



Fig. 4. Impact caused by mining activities (hole made by backhoe). Inspection carried out in Jatun.

State.

In search of evidence to support their court case, the Critical Geography of Ecuador (CGE) was invited to collaborate on a counter-mapping of the negative effects mining caused on the territory. This article’s fourth author joined the process as the CGE representative in charge of carrying out mapping, in collaboration with other action-researchers from the CGE. The counter-mapping consisted of a series of five collective field visits or ‘inspections’ by car and by canoe on the affected rivers. Leaders and members of the aforementioned alliance planned the inspections and decided upon the areas the CGE would visit. About 30 representatives of the alliance and local communities would join the inspections.

The inspections were aimed at producing a geospatial and descriptive report that would contribute to the public denunciation and be presented at the court, to demonstrate the effects of mining and the expansion of illegal mining. In collaboration with the other participants of the inspection, the CGE action researchers geo-referenced the points of the places visited, recorded the collective observations and perception of the mined landscapes, and made photos (see Fig. 4). Together with the participants of the inspection, they carried out about 20 interviews and informal (group) conversations with the inhabitants of the affected areas to include their testimonies in the report.

4.2.2. A local alliance supporting the mapping of mining impacts

The overall conditions in which the inspections took place were not easy, as the visited areas were controlled by (largely illegal) mining actors, who were evidently wary of an inspection of their activities. Their relations with the local populations created also barriers to the clearly anti-mining inspections. Some of the communities visited were in favor of mining or were themselves active as small-scale miners, and resisted the inspections. These communities generally argued that they had been neglected by the state and left with no alternatives.

The Ombudsman’s Office of the Napo (DPN) was a key player in ensuring safe access to areas where mining was taking place; it arranged for the necessary permits to enter the areas of mining activity or illegal mining. This state institution articulates the demands for the enforcement of social, environmental and natural rights. This meant that the DPN was also an actor with decision-making power over the information that was collected. The group of actors mobilized to support the researchers were fundamental to shaping the CGE’s understanding of the impacts that were captured on the map.

The priority of the map produced by the CGE was to show where mining had taken place, the forms of exploitation (legal or illegal) and, in particular, the environmental impact of the extractive activities. This mapping was carried out in a short period of time (due to the urgency of

¹ "Geographic report on the territorial situation in the province of Napo on some areas where metallic mining is being exploited." Available at: https://geograficacriticaecuador.org/wp-content/uploads/2022/01/Informe-inspeccion-Napo_Geografia-Critica_2020_marzo-2021_FINAL-con-firma.pdf.

presenting it to the legal authorities), covered a large geographical area and a wide number of affected communities. In this counter-mapping process, the inspections were largely led by the grassroots alliance: decisions about what to map were made bottom-up by the alliance and the representatives participating in the inspection. The mappings they brought about did challenge the reductionist, hegemonic state maps of mining concessions and the extractive imperatives that these maps introduced into the riverine area. However, many other tenets of critical pedagogy were not emphasized in the process. The map-making phase did not necessarily focus on promoting a broad dialogue between the affected communities, dynamizing new alliances, co-creating alternatives for practices on the territory. The safety issues and the concomitant dependence on the Ombudsmen office did moreover compromise the extent to which the mapping could establish the conditions for such dialogues. The format of the map also responded to techno-scientific standards, although this was a deliberate choice together with the grassroots alliance. In this case, the scientific validity of the map, provided by both the technical expertise of the CGE and the geo-referenced representation of the map, was central to strengthening the communities' legal claim and its chances in court, as evidenced by the speech of Andrés Rojas, provincial delegate of the Ombudsman's Office in Napo.

"We are presenting to you several evidences of the environmental damage caused by the mining company during these years in Napo. It is essential that the State takes responsibility and acts to stop the violation of the rights of nature and the people in our province. We are presenting biological, social, environmental and cartographic information so that they know the need to stop mining by revoking the concessions and making an environmental remediation plan [...]" (Andrés Rojas, January 2022 during the Protective Action Hearing).

4.2.3. When the mapping started to travel the province

It was, however, the performativity of the map that activated a deeper dialogue among affected communities, generating new processes of producing critical knowledge and increasing the strength of certain local movements in their fight against mining. The CGE handed the map to the organizations and communities that were involved in the alliance, which then disseminated it through social networks and community media. The members of the alliance also brought the map to their campaigning activities with the objective of discussing potential courses of action against mining in the province. These activities included discussion groups and workshops in the different communities living along the Napo River as well as protest marches.

As such, the map travelled, giving the inhabitants of the riverine communities an overview of how mining was affecting the area beyond their own community boundaries. Providing these actors—quite literally—with the broader picture allowed them to connect their individual experiences to those of other communities and identify with the anti-

mining movement of the Napo province. Through this exchange, subtle shifts in people's perceptions of the area were noted. This also led to the formation of new alliances and the strengthening of existing relationships to undertake new actions to defend the territory. Figure 5 synthesizes the key steps of the mapping process in the Napo river.

Although this was not the mappings' primary objective, as the map travelled the province and performed, different groups could create new imaginaries of the future for their own territories. A case in point here is the conversations generated by the map in the communities of Serena and Tzawata (Fig. 6). These collective reflections led to the creation of new instruments of defense, such as a documentary and new mappings, which contributed to their ability to advance their claims. In the community of Serena, for example, a new mapping process was generated based on the dialogue sparked by the first map. This mapping sought to represent local women's groups' visions of the past, present and future of their territory; as illustrated by the speech of Marcia Aguinta from Tzawata-Ila-Chukapi community. Thus, in the performativity of the map, the constraints imposed during its making (such as the limited time for its production and the need for a geo-referenced representation) were no longer present; the map was adapted for different uses according to the specific advocacy and activism efforts of different communities.

When I first came to this place, it wasn't to talk to someone, I was shy, I cried, that made me mature, so I started to learn, to value what was mine, and how we should fight. So that was my apprenticeship, seeing other women fighting, how they organised themselves, so I could see and feel it in my heart through the workshops and I said: no, I'm going to be like that too, I'm going to fight within my community too. (Marcia Aguinta, March 2021)



Fig. 6. Map being discussed in the community of Tzawata, March 2023.

Napo River, Ecuador



Fig. 5. Timeline illustrating key stages of the initiative along the Napo River, Ecuador.

5. Discussion

The two cases analysed here both represent some of the key characteristics of counter-mapping. They sought to challenge dominant ways of ordering and exploiting land and water flows by making visible the alternative understandings, experiences and claims of marginalized communities. Both mappings were furthermore aimed at the production of transformative knowledge to enhance the position of marginalized groups in struggles over hydro-social territory (Blair et al., 2023; Harris & Hazen, 2006; Oslender, 2021). Despite these common traits, the mappings also differed from each other in terms of their objectives, actor-alliances, dialogical dynamics and their performativity—that is, the ‘work they did in the world’ (Pickles, 2004). In this section, we first analyse these differences and then use insights from the mobilized concept in this paper to reflect on the way the interaction between the involved actors in each of the processes has brought forth alternative knowledge, shifting power relations and practices along the lines of becoming and performing of the maps.

5.1. The counter-mappings of Licto and Napo compared

Licto and Napo both had their mapping processes initiated by local resistance movements already organized against a powerful actor who was dictating a particular hydro-social territory to the detriment of local ontologies and practices (Hommes et al., 2022; Flaminio et al., 2022). The objectives of the mappings were clearly distinct though, leading to substantial differences in the dialogue process undertaken and the transformative knowledge generated in each case. In Licto, the mapping was aimed at creating new imaginaries for emancipation through the design of a new irrigation infrastructure by and for local riverine communities, and through the forging of new social bonds and local leadership groups around the Guarguallá river. Through a lengthy process of co-mapping, co-designing and dialogue between CESA, the action-researcher and communities, they questioned the workings of power emanating from the dominant State maps and plans and jointly envisioned future alternatives. In Napo, the counter-map was not intended as a means of imagining new alternatives, but as a very concrete tool to support a legal appeal against the State and its concession maps through a critical representation of the impacts caused by the extractive industry. This rather straightforward objective was determined by the alliance of resisting communities, grassroots activist groups, tourism operators and indigenous organizations prior to calling upon external actors, in this case the action-researchers of the CGE, to strengthen their claims in court. So both counter-mappings followed the tenets of critical pedagogy (Freire, 1970) in that they endeavored to produce alternative renderings of the territory to challenge oppressive state planning and economic exploitation and incite new forms of praxis. However, whereas the mapping in Napo aimed at challenging the ‘facts’ established by authoritative hydrocracies and powerful institutions by producing ‘counter-facts’ that presented more ‘grounded’ information about the impacts of mining on the river, the mapping in Licto went a step further. It also sought to challenge epistemes and ontologies by promoting the local capacity to produce counter-knowledge and counter-conducts that disrupted dominant norms and truths, in order to materialize an alternative hydro-territorial and ontological configuration (Boelens et al., 2024).

Following from these distinct objectives, the process and methods were also rather different. In Napo, the map had to be produced swiftly, strategically using a scientific cartographic language that would be considered legitimate by government institutions and the court. The time pressure, the straightforward objective, and the relatively large geographical span of the mapping gave shape to a process that leaned heavily on the (participatory) gathering of data and reports, and only involved dialogue with and between a limited amount of actors. This approach contrasts with Licto’s process, which was much less constrained and covered a smaller area. Its objectives as well as the methods

were more open-ended and evolved along the way, and the process included a much broader dialogue among involved communities. This enabled for the deconstruction of dominant discourses, a gradual integration of a plurality of visions, as well as the formation of agonistic configurations and emancipatory imaginaries. In the Napo case the dialogical potential of the map-making and the formation of agonistic configurations were less of an objective—and perhaps less of a possibility too, due to the strong polarization regarding the issue of mining. In this case, the communities were split between those supporting mining and those opposing it on the grounds of the socio-environmental consequences, and the mapping process did clearly privilege the interests of the latter. This does not mean there is no common ground for greater mutual understanding and a possible shift to more agonistic dynamics in the future, as both groups are essentially seeking ways to achieve a better quality of life in a context of state neglect and harsh socio-economic conditions. But for this mapping, the process was simply not conducive to exploring this potential.

5.2. Power/knowledge along the lines of becoming and performing of the map

Reflecting on the lines of becoming and performing of the Licto and Napo maps, we have been able to determine instances in which the dialogues, interactions and alliances forged through the mapping led to the shifting and renegotiation of power/knowledge relations. Dialogue here did not mean navigating a process that was harmonious and equal, but rather dealing with the swirl of affections, disagreements and contradicting interests among unequally positioned actors (Connolly, 2013; Boelens, 2015). In both cases, the mapping contributed to confronting hegemonic truth regimes and modes of hydro-territorial ordering, and to strengthening the capacity of involved communities to build new discourses about their territories. In one case, the mapping process moreover contributed to sustained shifts in intra-community power relations, particularly to the position of women. In this section, we address these instances for each of the cases.

In Licto, the alliance created with the external actor, CESA, and its support for the mapping exercise, enabled the local communities to increase their agency by creating the means for intra- and inter-community dialogue and actively co-developing ‘critique’ and ‘counter-conduct’ (Foucault, 2002). Dialogue triggered by mapping enabled actors to challenge State’s ‘top-down power’ as well as the forms of subjectification of the Lictenses by the State’s discourses. Map-making, as a critical pedagogy process to foster counter-conduct, scrutinized and visibilized these forms of State power. Next to ‘opposition’, that is, people’s outright and massive counter-force by taking the streets and occupying state-facilities, the counter-mapping also enabled the emergence of a third course of action, that of ‘non-conformity’, i.e. devising under-currents that stay ‘out of the mainstream’ (Boelens et al., 2023, 2024): Lictenses making their *own* rules, norms, rights, shaping and implementing a hydro-territorial system designed to be managed collectively, circumventing the State’s technocratic design and management. The fact that water continues to flow through *community-led* irrigation systems to date, three decades after the first counter-mapping endeavors, indicates the contribution of this mapping process to emancipatory water struggles.

This confrontation with hegemonic discourses did not emerge without internal friction though. Even in intra-actor dialogue interactions, gender was deeply entrenched in imaginaries with masculinity being the ‘naturally’ manifested logic in local organizational structures. The challenge to this logic through the new leadership positions assumed by women in Licto along the process was a fundamental aspect of the mapping. The critical pedagogy inspired mapping methodology, including the ‘maquetas’ that would travel to each community to generate more accessible dialogues, encouraged the engagement of this marginalized group. Women’s leadership paved the way to integrate plural visions into a collectively constructed imaginary. This was

brought about gradually, through a process in which women were vocal and could widen and redress gender balance to some extent, leading to a new mode of community governance in which they were respected more and integrated into water/territorial governance. Here, agonism as a way of embracing difference through the constructive engagement of actors and recognition of diversity has taken place.

In Napo, the CGE as an external actor amplified the communities' capacity to act by producing a map that was presented in the legal appeal. This lawsuit was won, and one could say that the alternative knowledge claims put forth in the mapping received recognition of the judge, causing hegemonic truths about the impacts of mining on the Napo river to crackle. However, the imperative to comply with the lawsuit required buttressing the techno-scientific episteme of the GIS-based map, so that this map could withstand the formal institutional sphere. The map-making process did not involve ample space for dialogue in which oppressive knowledges were deconstructed, opposing visions collided and alternatives forms understanding the hydro-social territory were forged. Unlike Licto, it was not obvious how the map-making process produced counter-conducts. However, at an individual level, the process of critical reflection on the mining actions in the territory may have reverberated in shifts of positions, stimulating the agency of the actors against the norms that maintain the dominating and exploitative status quo. Evidence of this can be found in the utilization of the map by the actors involved in its production and the wider local community, resulting in the instigation of debate and the formation of local alliances.

This demonstrate that the performativity of Napo's map showed more potential for emancipatory transformation. Napo's map, which illustrated the reality of the impacts of mining, became a source of dialogue throughout its performative phase: as it was displayed at marketplaces, community meetings and protest marches, it spawned conversations about views for the future of the upper-Napo river basin, strengthened the identification with the territory and instigated new actors to join the struggle for the Napo river. At this point, the map became a generative element that took on new lines of becoming and different meanings. The new collaborations between CGE and the Tzawata and Serena communities may indicate this. These collaborations, which are focused on the collective reimagining of their territories in order to keep mining out, will probably push further than the mapping discussed here in terms of challenges to hegemonic river ontologies and counter-conduct.

5.3. Further insights from the perspective of critical pedagogy

In our retrospective case analysis presented here, we sought to interpret the transformative potential of counter-mapping in the context of struggles for water justice in Ecuador. From the perspective of critical pedagogy, we reflected on the dialogical interaction between the actors, the power relations and different knowledges that were negotiated along the lines of becoming and performing of two counter-mappings. What did this perspective bring to our analysis? Through the lens of critical pedagogy, we particularly focused on power/knowledge dynamics, and the mapping's potential to produce counter-conduct. In each of the cases, we have seen that counter-mapping contributed to the challenging of established power/knowledge dynamics and river ontologies, and the emergence of new power arrangements so that these groups can articulate their visions in the management of their livelihoods and hydro-social territories. We have observed that due to differences in the objective and process of the Licto and Napo mappings, this potential has been harvested in distinct gradations.

In addition to this analysis of dialogical interactions and power/knowledge, we would like to highlight two other aspects of the mappings that merit attention when engaging a critical pedagogy perspective. First, the role of external actors, allied to grassroots groups and providing resources and tools, acted as an axis that dynamized the reconfiguration of power among communities and dominant actors,

incrementing their agency through articulated emancipatory efforts and fostering counter-conduct—as evident in the case of Licto. The involvement of external actors will, however, invariably require an understanding of the potential risks associated with shifts in inter- and intra-community power dynamics due to the introduction of an outsider with its own specific agenda (Acsehrad & Nuñez Viégas, 2022; Biesta, 1998; Sletto, 2009a). In the cases studied, NGOs such as CESA in Licto and CGE in Napo seem to have maintained a balance between intervening and sustaining pluralistic debate. A critical analysis of the influence and agendas of supporting external actors is however essential in order to navigate the construction of critical knowledge that prioritizes the agency and autonomy of local communities in their emancipatory struggles (Sletto et al., 2021). If the aim is to uncover 'top-down' power, the unpacking of how this may or may not be (unconsciously) embedded in the agenda of external actors is key to curb dominant mapping epistemes.

Second and last, it is imperative to recognize that counter-mapping processes can create new power imbalances (Sletto, 2009b). Critical pedagogy, and in particular the notion of agonist pluralism that we have combined with it, leads us to reject the notion of the 'resolution' of a struggle (Biesta, 1998; Mouffe, 1999), and helps us to see map-making, maps and their performative effects as contingent and temporally limited articulations. The dialogue sparked by mapping underlines the importance of consciously incorporating diverse and silenced or underrepresented voices, expressions of social plurality and difference in order to achieve new configurations that rebalance forces, yet in ever dynamic ways (Connolly, 2013; Mouffe, 1999).

6. Conclusion

How can critical pedagogy provide innovative insights into the transformative potential and limitations of counter-mapping? As this article has shown, engaging critical pedagogy has helped us to look more closely at the power/knowledge dynamics that take place between the multiple actors involved in creating, engaging with and using counter-maps as well as the emancipatory potential such dynamics create. Critical pedagogy, as a field of thought and praxis, places an emphasis on the way in which dialogical interactions unfold throughout the production of knowledge aimed at transformative change. Insights from this field have drawn our attention to the critical importance of the purpose and process of each counter-mapping, the networks of actors that are forged, and the ways in which subjectivities are reshaped through the process of mapping. The roles played by different actors within this network generate dialogue and its potential to bring forth counter-conducts through the mapping (e.g. the map's making and performance). In this process, we have noticed that the emergence of emancipatory knowledge is facilitated (or rather, co-created) through an iterative process of dialogue cultivated over time, fostered by direct exchanges between actors operating within a territorial scale that outlines shared practices. Insights from critical pedagogy thus allow for a deeper understanding of the conditions that shape the emancipatory potential of counter-mapping aimed at addressing an oppressive, unjust and environmentally damaging reality.

CRedit authorship contribution statement

Daniele Tubino de Souza: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Karolien van Teijlingen:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Rutgerd Boelens:** Writing – review & editing, Writing – original draft, Resources, Investigation, Data curation. **Gabriela Ruales:** Writing – original draft, Investigation, Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

Data will be made available on request.

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