

Forests as Collective Goods: a view on conflict dynamics and transformation

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I. Introduction

Global cross-scale sustainability problems like deforestation, water and air pollution, soil erosion and land disputes are more and more visible and urgent. Such urgency increases with the uncertainty connected to the ongoing climate crisis. By now, it is clear we are facing “super wicked problems” (Lazarus, 2009) with different but interdependent stakeholders intertwining and no clear boundaries or ready solutions (Paavola, 2005; Adger et al., 2005; Berkes, 2002; Andersson and Ostrom, 2008). In the last 60 years, plenty of scholars have studied common pool resources, cross-scale linkages, actors’ interdependence and interactions and advanced proposal for institutional designs that could help facing these problems. So far, polycentric governance seems to be the most reasonable solution for fair and shared management of natural resources. The greatest achievement of this strand of literature is to demonstrate that, under certain conditions, participatory and multi-level institutional designs are both feasible and more suitable than top-down and single actor ones. Still, many environmental problems remain unresolved and subject to further deterioration, hinting those expectations for such literature to resolve or successfully mitigate the climate crisis have not been met.

In this paper we recast the perspective with which to look at the persistence of sustainability problems, by suggesting such phenomena to be subject to a two-levelled collective action problem. Building on Mancur Olson (1965; 1982), John Searle (2005) and Brett Frischmann (2021), we treat natural capital as ‘collective good’ over which several collectivities placed at different but interacting scales (Berkes, 2002; Geores, 2003; Young, 2006) present concurring claims rooted in diverse collective intentionalities. Such claims connect to diverse management priorities, which may coexist as long as they do not become rival. We suggest that the partial rivalry to which collective goods are subject, and its indefinite appearance, accrues the potential for

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conflict over them. Yet, in such dynamics also lies an opportunity for society: if rivalry is not a fixed attribute of a collective good, it can be managed. This, however, requires handling trade-offs, which is not an easy-task, especially when considering heterogeneous use(r)s that are rooted in diverse cultural and institutional backgrounds. Our focus lies on the delicate process preceding successful polycentric governance. This implies paying particular attention to cognitive discrepancies (Adams et al., 2003), power asymmetries and conflict dynamics *before* collectivities agree on common procedural rules as those implied by a functioning polycentric governance system.

We take forests as a case-study of collective goods and apply our theoretical framework to four exemplary cases from the “forest-conflicts hotspots” (Mola-Yudelgo and Gritten, 2010), specifically Finland, Canada, Brazil and Indonesia. Through a qualitative comparative analysis, we identify key mechanisms of conflict origins and transformation. Our case analysis shows that conflicts rotate around the manipulation of how reality is filtered into what is true and credible. Yet, work dedicated to such kind of manipulation requires time, just as getting organized into collective action does. While such change in the perception of reality takes place, there will be at least one moment in time in which only smaller collectivities, such as firms or the public administration will be organized and reap benefits, at the costs of the (yet) un-organized group(s).

We observe that conflict escalation is necessary to level out or at least mitigate initial power asymmetries that would not make an agreement on procedural rules among parties desirable. Within our analysis, international NGOs play a key role in increasing the size and power of the distributional coalition (Olson, 1965) of the initially weakest party. Our investigation shows that the polycentricity literature might benefit from incorporating insights from other literatures, such as Social movements, Deliberative democracy and Bargaining theories. Such theories allow entering the difficult terrain of understanding in which circumstances and under which conditions conflicts transform, potentially permitting the unfolding of a polycentric governance system. While we focus on forests governance, we consider at least some of the conclusions we draw as potentially applicable to other environmental wicked problems, such as river management, ocean acidification and global ocean fish depletion.

II. Polycentric governance

Polycentric governance refers to an institutional arrangement constituted by several and partially overlapping decision-making centres. While each unit is self-organized and enjoys a certain degree of autonomy in making and enforcing rules within its domain of responsibility, it is also subject to information, sanctioning and actions from other units at lower and higher level. Thus, multiple decision-making centres are nested and operate concurrently under an overarching system of rules that enable and constrain them. Eventually, they work as a system that produces a Complex Adaptive System (Ostrom, Tiebout, and Warren, 1961; Ostrom, 2005, 2010b; Stephan et al., 2019; Aligica, 2014)

Since Polanyi's (1951; 1964) first conceptualization based on biological and chemical sciences and the organization of scientific communities, it is mainly the work of Ostrom, Tiebout and Warren (1961) and Elinor Ostrom (1990, 2005, 2010) that has applied it to research on social dilemmas for managing complex urban systems and ecological problems. Relevant studies include but are not limited to governance of water industry and policing and public safety in metropolitan areas, fishing in inshore fisheries, irrigations systems and forests. Under this legacy, polycentricity is being analysed as an alternative to global top-down solutions for climate change governance (Cole, 2015; Jordan et al., 2015; Ostrom, 2009, 2010a, 2012).

Ostroms' findings have significantly contributed to research on (natural) resources' management by demonstrating that, under certain conditions, users are able to self-organize and solve collective action problems. That self-organization can occur not only in a single but also between multiple governing authorities at different scales has also empirically been proven (Ostrom, 2005:283). Especially for resources that are parts of larger systems, nested enterprises appear as one of the "broader institutional regularities" characterizing systems that persisted against systems that proved unsuccessful, where these tended to be absent.

Yet, despite the clear relevance of polycentricity logic and research, many sustainability problems connected to the management of natural resources remain subject to conflict, wherein the harmonious spontaneous order of polycentric governance is missing.

Polycentricity and conflict

Within the polycentricity literature, both conflict and conflict resolution are ways in which different governance units take each other into account in their interactions (Ostrom, Tiebout, and Warren 1961). The existing literature has stressed how polycentric governance can be more capable than a highly monocentric or decentralized system to manage and smooth conflict (Andersson and Ostrom, 2008; Ebbin, 2004; Heikkila, 2019). First, each unit can use exit, voice and self-organization as strategy to contest other interdependent units. Second, larger units can intervene to provide institutional arrangements that work as conflict resolution mechanisms for smaller units. For instance, courts represent higher jurisdictions wherein local actors can turn to make claims against other units (Thiel and Moser, 2019). Finally, general-purpose units can be helpful in addressing problems related to elite-capture and discrimination.

However, we argue, so far, this literature has only been partially able to explain specific conflict dynamics. Indeed, conflict is mostly studied in terms of a polycentric arrangement's *ex-post* capacity to deal with it: to the extent that institutions are well designed, certain institutional features allow the coexistence of multiple management priorities and the co-production of certain public goods (Aligica and Tarko, 2013; Andersson and Ostrom, 2008), so that conflict does not escalate. In this study, we focus instead on what happens before such institutional design is achieved, e.g. how is such coexistence reached? We briefly highlight key features of natural resources conflicts and then propose a theoretical framing of collective goods that we deem adequate for their investigation.

Natural resources conflicts are defined in many different ways. FAO characterizes them as “disagreements and disputes over access to, and control and use of, natural resources” (Matiru, 2000:1). They arise when users have competing demands or different management priorities, and those of some groups are excluded from policies, programs and projects (Matiru, 2000). Involved parties might also have the same requirements but different views on how the resource should be distributed to meet their needs, or on exploitation and distribution procedures (White et al., 2009). Thus, conflicts over natural resources might be seen as benefits-shared conflicts (Jingyuan Xu, 2021) that are set off by a competition over or a change in resource access (Yasmi, 2003), with access understood as the ability to benefit from the resource (Ribot and Peluso, 2013).

However, this definition is only a partial one, since it catches how conflicts manifest but not their underlying causes, i.e., what is really being contested (Nie, 2003; Yasmi, 2003). Other scholars focus on conflict as being more about different and competing aspirations for using and managing the same resource, which depend on different perceptions of it (Adams et al., 2003; Godelier, 1981). Such perceptions include immaterial and immeasurable higher-level principles and core values, as well as technical and evidence-based arguments (Sranko, 2011). Another part of the literature studies conflicts over natural resources' use in terms of different feelings of psychological ownership, i.e., a state in which individuals or group perceive a certain target as being "their own" possession even though it might not be so in legal terms (Matilainen et al., 2017). Similar approaches define conflict as "a difference in goal, perception or interest" (Coser, 1957; Miller, Bartos & Wehr, 2002; Pruitt, Rubin & Kim, 2003).

Within a polycentric system, such value heterogeneity reflects in institutional heterogeneity. Certain features of the institutional design then allow the coexistence of multiple management priorities and the co-production of certain public goods (Aligica and Tarko, 2013; Andersson and Ostrom, 2008). Yet how is such coexistence reached? We elaborate some theory and focus on forests in order to advance some replies.

III. Forests as collective goods

Forests are multifunctional resources that provide a wide range of goods and services, from the local to the global scale (Geores, 2003). They act as carbon sinks, are home to biodiversity and play a key role in water and soil preservation. They are resources that also contain other resources such as food, medicinal plants, wood fuels and timber, which make them necessary for both livelihood and commerce. Moreover, users of the same forest located at different scales, might have heterogeneous sources of behaviour and knowledge, different regulatory and policy systems and different socio-economic and political settings (Young, 2006). For certain traditional³ communities, forests are not just physical spaces but "social facts" (Tsing, 2005:xi), in the sense that they are constitutive of personal and community-identity, history and culture (Abega, 1998; Pemunta, 2018; Simbaña, 2011).

³ In this work, we use "traditional communities" as referring to both Indigenous and local communities.

Their multi-functional nature makes forests particularly susceptible to several claims advanced by multiple stakeholders: these reflect in a variety of uses made by a number of different users. We synthesize quality and quantity of the claims advanced as *use(r)s* (Frischmann, 2012). Within such aggregate concept for pressure on a forest, we suggest that concurrent claims are advanced by different stakeholders, here treated as *collectivities*. Noteworthy is that in our understanding, a collectivity is not necessarily a homogenous spatial unit (Agrawal and Gibson, 2001) but a group of people that - despite potential heterogeneity - differentiates from other stakeholders in their way of perceiving the forest and preferring a connected management priority. A forest then, is a collective good for different collectivities.

Collective goods resemble public goods that are however relevant only for specific sub-groups of society (Olson, 1965; 1982). This distinction is crucial, highlighting that collective or group-interests can easily lead to conflict with the broader societal interest. We outline a two-level collective action problem that we deem to be at the root of conflicts over forests (Figure 1). At the first level, we sketch how each collectivity – eventually – get organized to advance an own claim over forests.

Resembling public goods, the benefits produced by forests cannot be withheld from any member of a group. Yet obtaining, maintaining or enlarging such benefits to some degree depends on collective action. According to Mançur Olson (1965), any individual contributing to the advancement of a collective good will only perceive a minimal share of the total benefits obtained through collective action. Such share is inversely proportional to the size of the group. For this reason, no collective action eventually ever manifests in large groups, "unless individuals support them for some reasons *other* than the collective goods they provide" (Olson, 1982:20). In other words, large groups composed of rational - although potentially altruistic - individuals, will not engage in collective action, unless the cost of participating is negligible⁴ or the groups have identified a so-called *selective incentive*.

Selective incentives recruit participants in the collective action by either punishing those that seek to avoid participation or by remunerating those who join with special benefits. However, large or small but heterogeneous groups face greater difficulties than small and

⁴ E.g., signing a petition.

homogenous groups in developing such incentives, because members are less dependent on the opinion of 'valued others' (Creed et al., 2014). In other words, large groups feature a lower degree of bonding social capital (Putnam, 1993), which usually creates a barrier to defecting from actions that are in the group's interest. In this sense, Olson anticipates that homogeneity of social status or tastes is an important precondition for cooperation, and collective action, to manifest⁵.

We regard the difficulty of getting collectively organized as a first important level in setting the landscape of conflicts over collective goods (See figure 1). In fact, only those collective interests that succeed in getting organized can participate in the dispute with a claim. Where groups will not have access to selective incentives, they are less likely to get organized, while smaller or more cohesive groups will be more likely to engage in collective action (Olson, 1982). As we shall see, such difference in organizational capacity leads to a power-imbalance across collectivities. In particular, smaller – or more cohesive groups, such as firms, or the public administration are likely to assume more powerful positions.

Such power differentials, however, are also embedded in the kind of knowledge, information and legitimacy connected to a collective good. This is another aspect we investigate at Level 1. According to Olson (1982), knowledge over a collective good is a collective good itself. This means that acquiring information and knowledge over a collective good is itself subject to a collective action dilemma. Detaining special knowledge over a collective good contributes to being more powerful, mainly because most of society does not have the same kind of information (Olson, 1982; cf. Weede, 1985). Crucially, which knowledge is considered legitimate in society is of much relevance here.

The relevance of information and knowledge over a collective good depends on its social acceptance, legitimacy and comprehensibility to all stakeholders, not merely on its “correctness” or “objectiveness” (Kyllönen et al. 2006). The implications of such relative relevance are two: on the one hand, as we shall see below, different groups may refer to different sources of legitimacy (Searle, 2005). This can increase conflict potential when

⁵ Ostrom's (2005) findings have shown that the group's size and heterogeneity do not actually have a uniform effect on collective action; in fact, such mechanism interacts with users' and the resource's characteristics – tendentially leading to heterogeneous effects.

collectivities do not understand/recognize the claimed legitimacy of another's, or perceive it as impairment of their own legitimacy source (Glasl, 1999). On the other hand, power asymmetries between collectivities can reflect the reach of such legitimacy: the state, for example, has particular leverage in producing legitimate information (Pritchett, 2013), while traditional knowledge detained by Indigenous communities may not be known or recognized by many other citizens.

In line with a part of the natural resources conflict literature (Coser, 1957; Miller, Bartos & Wehr, 2002; Pruitt, Rubin & Kim, 2003), we suggest conflict over the material aspect of forests and the benefits they provide is just the tip of the iceberg; at the very basis, there are emotional and cultural elements (Yasmi, 2003, Hoogstra-Klein et. al., 2012). The latter relate to the 'institutional ethos' (Voronov and Weber, 2017) that frames the perceived legitimacy over whom uses a specific resource for which purposes. We follow Searle (2005) in sketching how any claim by a collectivity is underpinned by a diverse perception of the same forest, which is rooted in institutional facts (Searle, 1995; 2001; 2005). Institutional facts depend on - or are relative to - whom it is that observes the world. Thus, they would not exist if there had never been any conscious human being with some intentional state⁶.

According to Searle, three elements make up an institutional fact. First, people must have collective intentionality that is a *joint perspective* on the surrounding world that a group adopts as a result of cooperative behavior. Second, this must be coupled with the "assignment of a function" (Searle, 2005:7) by which the group transforms objects to derive new uses and benefits⁷. Yet, and third, it is a special type of assignment that matters, namely the status assignment function: if an object or person can perform a certain function only in view of a specific *status* it assumes, this requires the 'collective acceptance' of such status being assigned to that object or person (*ibidem*).

An institutional fact can therefore be described as

X counts as Y in context C

⁶ This implies that institutional facts are rooted in both, 'beliefs and intentions' (Searle, 2005:3).

⁷ Tools developed by humans are an example in a primitive sense.

Where *X* is any specific collective good such as a forest, *Y* represents a special status assigned to *X* for it to perform some functions and *C* is a time-space and contingency specific restriction of the context in which '*X* counts as *Y*' is valid (Searle, 2005:22).

We suggest that in the conflicts over collective goods we study: *X* is the specific forest – object of concurrent claims – and *Y* is the preferred status assigned to the forest by the respective collectivity. While *X* is the same for all collectivities, *Y* is the 'exact nature at issue' (Olson, 1982:24) the forest represents for each separate collectivity. *C* instead is a system of emotional, logical and cultural elements specific to the collectivity, else said, it is the specific collectivity's context.

In Figure 1, different collectivities embedded in different contexts *C* assign a different status *Y* to the same forest *X* and a different management priority. For example, forest-dependent communities usually refer to traditional land and ground their perception of the forest in traditional experiential knowledge, informal rules and higher social discount rates. Instead, corporate actors or national governments often think in terms of commercial forestry, normally privileging scientific evidence and formal, legally defined rules that emphasize present costs *versus* future benefits and resource status (Scott, 1953; Young, 2006). Such differences imply a certain emotional loading, as status functions are "the glue that holds human societies together" (Searle, 2005:9). In the diversity of *Y*s, and their possible incompatibility, lies the key conflict potential over forests. It is here where conflict over collective goods assumes a second-level dimension. We use another part of Olson's (1982) theory to conceptualize potential conflict over collective goods at level 2.

He shows how the inherent difficulties of getting collectively organized create a scenario in which groups with a special interest in a collective good face the choice of either maximizing societal output – 'enlarge the pie' – or working towards obtaining a greater share of societal output – 'increase one's slice of the pie'. While each collectivity's interest in the forest represents a certain 'slice of the pie', the aggregate output derived from all users (see below) represents the overall 'size of the pie', which is of broader societal interests. We argue that, because the single interests are usually interdependent (Deutsch, 2006; Paavola, 2005; Raitio and Saarikoski, 2013; Zachrisson and Lindhal, 2013), the overall 'size of the pie' includes but is not limited to a forest's sustainability,

health and overall productivity⁸. Olson (1982) outlines why groups often tend to favor the second strategy to the detriment of societal interest. In doing so, they become a 'distributional coalition' that *de facto* puts the collective interest atop of the public (societal, broader) one⁹. Only when groups grow a sufficient amount to cover a significant segment of society, their interest shifts towards 'enlarging' the pie, because their share of such pie is big enough. Because each distributional coalition will perceive the other's activities as an impairment to their own (Glasl, 1999), the collective action dynamics at level 2 bears further potential for conflict.

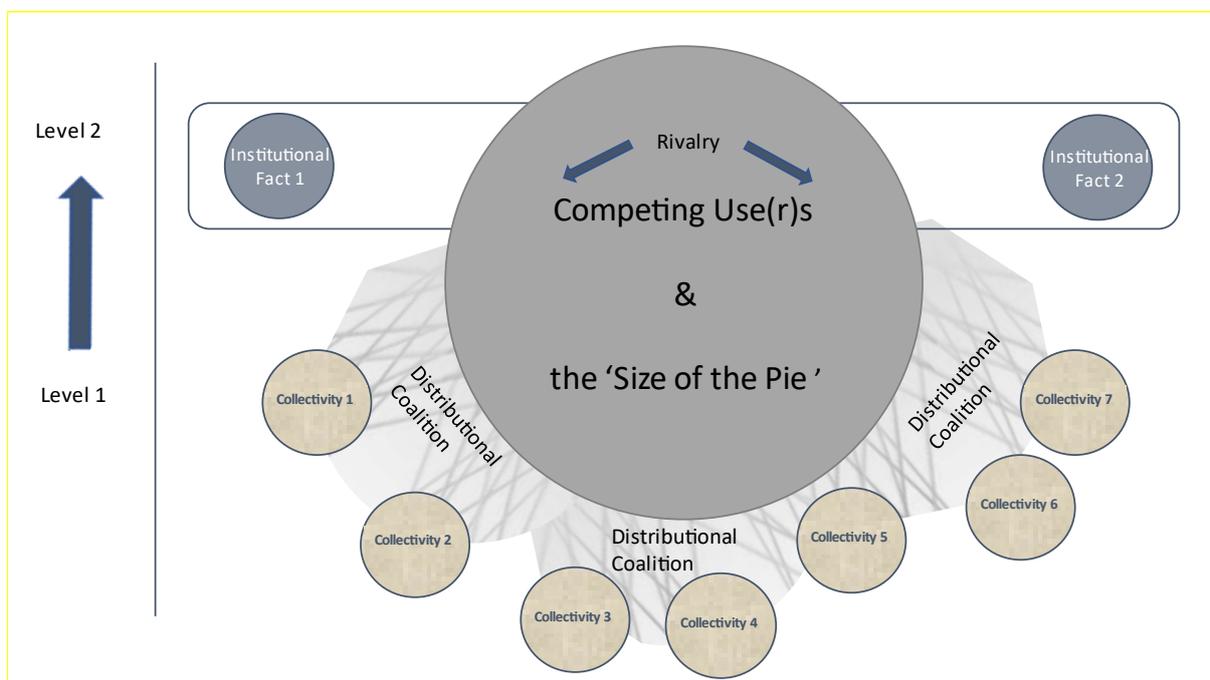


Figure 1: The figure sketches two levels at which different aspects of collective action apply. At level 1 collectivities need to get organized to advance their claim, which is informed by different institutional facts. At level 2, collectivities - eventually joining others - tend to become distributional coalitions demanding a distribution of benefits of the collective good in their group's favour to the detriment of societal aggregate output.

⁸ Particularly tricky is that extractive use for economic purpose can lead firms to exploit a resource to the point of no return and simply move to another resource.

⁹ Distributional coalitions defend a collective good that is based on the (re)distribution of the broader public good in favor of a specific sub-group of society, else said: their own one. Olson's theory has therefore mainly been used to study lobbies, cartels and special-interest groups engaging in rent-seeking.

Summing up, conflict over a collective good emerges because diverse collectivities, who perceive the collective good in different ways, advance claims with clear power asymmetries. Such power differentials are rooted in heterogeneous organizational capacity and in the source of legitimacy of their claims. To the extent that collectivities become distributional coalitions acting in favor of their own group's interest, a symmetrical solution across groups for the common interest (and optimal outcome) may not be found (Olson, 1982).

The mechanisms described bear a clear potential for conflict, but its escalation is not automatic; it arises in as much as the diverse management priorities, their scale and contingencies, cross a certain threshold that make the forest use(r)s rival among each other. We build on Frischmann (2012) to suggest that the partial rivalry to which collective goods are subject, and its indefinite appearance, accrues the potential for conflict over them.

The underlying potential for conflict origins and transformation

Multiple collectivities have interdependent claims over the same forest and consumption by one might subtract resource units from the availability of the others. For instance, fruit harvested by one household is no longer available to another household and trees felled for paper and lumber production withhold source of timber for local consumption. Similarly, in a study on rural households in Colombia, Cardenas (2007) demonstrates that the harvesting of coastal mangroves for firewood and other wood products harms coastal fish populations, which is the main source of nourishment for villagers. Eventually, rivalry can increase to the point the resource stock gets congested and its capacity to support additional use(r)s diminishes (Frischmann, 2012). When this threshold is crossed, the forest and the wide range of outputs it can provide become a common-pool resource, as rivalry over the resource has begun (Figure 2).

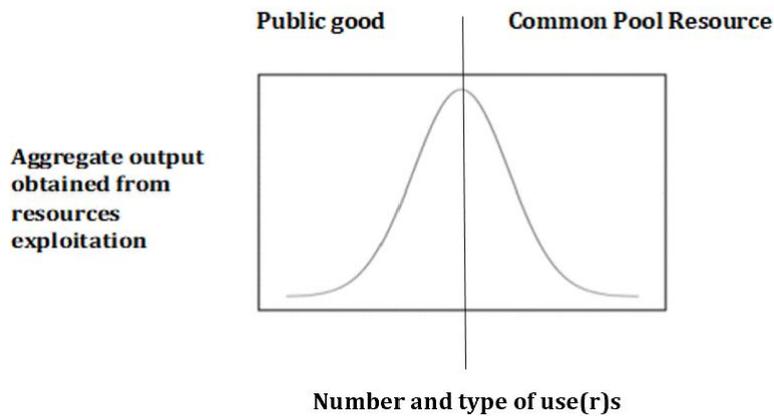


Figure 2. The figure depicts a bell-shaped function where the forest is the input and n collectivities concomitantly make multiple use (x -axis) of it to derive an aggregate output (y -axis), the set of all outputs stemming from downstream uses. As the exploitation of a forest increases, the aggregate output obtained increases, too. Yet, after a previously unknown tipping point is reached, the forest's overall capacity to sustain different use(r)s diminishes, rivalry arises and competition is likely to surge. The resource is not a public good anymore but a common pool resource.

Worth mentioning is that there is no clear single mechanics according to which a certain number of use(r)s will kick-off the threshold surpassing. The complexity of multiple interdependencies between quality and quantity of uses of the collective good and its ability to regenerate will be entirely context dependent (Frischmann, 2012). For instance, cultural uses of the forest might be rival with industrial uses but non-rival with livelihood ones. Moreover, rivalry may change with use rates, timing, spatial proximity, and other contextual factors (Frischmann, 2012:151). Therefore, rivalry is not a fixed attribute of the resource: its exact identification depends on the unfolding of complex cross-scale claims. Institutional design, in this sense, can play an important role, by e.g. facilitating forest logging for industrial purposes through concessions or by prioritizing commercial uses over non-commercial ones, therefore anticipating rivalry. Thus, stakeholders have an important opportunity to handle trade-offs.

As the resource gets congested, "the problem then might be not how to satisfy one's own wants at a minimum expense for others, but how to satisfy one's own *or* other' wants" (Weede, 1985:47). It is here that the degree and quality of actor interdependence makes a critical difference to whether and how the conflict evolves (Zachrisson and Beland

Lindhal, 2012). Recalling Frischmann (2012) we suggest that such interdependence deteriorates when i) the parties recognize each other's goals and priorities as negatively interfering and; ii) at least one of the collectivities is seen as affirming its interests at the disadvantage of one or more other collectivities (Bennett et al., 2001; Chiappero et al., 2015; Glasl, 1999). We next present an analysis of four case studies in which diverse collectivities advance different claims over the same forest.

III. Case studies

This study is based on qualitative secondary analysis of papers, reports and interviews on four cases studies from “forest-conflicts hotspots” (Mola-Yudelgo and Gritten, 2010), specifically Finland, Canada, Brazil and Indonesia¹⁰. The aim is to identify key issues for conflicts' origins and transformation¹¹ towards potential co-existence, with a specific focus on understanding the emergence and role of collective action. Conducted on a comparative way, the analysis shows that, despite being located in different contexts, the four case studies present similar underlying mechanisms.

In all cases there are at least four main collectivities involved, namely the government – whether at the municipal, state or federal level - at least one business company, national and international (environmental) NGOs and traditional communities. Disputed ownership is one of the main controversial issues, since commercial forestry takes place in State's land that overlaps with traditional communities' customary land and usufructuary rights. To attain standing and increase their leverage *vis-à-vis* the other parties to the conflict, weakest collectivities build national and international networks.

In what follows, we briefly describe the case studies focusing on the parties' initial frame, the issues leading to conflict and issues transforming that. Then, we discuss these

¹⁰ To be clear, the Jambi Province (Indonesia) case-study over palm oil plantations. Under FAO's classification (2020b) these do not fit the category of “forests”. Yet, since plantations replaced forests, we consider the case study as fitting the scope of our research.

¹¹ We chose to use “transformation” rather than “resolution” as a more inclusive term for the outcomes of four cases we study, which are different among themselves and not necessarily successful to the same extent. Moreover, this wording allows to see each outcome – however positive – always as partial subject to change (Walker and Daniels, 1997).

dynamics in light of the theory developed so far, to understand which are the gaps left by the polycentricity theory and how other theories can contribute.

Table 1

Case-study	Main actors involved	Issues leading to conflict	Issues transforming conflict
Inari case, Finland	Government; Metsähallitus; NGOs; Sami herders	Reindeer herding vs. commercial logging; Disputed ownership; Dissatisfaction with consultations and negotiations.	Cooperation between herders and ENGOS'; Increasing media attention; Direct actions targeting Metsähallitus, the government and international customers; Scaling up to national political agenda.
Great Bear Rainforest Case, Canada	(Provincial) Government; Several BC timber companies; NGOs; FNs	Logging vs. Biological richness and FNs' socio-economic development and self-governance;	Alliances building (JSP and G2G especially); Involvement of journalists and media; Direct actions targeting international customers; Public awareness and acceptance of sustainable development's discourse
Espirito Santo, Brazil	Government; Aracruz Celulose S.A; Landless movement and NGOs;	Land occupation; Forests replaced with green desert;	Police's violence; Occupations and auto-demarcations; Support from rural civil society; Electoral support's withdrawal

	Tupinikim and Guarani		
Jambi Province, Indonesia	Government; PT. Asiatic Persada; NGOs; SAD Communities	Land grabs and disputed ownership;	Alliances with ENGOS; Fall of Suharto's regime;

Finland – Logging in Inari

The Inari case traces its origins in the 1950s, when the spreading of commercial timber harvest started to cause adverse impacts on both the environment and Sami's traditional reindeer herding livelihoods because of logging's direct and indirect impact on the spatial distribution and quantity of lichens, critical for the winter grazing of reindeer¹². On top of that, land rights are disputed because commercial forestry occurs within State-land that, however, at least partially overlap with Sami's customary land.

From the 1970s, public criticism began to raise and the Sami, already organized in reindeer herding co-operatives (RHCs), commenced to resist logging activities. As a response, Metsähallitus - the State company responsible for managing most of the area - shortly started to organize meetings, discussions and stakeholders working groups with representatives from the Sami and the Municipality to discuss reconciliation of the two livelihoods (Raitio, 2008). In the late 1990s, the company also began to develop new planning tools for commercial forests but these initiatives were not considered enough by numerous RHCs that claimed for some areas to be excluded from commercial forestry (Raitio, 2008).

For the Sami people, reindeer herding is a traditional livelihood and a fundamental part of their culture and identity (Bostedt, Parks, and Boman 2003; Danell 2004; Riseth 2006). On the other side, commercial forestry is an important Finnish export industry and a key employer in the region; thus, the forestry industry deemed requests to stop commercial

¹² For a clearer and more comprehensive understanding of the interdependence between commercial forestry and reindeer herding activities, please refer to Routurier and Roué, 2009; Sändstrom et al., 2010 and Bostedt et al., 2015.

logging activities from some pasture forests as a threat to the economic viability and employment in the area.

The conflict peaked from the 2000 onwards when the co-operative scaled the issue up to the national political agenda and international media attention in alliance with environmental NGOs. While Greenpeace and Nature League especially helped the RHCs in organizing field visits with media representatives and documenting and spreading information about loggings in controversial areas, some of the RHCs themselves drafted a joint appeal to the Ministry of Justice, the Ministry of Agriculture and Forestry and the Ministry of the Environment to express their concerns and urge for the logging of old-growth forests in winter pastures areas to be stopped immediately, the forest management practices as well as the planned annual cut (PAC) to be reconsidered to give greater consideration to herders' needs and the consultations to be improved (Raitio, 2008). On top of that, NGOs started an international campaign targeting Metsähallitus, the Finnish Government and the Central European customers of the Finnish paper industry. Pushed by rapid conflict escalation and the desire to reach a truce in a situation of escalated conflict (Metsähallitus press releases 24.3.2005, 30.3.2005 and 24.11.2005), Metsähallitus began to revise the Natural Resource Plan for Northern Lapland; still, it kept refusing to set aside logging from some areas marked on maps by the RHCs together with the NGOs.

Facing a stalemate in the conflict, some of the herders decided to file a civil lawsuit against Metsähallitus. Moreover, by the end of 2005, the Sami Council and the NGOs conducted an independent but inter-linked campaign against Stora Enso, the major buyer of Metsähallitus timber from Inari; such a strategy proved successful to the extent that Stora Enso asked Metsähallitus not to deliver wood from the disputed sites in Northern Lapland.

It was only in 2010 that, following the prolonged conflict and negotiation process, a de-escalation – at least temporary one – was reached, by which almost 80 per cent of important reindeer pastures as previously specified and marked by herders and Greenpeace were set aside from cutting areas.

Canada – Logging in the Great Bear Rainforest

Origins of the conflict over British Columbia old-growth forests, also known as “War in the Woods”, date back to the 1980s when some of the First Nations (FNs) inhabiting the

area together with environmental movements and grassroots organizations (ENGOS) started protesting against logging activities carried out by timber industries (Saakiroski, Raitio and Barry, 2013).

ENGOS' framing was very much focused on the global value the forest played in terms of wildlife and biodiversity richness; indeed, they renamed it the "Great Bear Rainforest" (GBR) referring to the white-coated Kermode Bear endemic to the region and kept asking the creation of class A Parks that exclude any human activity. The FNs, instead, claimed the development of commercial forestry had occurred without their consent and was undermining their livelihoods; moreover, they were concerned that conservationist arguments disregarded their wellbeing and their right to hunt, harvest and take ceremonial logs from the forests. On the opposite side, forestry companies were strongly hostile to any reduction of timber supply; they argued that this would undermine the profitability of their operations and, consequently, employment and the regional economy.

In the middle of this chaos, the ProvGov – that is the actual legal owner of the land - was first strongly adjutant with the forestry industries because of the jobs and revenue it could derive but, from the 1990s, started to change its attitude due to the increasing conflictual scenario. Specifically, it tried to introduce a collaborative planning system - the Land and Resource Management Planning (LRMP). Yet, neither the FNs nor the ENGOS accepted to participate in the process, since they felt they had not enough bargaining power at the moment for their opinion to be really taken into consideration. As a counter-strategy, the former decided to pursue a legal path by bringing cases to Courts, while the latter started a big environmental campaign addressed at the industries and their international customers. These strategies brought to a change in ProvGov and logging companies' attitude respectively.

The critical turning point occurred in 1999 when a German delegation of papermakers and magazine publishers toured active logging sites guided by Greenpeace. After the visit, they threatened cancellation of contracts with the timber companies unless an acceptable solution to the conflict was found (Armstrong, 2009). Following this episode, the logging industries moved from an "attack and defend" (Raitio, 2012) strategy to preserve the status quo, towards searching for mutually acceptable solutions (Armstrong, 2009). A group of companies met and decided to develop a strategic approach to resolve the conflict, entering into negotiations processes with ENGOS that evolved into a more long-

term alliance known as the Joint Solution Project (JSP). A fundamental achievement for ENGOs was a moratorium on logging activities in contested areas, conceded by the industries in exchange for one of the market campaigns.

The JSP's development, however, generated resentment in both the ProvGov and some FNs, who felt bypassed from agreements that concerned their territory. As a response, the two parties began to sign protocols to enter into a "Government to Government" (G2G) relation, by which a commitment was undertaken for shared-decision making and agreement over land use planning and resource management. For both actors, this represented a strategic alliance to counterbalance the ENGOs-Industry power. In the meanwhile, the coastal FNs, who had until then worked mostly independently of each other to promote their rights and title, started to establish formal coalitions such as the Coastal First Nations Turning Point Initiative (CFNI) created by the end of 2001. At the same time, the relation between ENGOs and FNs became stronger: the former recognised their need to take FNs' concerns seriously while the latter realized they could benefit from environmental groups' market campaigns that contributed to obtain international visibility and pressure. It is against this background that a critical meeting took place in 2001, where the FNs expressed their interest for ecological sustainability in the region as long as the ENGOs were willing to recognize their rights and title and to take the issue of FNs' human well-being on their agenda (Raitio, 2012).

The approval of a logging moratorium on the one hand and the development of G2G relations on the other let FNs and the ENGOs feeling that ground rules were more inclusive of their own interests; This power re-shuffling, in turn, changed their incentives towards participating in the formal LRMP.

In the end, the ProvGov regained control over the entire process; having now developed an interest in formalizing the agreement, all collectivities on sitting at the formal planning table (Raitio, 2012). The process culminated into BC Premier Gordon Campbell's announcement, in February 2006, that an historical agreement had been reached over the GBR. Completion of the land use plan and implementation of a framework were finally reached in 2009 (Armstrong, 2009). A concrete outcome of FNs' increased influence was the establishment of a new category of protected areas called Conservancies, which, in contrast to Class A Parks, allow for the FNs' traditional uses (Howlett et al., 2009:389).

Indonesia – palm oil in Jambi

The conflict in the Jambi Province in Indonesia also traces its origins in the 1980s. The trigger was the granting, by the Head of Agency for Inventory and Forest of Indonesia, of an issuance of oil palm plantation concession to PT. Asiatic Persada - one of the biggest palm oil firm from Jambi - on a territory that included 3.550 ha of Suku Anak Dalam Bathin Sembilan's (SAD) traditional land. Since the very beginning, SAD communities considered this an illegal occupation but it was only with the fall of Suharto's dictatorship, in 1998, that they started organizing to claim back their ancestral lands. Demonstrations, occupations, roads' blockades and reports to the government office were combined with a formal legal path. As in the other cases, SAD communities got the support of several NGOs, especially in collecting proof of traditional land rights and developing maps.

A turning point occurred in 2012, when a mediation process led by a governmental team led to a 2.000 ha partnership scheme that, however, was accepted only by a part of the SAD group. Because the land was located outside the Cultivation Rights location, some communities decided to disagree with the compensation.

Brazil – eucalyptus in Espirito Santo

In 1967, Aracruz Celulose S.A (AC) entered and appropriated the land of Tupinikim and Guarani communities in Espirito Santo, with the support of governments at all levels. The company is a big producer of cellulose made from bleached eucalyptus pulp and it exports to Europe, China and the United States. Once having seized the territory, it destroyed the Indigenous villages and cleared most of the forest to establish eucalyptus monoculture plantations and build pulp mills.

The Tupinikim and Guarani, on their side, perceived this as an illegal occupation and saw their livelihoods, culture and identity threatened by the "green desert". Used to live in about 40 villages, they were now confined to just three and they felt alienated (WRM Bulletin 258, 2021). Thus, they started occupying and auto-demarcating AC land with the support of the National Foundation for the Indian (FUNAI). As a first response, in 1998 the then Minister of Justice demarcated some of the land and brokered a series of accords between the communities and AC, by which the former was offered compensation for selling lands to AC. This created a challenge for the communities' unity, because some leaders and other members were willing to accept the agreement while others considered territory more important than money.

Nonetheless, at least part of the communities kept mobilizing: in 2005, about 1000 families occupied the land again, cut down eucalyptus trees and built two large communities building in two of the villages they had once been living in. While the police responded with strong violence facilitating AC to take back the land, the case had already gained so much international visibility and support that the company and government's reputation was damaged. After the police raid, Indigenous communities also got the support of other communities, professors, students and most importantly the rural social movement, with which they started to form alliances. Yet, exponents from the rural movements were mostly concerned with the fact that agribusiness and monoculture created problems for agriculture, biodiversity and water, prevented agrarian reform and shortened rural labour market, therefore forcing migration towards urban areas.

From 2006, strengthened by their alliance with the campesino movement, the Tupinikim and Guarani continued their struggle even more radically, e.g. cutting and burning AC's plantations and occupying the port to block exports. Their actions, however, targeted Lula's government as well, which was accused of impeding agrarian reforms: in 2007, a march through Brasilia was organised to revoke support for Lula and accuse the judiciary, executive and legislative power of backing up agribusiness interests and impeding land redistribution. In July 2007, the Tupinikim and Guarani occupied again the 27000 acres of land and started rebuilding two villages. In their view, this reconstruction was necessary to continue having their spiritual practices and ceremonies as well as to keep monitoring and surveying their territory.

Despite this situation, the company in the continued neglecting that was Indigenous traditional land and, even worse, started a racist campaign saying that those communities were not actually Indigenous. The then Brazilian minister of Justice, instead, facing increasing pressure and fearing more and more radical action, in late August 2007 demarcated 27,000 acres of land for the Indigenous communities and, three years later, President Lula approved the demarcation of another/additional 18,000 acres in the Aracruz Municipality.

IV. Understanding collective action for conflict transformation

Despite different contexts of embedding and diverse outcomes, the four case studies display some similarities in their pathways; we focus on these tracing common actions

and strategies that have led from conflict origin to potential co-existence between collectivities. To be clear, we refer to “co-existence” as an agreement on common procedural rules that sustain polycentric governance.

Specifically, we attempt to (i) describe the main elements of this pattern referring to some of the concepts elaborated so far and (ii) demonstrate how other theories, i.e. the Social movements (SMT), the Bargaining (BT) and the Deliberative democracy (DT) theories, can fill some of the gaps left by the polycentricity literature. For the sake of exposition, we structure our analysis roughly dividing it into three main phases, though the boundaries between them are sometimes blurred. Moreover, because we consider that more functional to understand the dynamics of interests, we adopt mostly the weakest parties’ perspective.

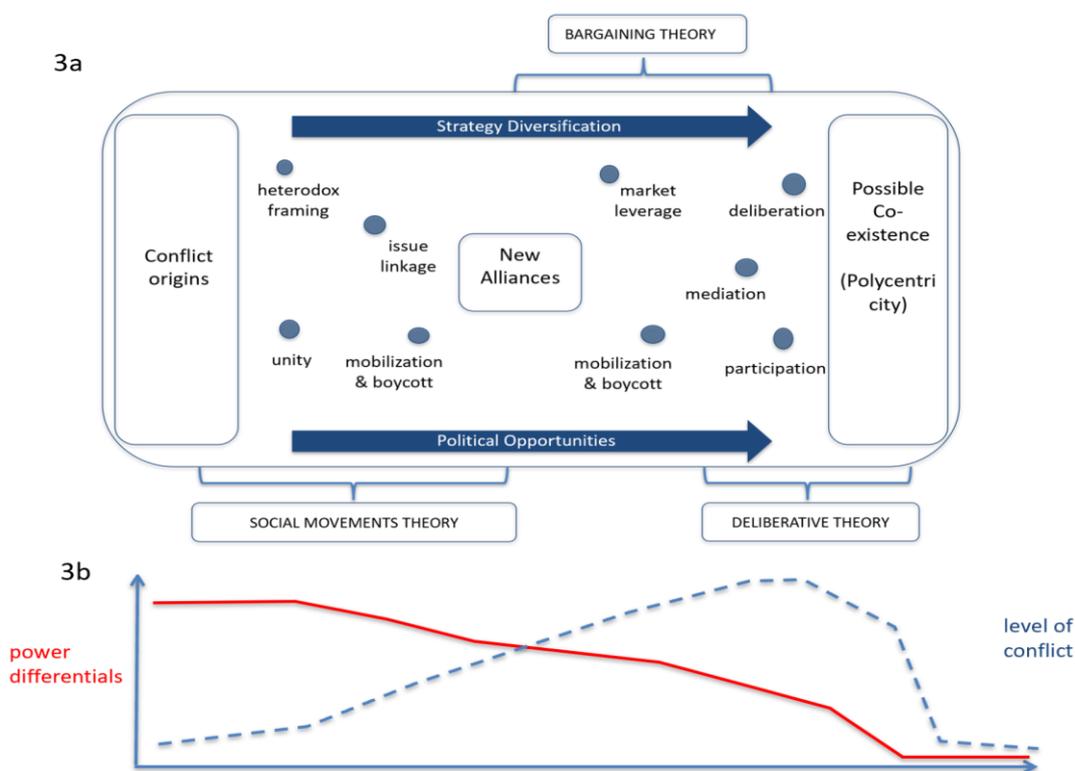


Figure 3. In Figure 3a we depict the conflict’s pathway dividing it into three main phases, despite boundaries between them are not always so defined. Points represent collective action strategies different actors adopt to transform the conflict. According to our analysis, the SMT, BT and DT can give significant contribution to understanding specific steps in this pathway. Figure 3b instead shows the trend of both power differential and level of conflict during the three phases. At the origins of the conflict, the power differential is too high for parties to engage into confrontation; only as long as weakest parties engage in collective action to re-shuffle power imbalance, they develop an interest

in entering into conflict with their (strongest) counterpart. Eventually, conflict escalation serves diminishing power differentials and creating conditions for possible coexistence.

Phase 1: Conflict origins

In accordance with our analysis, all the case studies start from a feeling of exclusion from policies, programmes, negotiations or consultation, and a request for social change by weakest parties (Tarrow, 2011; Burawoy, 2017). In the GBR case, FNs claimed other parties were taking decisions over their territory without talking to them, despite such agreements undermined their physical and cultural existence. Similarly, in the Inari case, Sami felt the so-called negotiations were far from a real dialogue: since Metsähallitus alone established the agenda, they could not question fundamental issues but only affect superficial decisions (Raitio, 2008). In Jambi and Espirito Santo, the Indigenous communities asserted the respective companies had illegally occupied their territory, causing evictions and destroying their livelihoods. In the four cases, traditional communities alleged commercial forestry established without their consent was undermining their livelihoods, culture and identity.

In a way, this seems to prove that feeling impairment is a key cognitive element for conflict to spark (Glasl, 1999). However, we observe that the link is not straightforward; indeed, despite perceiving a common external threat, weakest collectivities will not have an incentive to engage into conflict with their counterpart unless they are first able to reach internal cohesiveness and unity (Toch, 1965, Wilson, 1973; Harry, 1975), that is to self-organize.

The SMT can be of support here to understand the emergence of collective action at Level 1 as a result of framing, political opportunities, and mobilizing structures (McAdam et al., 1996; Tarrow, 1998). A crucial element for a social movement to materialize is that the sense of exclusion is socialized: enough participants must share a sense of vulnerability in front of similar circumstances (Simmons, 2014) and find the movement's goal appropriate and attainable (Hiller, 1975). This resonates with Olson (1982:24) in as much as unity implies an agreement on 'the exact nature' of the claim to be made and on Searle's (2005:7) 'Y' in a way that implies a shared 'directedness of the mind'. In Espirito Santo, the Tupinikim people reported their struggle taught them that being united and having a single objective was fundamental to fight against AC. Indeed, they faced their

biggest challenge when some communities' members were willing to accept a compensation agreement offered by the company in 1998 instead of keeping fighting to have their land back (WRM Bulletin 258, 2021).

To work on socialization, activists should frame grievances and threats in a way that resonates with local culture and sounds as a contestation of target institutions (Snow and Benford, 1988; Snow et al. 2014; Snow et al. 2018; King, 2008; Kroger, 2011). This "heterodox framing" produces a kind of scapegoat, whether this is a law, international finance or a specific actor, that is an enemy to address. We will come back to this in the following section.

Moreover, weakest collectivities have favorable surrounding social, political and economic environment and the possibility to access various mobilization structures (McAdam and Scott, 2002; Jenkins, 1983) to transform a shared and heterodox understanding of the situation into action and influence.

That political opportunities shape the potential for collective action is evident throughout the entire pathway of the four conflicts, but assumes particular relevance in very oppressive systems. In in the Jambi case, the fall of President Suharto in 1998 represented "good news" (Meyer, 2002; McAdam and Tarrow, 2018). Indeed, SAD's consciousness started to appear around 1999, when the growth of democratic principles, decentralization and the proliferation of civil society organizations were encouraging people to reaffirm their rights (Colcester et al., 2011; Setyo Pratiwi, 2018).

Then, when similarly situated groups face good news or bad news, the potential and scale of common interests widen if people are already embedded in organizations and communities, as trust and solidarity are heightened and communication flows rapidly (McAdam, 1999). The four case studies show important differences in the weakest parties' organizational capacity: for instance, in Indonesia, the Indigenous communities started almost from scratches, while in Inari the Sami herders were already organized in RHC. Clearly, this had an impact on the time and costs these collectivities had to spend in collective action at Level 1. NGOs, on their side, already had these organizational structures, so that they could more easily transform their framing into effective mobilization; as explained in the next section, this was actually an incentive for traditional communities later on in the conflict pathway to ally with NGOs.

Phase 2: Conflict transformation

Collective action at Level 1 is fundamental for each collectivity – especially the weakest parties - to present itself as unitary and credible actor towards their counter-part(s). This is the point where the conflict is most likely to escalate (see blue line). Because the collectivity has gained momentum by constructing and organizing around raising or opposing to a shared grievance, the cognitive element of conflict is particularly strong in this phase. Referring to Searle, this is the moment in which each collectivity wants to advance its own specific institutional fact over the others.

Moreover, power differentials between collectivities are still rather large, which means collective action to deescalate the conflict is not feasible, in as much as it is not desirable for the weakest parties. Indeed, the latter might actually look for conflict to raise attention to their perceived exclusion (Affolderbach, 2011). Importantly, as long as conflict de-escalation is not a key goal of all parties, informal and disruptive strategies will remain of crucial importance. In the GBR case, until they had achieved sufficient bargaining power and gained influence in decision making, ENGOs and at least part of FNs chose to stay outside the formal planning process initiated by the government. Similarly, in the Inari case, feeling they did not have any real influence of consultations, ENGOs and RHCs preferred to go on with other strategies – prevalently boycotts - that sought to underline the legitimacy of the formal processes.

In this phase, the SMT and the BT have much to offer to the polycentricity literature. BT helps in understanding the element of power and how this can influence the emergence - or not - of collective action and its outcome. SMT is useful to explain how least powerful parties can manage to level the playing field and get their demands worthy of consideration from the corporation and the government (Schurman, 2004; McAdam, McCarthy and Zald, 1996, King 2008). Heterodox framing, mobilizations and boycotts are particularly relevant instruments.

Bargaining is generally described as a process through which actors with antagonistic interests achieve a certain outcome under conditions of “strategic interaction” (Young, 1975). In its simplest form, bargaining occurs between two people who have a pie but can eat that only if they reach an agreement over how to share it. Because the pie cannot be enjoyed otherwise, the parties have an incentive to agree but the bargaining problem is about deciding the slices of the pie. In a way, this resembles Olson’s understanding of

collective action as a dilemma between increasing one's own slice of the pie or working towards expanding the overall pie. Importantly, BT pays close attention to sources and distribution of bargaining power, since they affect both parties' incentives to sit at the bargaining table and the outcome of such bargaining.

In traditional bargaining, a more relaxed attitude to risk is an important source of bargaining power: until a party has less to lose than the other, that is to say its status quo utility is higher, it will not be prone to making concessions (Ratner et al., 2013; Zeuthen, 1930) and coming to a fast agreement (Schelling, 1956). Thus, weakest parties must find a way to change their opponent's reserve function, which means raising its cost of non-deescalating the conflict (Weede, 1985). Our studies confirm the finding that in environmental bargaining, making the conflict escalate is an effective strategy to this end (Affolderbach, 2011). Moreover, in our cases the alliance between traditional communities and NGOs with international reach plays a key role in offsetting such conflict escalation.

Initially, traditional communities and NGOs adopted specific strategies as two separate collectivities; later, they developed an incentive to form strategic alliances so to increase their bargaining power. This shift does not require the neat 'fusion' of former collective interests: in Espirito Santo, despite having formed strong alliances, the Tupinikim and Guarani people kept advancing claims for their customary land rights while the rural movement framed their allegations more as an issue of agribusiness' advancement. Similarly, in the Inari and GBR cases, native communities kept defending their livelihoods while ENGOs advocated mostly for biodiversity conservation. Still, by allying the two collectivities could effectively pool their resources (Ratner et al., 2013; Hargrave and Van de Ven, 2006), such as legal entitlements, information, technical skills, or cross-scale networks. In all the cases, NGOs helped traditional communities with mapping, demarcating their customary land or collecting proof of customary ownership.

However, as the SMT has emphasized, parties need to gain the support of others too, to make mobilization effective (Ilgstein, 1997; Troast, Hoffman, Riley, and Bazerman, 2002). For secondary stakeholder groups lacking traditional sources of bargaining power, the support of strategic "others" is even more crucial (Zietsma and Winn, 2008; King, 2008). In the GBR and Inari cases especially, market campaigns addressed at international customers served traditional communities and ENGOs to increase their visibility and, therefore, increase pressure over the companies, reversing their status quo utility.

Between 2005 and 2006, Metsähallitus' decision to revise the Natural Resources Plan for Northern Lapland came as a response to escalated conflicts and mobilization that made use of market leverage.

In cases such as the Espirito Santo one, where the market leverage did not prove sufficient, activists had to find another window of opportunity to challenge existing structures of forest governance. Thus, they strongly targeted the State as well, through demonstrations and electoral support's withdrawal.

As it is the case for collective action at Level 1, constructing alliances between different collectivities required constructing a shared frame. Issue-linkage has been a key strategy here: if one party ties its concern to an issue of importance to a second party, the two parties can act on a common position (Zietsma and Winn, 2008). If this occurs under heterodox framing, the strategy can be even more effective for the coming together of previously separated collectivities. In Espirito Santo, the rural movement had the merit of bringing to the table the issue of agrarian reform vs. monoculture and agribusiness, which also allowed an issue initially perceived as local becomes of global concern (Haarstad and Floysand, 2007). In turn, issue-linkage and scale-jumping (Ukridi and Walter, 2011) played the double objective of serving issue-raising efforts and – consequently - changing the companies' status quo utilities. In the BT's language, they levelled the playing field by diminishing the company's risk-relaxed attitude advantage. Once the company becomes afraid of losing reputation and market shares, its reserve function changes and it develops an incentive to respond to other parties' demands and de-escalate the conflict (Cronkleton et al., 2008). Importantly, this analysis contradicts Olson's prediction that because larger and more heterogeneous groups will not have access to selective incentives, they will not get organized, while smaller or more cohesive groups will engage in collective action. Indeed, our case studies demonstrate that collectivities can adopt specific strategies to overcome this problem: cross-scale framing by NGOs, in this sense, was crucial to cut time needed to scale up collective action and mobilize masses by reducing participation costs.

Phase 3: Potential co-existence

Once a new power balance between the various collectivities emerges, they might develop an incentive to shift from confrontation to collaboration, and conflict can de-

escalate (Figure 3). Using the BT's language, we might say the parties move from a distributive/positional bargaining to an integrative/principled bargaining, that is from a zero-sum game with a fix pie to a positive-sum game with a pie that can be enlarged, despite the actual distinction is less clear-cut and each collectivity will simultaneously look for relative and collective gains (Humpreys, 2001). In line with Olson, a (partial) shift from a distributional coalition perspective to one looking towards increasing the pie a bit more is possible "only if a special-interest group starts representing a larger share of society. This has to do with the fact that the portion of the increased pie that will return as benefit to the group is larger.

A key shift implies some sort of agreement on process, which also manifests in the renouncing of informal and illegal actions and the - now more equal - participation within a formal setting. For instance, in the GBR case, a first step for the companies and the ENGOs to start undertaking responsibility to solve their controversies was possible thanks to the JSP's approval, which established a set of principles that would have guided the solutions. It is at this stage that DT becomes of key interest.

As DT clearly explains, collective action at this point is about "agreeing to disagree" (Fligstein, 1997; Sen, 1998;2000). Recalling Searle's formula, each collectivity still assigns its own Y to the forest and there is no mutual identification; however, collectivities share a commitment to try to work out their conflict in a democratically acceptable way (Young, 2000). Thus, their focus shifts from Y to X as space of mutual effect and positive interdependence wherein realizing their respective goals requires mutual adjustment (Deutsch, 2006).

As Aligica and Tarko (2013:13) explain, this is exactly the point of Polycentric governance, which is essentially "concerned with the possibility of creating valued states of affairs from as many normative perspectives as possible". However, BT and DT can be of some help here in understanding which are exactly the factors most likely to conduce to such co-existence.

First, discussion should be problem- and not values-oriented (Fung and Wright, 2003). Secondly, parties should discuss interests rather than positions (Fisher and Ury and Patton, 2011), that in DT means framing one own's argument as public and reasonable to the other parti(e)s shifting from a self-regarding to an enlarged thought (Young, 2000). Third, and related to these first two points, parties should have increased information

about objective facts, which can support “principled bargaining” (Fisher, Ury and Patton, 2011) bringing to a reconsideration of values and interests (Richardson, 2002; Sen, 1999). In the GBR, an important role was played by the Coastal Information Team (CIT), a “science-minded” body where representative of the different stakeholder collectivities together with independent scientists, practitioners and experts. By offering a separate arena for joint fact-finding and discussion and advancing detailed ecological questions, this body helped the parties to focus on problem-solving, explore interests and concerns more consciously¹³.

Conclusion

According to the last Global Forest Resources Assessment published by the Food and Agriculture Organization of the United Nations, there are currently 4.06 billion ha of forests – equal to 31 per cent of Earth’s land. A decrease of 420 million ha due to deforestation has been reported between 1990 and 2020 (FAO, 2020a). 22 per cent of the total Earth’s Forest area is designated for multiple use¹⁴. Among the specific uses, wood and non-wood products stand out as main use for 30 per cent of the world’s forests, while soil and water protection, biodiversity conservation and social services provision account for only 12 per cent, 10 per cent and 4 per cent, respectively¹⁵.

This study has tried to highlight how multiple uses are a key characteristic of collective goods, which describe the entirety of natural capital providing stock (natural assets comprising soil, water, air, and vegetation), and flow (ecosystem services, consumables) to society. Apart from ethical concerns questioning whether humanity should be allowed to seriously compromise natural capital, community, infrastructural and environmental resilience, as well as societal health and wellbeing are strongly dependent on critical

¹³ Studies about international forests negotiations (Humpreys, 2001) show that the intersessionals sessions enabled the ‘brainstorming’ of ideas as recommended by Fishers and Ury’s principled model (1973:62-73). For instance, it was possible to have integrative bargaining on new less contentious issues (forest research, economic valuation, consultation and participation), while on issues where one loses and the other gains positional bargaining prevailed (I.e. finance, technology transfer and trade).

¹⁴ FAO (2020a:57) provides the following definition of multiple use: the management objective is a combination of several purposes, none of which is significantly more important than another. Thus, a designation of multiple use indicates that the forest is managed for any combination of production, soil and water protection, biodiversity conservation and the provision of social services.

¹⁵ Data are collected on a total of 236 reporting countries and territories. However, FAO warns that despite an overall improvement in reporting, few countries and territories have reliable data over the 30-year period analysed (1990-2020), which means conclusions must be taken cautiously (FAO, 2020).

natural capital's resilience (Bateman, 2020; Chiesura and De Groot, 2003; Ekins et al., 2003; Ekkel, 2017; Guerry, 2015).

We have put conflict over collective goods at the heart of our investigation, to show how power asymmetries currently shape exploitation of natural capital such as forests. Our investigation identifies a two-levelled collective action problem as key root for the current human inability to resolve environmental wicked problems. However, our analysis of four exemplary case studies in Brazil, Canada, Finland and Indonesia also shows some common trends in conflict transformation, that eventually take us closer to the ideal condition of polycentric governance, which should grant greater inclusion and embeddedness of multi-layered stakeholders in order to pursue greater effectiveness, foster input-legitimacy and transparency; and to develop more adaptive, place-based and iterative managing processes (Iaione, 2016), in favour of sustainability.

We find that only after an appropriate conflict escalation, parties resume sufficiently equal power positions to agree upon procedural rules, which are necessary for polycentric governance. Our investigation of forests is extendable to many other collective goods subject to multiple, cross-scale interests.

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