Community agreements and indigenous territorial management: an experimental ethnography through a board game in the Colombian Amazon

Acuerdos comunitarios y manejos territoriales indígenas: una etnografía experimental a través de un juego de mesa en la Amazonia colombiana

Acordos comunitários e gestão territorial indígena: uma etnografia experimental através de um jogo de tabuleiro na Amazónia colombiana

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Abstract

In order to understand how indigenous communities in the Amazon make decisions regarding territory and reach agreements regulating use of natural resources in the face of extractive economies, an experimental ethnography was carried out involving design and implementation of a serious board

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game. "Managing the Territory" is a thematic group game which is not dependent on chance, but rather invites players to discuss dilemmas, make decisions, and develop agreements regarding economic activities involving use of natural resources to be carried out in their territory, including extractivism. This ethnography discusses players' commentaries that emerged during the game as well as community decision making in the face of potential social and ecological impacts of extractive activities. The actions of the game that promoted developing agreements among players led them to reflect on topics in need of community decision making regarding regulation of their territorial resources and to discuss their differences of interests. In some cases, the potential influence of extractive economies led players to take action to establish, revoke, or modify a formal territorial management agreement, and in others to restore or revoke an informal traditional pact. Players' commentaries allowed for inferring principles of indigenous territorial management related to sufficiency and reciprocity, as well as informal territorial management pacts, that explain the rationales according to which they regulated the territory during the game.

Keywords: community agreements, indigenous territorial management, serious board games, extractive economies, experimental ethnography.

Resumen

Con el objetivo de comprender cómo las comunidades indígenas de la Amazonía toman decisiones sobre el territorio y llegan a acuerdos que regulen el uso de recursos naturales ante la influencia de economías extractivas, se llevó a cabo una etnografía experimental que incluyó el diseño e implementación de un juego de mesa serio. "Manejando el Territorio" es un juego temático, grupal y no dependiente del azar que invita a los jugadores a tomar decisiones, generar acuerdos y discutir dilemas sobre el uso de los recursos naturales y las actividades productivas y extractivas que se pueden o no realizar en su territorio. Esta etnografía recoge las reflexiones de los jugadores que emergieron a través del juego y relata la toma de decisiones de las comunidades ante los posibles impactos sociales y ecológicos derivados de actividades extractivas. Se encontró que las acciones del juego que permitían generar acuerdos entre jugadores llevaron a los integrantes a reflexionar sobre temas que requerían toma de decisión comunitaria en cuanto a la regulación de los recursos de su territorio y a discutir sus diferencias de intereses. La influencia de economías extractivas condicionó, en algunos casos, acciones dirigidas a establecer o revocar un acuerdo formal, y en otros a restaurar o abandonar un pacto tradicional de manejo territorial. Las reflexiones de los jugadores permitieron inferir razonamientos del manejo territorial indígena que explican los principios que subyacen a la forma como regularon el territorio durante el juego. Estos principios se relacionan con nociones de suficiencia y reciprocidad, además de pactos de manejo territorial

Palabras clave: Acuerdos comunitarios, manejo territorial indígena, juegos de mesa serios, economías extractivas, etnografía experimental.

Resumo

Com o objetivo de compreender como as comunidades indígenas da Amazônia tomam decisões sobre o território e chegam a acordos que regulam o uso dos recursos naturais diante da influência das economias extrativistas, foi realizada uma etnografia experimental que incluiu o projeto e a implementação de um jogo de tabuleiro sério. O " Gerenciando o Território" é um jogo temático, em grupo, não aleatório, que convida os jogadores a tomar decisões, gerar acordos e discutir dilemas sobre o uso dos recursos naturais e as atividades produtivas e extrativistas que podem ou não ser realizadas em um território. Esta etnografia recolhe as reflexões dos jogadores que surgiram espontaneamente através do jogo e relata as decisões das comunidades diante de possíveis impactos sociais e ecológicas derivadas das atividades extrativistas. Constatou-se que as ações do jogo que permitiram a geração de acordos entre os jogadores levaram os integrantes a refletir sobre a regulamentação dos recursos do território e a discutir as diferenças de interesses. A influência das economias extrativistas condicionou, em alguns casos, ações destinadas a estabelecer ou interromper um acordo, ou, em outros, acções destinadas a estabelecer ou revogar um acordo formal e, noutros, a restaurar ou abandonar um pacto informal tradicional de gestão territorial. As reflexões dos jogadores nos permitiram inferir conhecimentos sobre a gestão territorial indígena que explicam os princípios subjacentes à forma como regularam o território durante o jogo. Estes conceitos se relacionam a noções de suficiência e reciprocidade, e pactos de gestão territorial.

Palavras-chave: Acordos comunitários, gestão territorial indígena, jogos de tabuleiro sério, economias extractivas, etnografia experimental.

Introduction

An increasing number of studies regarding community agreements, including intercultural agreements, have been carried out through participatory research addressing concerns regarding common use resources in the context of "development"[1]. Initially, such studies were based on the supposition that local populations lacked institutions and mechanisms for regulating common use resources. This has been re-evaluated by neoinstitucionalist[2] rural sociologists and cultural anthropologists who have provided evidence regarding the diversity of indigenous and other peasant organizations and community mechanisms throughout the world for regulating and managing collective territorial resources (Poteete *et al.*, 2012, p. 63). These studies have shown how peasant, forest dwelling, and other rural and/or indigenous populations have developed a variety of relationships with nature which do not concord with the principles of maximum utility hailed by economists. Rather, in many indigenous and/or peasant territories autonomous regulation or self-governance which is not mediated by private property and the State has allowed for conservation of local resources (Poteete *et al.*, 2012, p. 64).

Over the past twenty years, indigenous organizations and communities of the Colombian Amazon, often with the support of conservationist and environmental NGOs and/or State agencies, have developed a variety of forms of intercultural agreements among populations that share the same territory or ethnic identity and/or belong to a multi-ethnic territorial jurisdiction recognized by the State (Espinosa, 2014, p. 90). Such tools and strategies include life plans[3], ecological calendars, and natural resource management regulations (Hurtado 2011, p. 440; Vieco 2009, p.140). Although these territorial governance agreements revindicate territorial autonomy by the indigenous peoples and the organizations representing them, besides highlighting the ancestral nature of the territories and their environmental services, the influence of these agreements on decisions regarding the territory and their relationship with extractive[4] economies is an unexplored field of research.

This article presents an experimental ethnography involving design and playing of the serious board game "Managing the Territory". The objective of the ethnography was to explore how the indigenous communities of the southern Colombian Amazon collectively manage their territory, make decisions, and reach agreements to jointly regulate natural resource use in the face of extractive economies. The game was designed by researchers together with several indigenous leaders in 2016 and 2017 during application by the Sinchi Institute of the Indigenous Well-Being Indicators in the southern Colombian Amazon, and was implemented in 2018 with Tikuna, Uitoto, Cocama, Bora, and Inga indigenous inhabitants

of the Uitiboc and Cotuhé Putumayo *Resguardos*[5]. The indicators showed that many of the obstacles that the local communities and indigenous organizations face in reaching agreements regarding resource use are due to the presence of extractive economies in the region and involvement of some of the indigenous residents in these economies. Extractive economies in the region are principally led by people from outside the communities who hire local residents as well as indigenous people and mestizo peasants from outside the region, and most of the revenue from these economies is also extracted from the Amazon. Several indigenous leaders expressed that despite the existence of traditional culturally based pacts and more recent formal local agreements regarding territorial management[6] based on traditional knowledge, sustainability principles, and conservation of forests, recently gold extraction, selective logging of precious woods, and commercial hunting and fishing by indigenous and non-indigenous local residents have provoked cultural changes that have debilitated traditional pacts and the capacity of the local population to reach and maintain agreements regulating resource use (Acosta *et al.*, 2020, p. 45).

In recent decades, understanding how human groups reach agreements and make decisions regarding territory has been a topic of interest for participatory research using board games (Camargo *et al.*, 2007,p. 477; Cardenas, Maya and Lopez, 2003, p. 64; Speelman, 2014, p. 22; García-Barrios *et al.*, 2016, p. 192; 2011, p. 370). According to van Noordwijk *et al.* (2020, p. 12), serious board games stimulate players to explore the behaviour of a system in a safe space through evaluation of local scenarios and related negotiations. Serious board games have been demonstrated to provide information that could contribute to real-life collective decision making and action. The authors of these studies highlight games as a powerful tool for constructing models, observing players` behaviour, eliciting their decisions in a given context, and providing a platform for discussion of the consequences of their actions (Wesselow and Stoll-Kleemann, 2018, p. 301).

Use of board games for the purpose of studying management of natural resources by local communities began to be disseminated thanks to Ostrom, who used what she called “simple games” regarding common use resources to analyse the mechanisms that groups of people use to transcend dilemmas of the commons (Ostrom, 2000, p. 56). Ostrom`s findings allow for comprehending how and why actors construct their expectations and discourses and establish - or fail to establish - cooperative actions, institutions, and social practices to put their individual and collective life projects into practice. These researchers - largely governance and collective action theorists - advocated for community agreements as a potential strategic tool for resource management, ecosystem conservation, and transformation of decisions made by the local population into collective action and public policy (Agrawal, 1997, p. 6).

Researchers in behavioural psychology, economics, and neoinstitutionalism have implemented role-playing board games in rural contexts to establish a context for analysing non-cooperative behaviour[7]. Their approach is grounded in the principle of rationality, which assumes that individuals only deliberately make decisions, guided by their own volition rather than unconscious drives, traditional norms, or environmental influences. Neoinstitucionalism, like economism, has been criticized for portraying human cooperation as a way of pursuing strictly individual plans through mutually consensual agreements (Peña-Azcona *et al.*, 2021, p. 114), understanding agreements among participants from an optimistic win-win perspective, expecting that everyone will benefit (García-Barrios *et al.*, 2008, p. 25). According to these theories, this voluntary informed strategic collaboration produces efficient economic results, which largely contributes to the success of such rationales in policy decision making. According to Garcia Barrios *et al.* (2008, p. 26), the widespread application of win-win perspectives often leads to serious theoretical and practical bias by decision makers, assuming that all participants are willing and able to engage in cooperative behaviour, disregarding variations in individual motivations, preferences, and cultural norms. However, agreements may also be based on meaningful conduct - or " significant actions" - by which individuals are willing to make personal sacrifices for the common good, depending on historically rooted traditions and community agreements (Garcia Barrios *et al.*, 2008, p. 26).

For MacIntyre (2001, p. 34), in traditional communities - and in close personal relations in other contexts, the success of cooperation depends on commitment and collaboration by all participants through meaningful conduct, involving personal sacrifice for the common good. By contrast, strategic cooperation is that by which individuals may be willing to sacrifice the common good and act selfishly if doing so provides them with benefits. This type of cooperation is more common in capitalist societies in which human relations are largely based on impersonal transactions of goods and services.

This article addresses the following question: How do the principles of territorial management that emerged during testing and playing of a role-playing board game influence decision-making and community agreements that regulate use and exploitation of resources by communities and indigenous organizations of the southern Colombian Amazon? Below, we describe the experimental ethnographic approach of the board game Managing the Territory. We then present the experience of playing the game with a group of indigenous leaders who provided their perspectives regarding territorial management, which were later considered to modify the game. Following this, we show how the players came to agreements and made decisions, and discuss dilemmas they confronted. Finally, we

elucidate some methodological limitations of the board game and its potential as a research tool.

The experimental ethnographic method using serious board games

The experimental ethnographic method was based on a transdisciplinary approach that included participatory research (Parra Vasquez, *et al.,* 2020, p.15). The literature uses the term experimental ethnography in the context of different disciplines (Castañeda 2006, p. 81). This experimental ethnographic study takes advantage of the capacity of board games to provide a context for players to explore decision making, evidencing their "meaningful contexts" – or the subjective motives by which they make decisions (Weber 2002[1922], p. 49). An experimental ethnography communicates an experience that has occurred during fieldwork, presenting the lessons learned through the study. Experimental ethnography allows for introducing situations during fieldwork with the objective of analysing how people react, and learning from their responses. Methodologically, experimental ethnographies take advantage of the fact that data both exists before the study and emerges through interactions that occur during the research process (Castañeda 2006, p. 82). This methodology constructs knowledge in a simple language, incorporating local knowledge into the design of experimental tools and interpretation of results (Shanley and López, 2009, p. 540).

Using board games in participatory research allows for constructing analysis through the meanings that people give to their own and others` actions. The purpose of the game is to generate subjective meaning in players which catalyses actions that determine the outcome of what is at stake. To accomplish this, the structure of the game should bring together the individual narratives expressed by the players upon which the general narrative (the plot) is constructed. Players should confront dilemmas and make decisions based on their values, which in turn may be influenced by their community`s culturally based values. Through drama, the board game allows the players to apply their understanding of daily life to the particular situation being represented, often using metaphors catalysed by their psychological identification with real life situations while playing the game (Alexander 2009, p. 32).

Nevertheless, games have untested limitations with respect to with whom and how they may be used. These limitations arise due to cultural disparities between designers and players, as well as the implicit norms that influence game design. Additionally, unwritten rules impact game design and play a role in the dynamics arising among players of different locations, backgrounds, or cultures who play the same game with the same rules and incentives

(van Noordwijk *et al.*, 2020, p. 10), which in and of itself may provide an opportunity for learning. Furthermore, some critics argue that significant limitations exist in using board games as a "laboratory" to "control" the social context to be evaluated and analyse decision-making. They hold that such an approach assumes that players will make decisions in the game just as they would in real life. However, participants` behaviour in experiments does not always coincide with their behaviour as observed outside the experiment (Anderies *et al.*, 2011; Gintis 2000, p. 315). As a result, decisions that deviate from real-life behaviour are often interpreted as "errors" or "biases", raising concern about the replicability and comparability of the results obtained from these experiments (Napitupulu *et al.*, 2020, p. 177). Therefore, upon using board games as a research tool one should take into account the fact that decisions in the game are not necessarily an identical reflection of the meaningful contexts of the participants; however, neither are they completely unconnected to these contexts.

The potential of games as a research tool lies in the fact that they stimulate players to catalyse actions that provide researchers with a better understanding of a particular phenomenon (De La Cruz *et al.*, 2020) while allowing for understanding the connection between players` "ludic" experience of playing games and their interpretation of knowledge through the lens of a game (Flanagan, 2009, p. 2; Gadamer, 1999, p. 21; Castell, 2011, p. 21; Johnson *et al.*, 2015, p. 3). In this study, the game is part of a performative methodology that provides for experiences shared among people which are both enjoyable and meaningful. It involves players and researchers emotionally, providing a sense of communality that enriches players´ perspectives regarding the phenomenon studied (Douglas and Carless, 2013, p. 55). The game provides a reciprocal back and forth interaction that leads players to share knowledge as a rooted, embodied, sensorial, empathetic, creative act of learning (Magnat, 2016, p. 219). In the words of Ingold (2017, p. 147), this knowledge consists of "skills of perception and capacities of judgement that develop over the course of direct, practical, sensuous engagements with our surroundings".

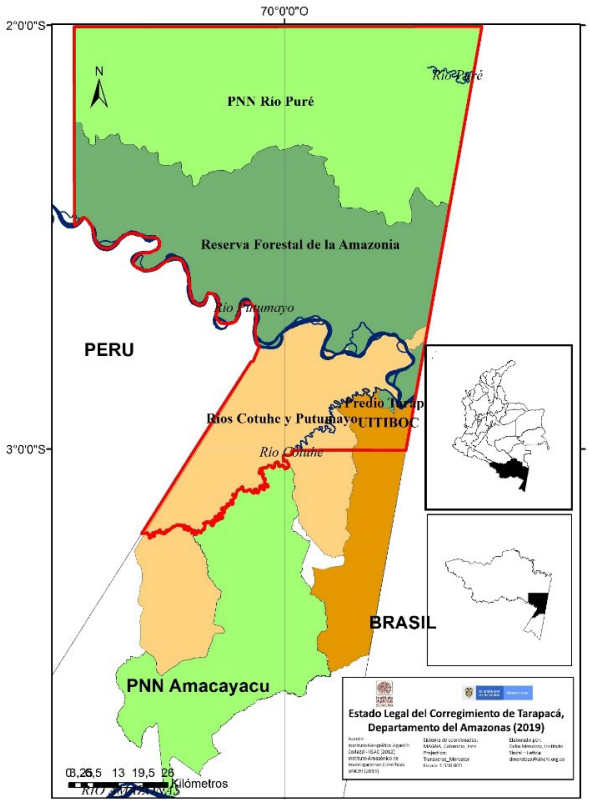
Study area

The game Managing the Territory was played in the "non-municipalized area"[8] of Tarapacá, on the Putumayo River in the estuary of the Cotuhé river in the southern Colombian Amazon, on the border among Colombia, Peru, and Brazil. The territory contains two *resguardos* - Uitiboc (95,000 hectares) and Cotuhé Putumayo (250,000 hectares) - under the administration of The Association of Indigenous Traditional Authorities (AATI[9] according to its Spanish initials), The Greater Indigenous Council of Tarapacá (CIMTAR), and The Association of Traditional Authorities of Tarapacá (ASOAINTAM). The *resguardos* are multicultural, made up of families of the Tikuna and Yagua ethnicities – originally from the region, as well as of the Uitoto, Cocama, Inga,

Okaina, and Bora ethnic groups from the Igará Paraná, Amazonas, and Alto Putumayo Rivers who migrated to the region as a result of social problems resulting from widespread extractivism in their territories of origin. The Amacayacu and Río Puré Natural Parks are located in the Tarapacá region (Figure 1).

The region of Tarapacá has 3179 inhabitants, of which 51.3% live in the town of Tarapaca and 48.7% in 9 smaller communities on the Cotuhé and Putumayo Rivers; 89% of the population of Tarapacá is of indigenous origin (De La Cruz *et al.*, 2016, p. 43). Principal economic activities have traditionally been fishing, hunting, and rotated slash and burn polycultures, locally known as *chagras*. However, the Tarapacá region has also become the scenario for extractivism carried out by people originally from the region as well as by outsiders, including gold mining, logging, largescale fishing of arawana (*Osteoglossum bicirrhosum*), commercial hunting, and illegal cultivation of coca (*Erythroxylum coca*) to produce cocaine (Salazar and Riaño, 2016, p. 25).

Figure 1: Cotuhé Putumayo and Uitiboc Resguardos, Tarapacá, Amazonian region of Colombia



The game "Managing the Territory"

Managing the Territory[10] is a thematic game representing individual and collective decision making, agreements, and dilemmas that Amazonian indigenous peoples confront with respect to territorial management. This board game, which does not involve chance, simulates a territory as a space of interactions in which each player represents a family inhabiting a community in the Amazon jungle. The game board, divided into 58 hexagons, simulates a jungle territory with rivers and a village. Each hexagon represents part of the territory with a set of natural resources which increase in abundance the farther one travels from the village, as in real life generally anthropic pressure decreases with distance.

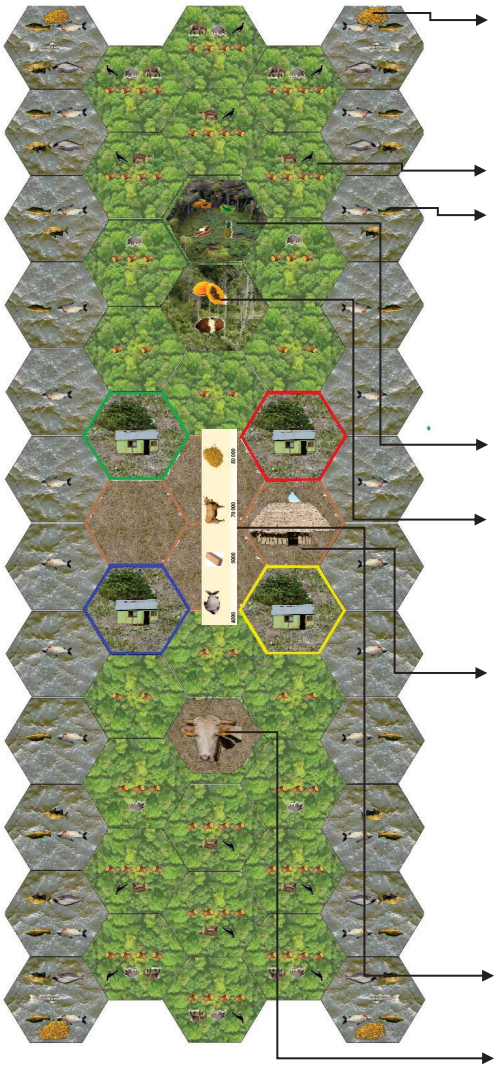
The objective of the game is to survive by taking advantage of the resources available in the territory, with the only requisite to remain in the game being to feed the family (earning eight units[11] of food from the *chagra*, hunting, and/or fishing during each half of the game). All players have access to all resources available on the game board, unless they have been previously depleted by another player or have been the object of a regulation mutually agreed upon by the players. Each player has five units of effort (UE) – or actions - that they may use during each turn by moving to any contiguous hexagon, fishing, hunting, felling timber, cultivating *chagra*, extracting gold, raising cattle, selling the products of any of these activities, or convening the players to meetings in the *maloca*[12] to reach agreements (Figure 2).

During the game, each player has ten turns, divided into two sets – or game halves – consisting of five turns. In the first half, only the resources of fishing, hunting, and *chagra* are available and the only requisite to remain in the game is to feed the family. In the second half, the options are provided to extract gold, raise livestock, and sell their products in the store, and aside from feeding their family, players should earn money by selling fish, timber, cattle, or gold (Table 1) to pay community taxes, and in general for other monetary expenses which are not stipulated in the game.

Test phase and modifications to the game

Several game rules were decided with the input of a group of indigenous leaders during a test phase to make the game as realistic as possible. They indicated that a system of fines for depleting resources should not be imposed, as this would allow players to deplete resources if they could pay the fines. Rather, Berlandi Gabino of ASOAINTAM advised that those who do not comply with agreements should provide a community service. In Tarapacá, rather than imposing fines, communities and organizations typically establish other types of measures and sanctions based on their norms and customs. In the end, the indigenous leaders decided that in the game, a simple majority could agree to set maximum quotas for each type of resource.

Figure 2: "Managing the Territory" game board and actions



Extracting gold: When gold is extracted, half the river is contaminated by mercury, potentially resulting in players being contaminated if they eat fish from the river.

Hunting, fishing, and logging: If the hexagon contains only one resource and it is extracted by a player, it is not depleted for future moves. If the hexagon contains two or more resources, the player decides how many resources to extract, and how much of each one; if they extract more than half of one of those resources, all resources are depleted. If the players use half or less of a given resource, it will continue to be available. These rules do not apply for extracting gold which is "not depletable". If a given resource was used but not depleted and the same player wishes to use it again, they must leave the territory and re-enter.

Harvesting chagra: The chagra is harvested all at once, providing 4 different units of food. Once harvested, the hexagon becomes a fallow plot.

Gathering food from fallows: A player may gather 2 units of wild foods, and food from these hexagons are available throughout the game for use by the same player.

Inviting players to the maloca: When it is their turn, any player may call the others to the maloca. If more than half attend, they may make decisions. The players may reach agreements regarding available resources and decide whether to: 1) allow players to freely use natural resources and carry out productive activities; 2) set maximum quotas for resource use and productive activities; or 3) prohibit resource use or productive activities.

Selling their products at the store: A player may sell timber, fish, gold, and/or cattle.

Raising a cow: This action provides the player with one head of cattle, and that hexagon may not be used again by any of the players.

The two initial prototypes of the game allowed players to carry out extractive activities and earn money from the start. This was modified based on players` commentaries during the test phase. Alci Gabino of ASOAINTAM recommended that in the first half of the game the option to extract gold,

raise cattle, and sell resources not be activated. For him the game was "a good exercise for making comparisons among different ways of life [...] to see what this system would be like […] - a tool to compare life systems [...]", as it served to pose scenarios in which an extractive economy is introduced in a conserved territory. Based on these observations, it was agreed that the first half of the game would represent a system of local governance before introduction of an extractive economy, and the second half should illustrate what happens when the actors have the opportunity to participate in the extractive economy; therefore, the options to extract gold, raise cattle, and sell the products of these activities would be activated only in the second half.

Playing the game Managing the Territory

After the test runs with the indigenous authorities, the game was played by a total of 33 (Table 1) indigenous members of the Uitiboc and Cotuhé Putumayo *Resguardos*, selected by convenience, as they formed part of the indigenous associations with which the Sinchi Institute was carrying out participatory research and voluntarily agreed to participate.

Table 1: Distribution of participants in the game "Managing the Territory" in Tarapacà, Colombian Amazon, by gender and age.

	age 13-18	age 19-45	46 and over
Male	6	14	3
Female	4	5	1

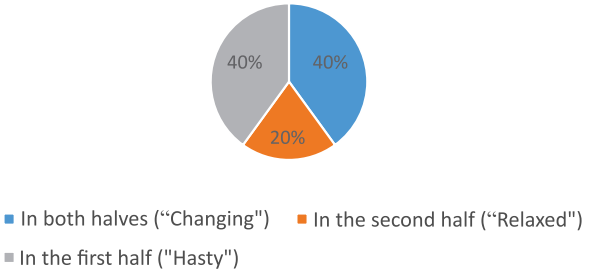
Ten game sessions were carried out with two to four players each, some of which involved only youth (age 13-18) or only players of a single sex. Information was recorded regarding: (1) each player`s decisions; (2) participant observation during the session; and (3) players` commentaries during and after the game. The researchers later contrasted this information with participant observation of territorial management and natural resource governance carried out in Tarapacá since 2009. The fact that fewer women participated in the sessions may lead biased interpretations and result in a limited contribution of female perspectives with respect to territorial management. Game sessions were recorded by audio and some notes were taken, and game results were later systematized in Excel. Analysis of the game sessions resulted in identification of the following factors involved in determining how agreements were made regarding natural resource use: the objective of the agreement, *de facto* territorial management pacts, the principle of sufficiency, and potential benefits and negative effects of the subsistence and extractive activities.

Influence of agreements on extractive activities

In each session, players went to the *maloca* 1- 3 times to attempt to reach agreements. In almost all cases, the majority attended, fulfilling the basic requisite for making collective binding decisions regarding resources. As we were interested in observing the influence of extractive activities on agreements and resource depletion, we classified the sessions into those in which agreements were made when players did not have the option to extract resources (first half of the game) and those in which agreements were made when players had the option to extract resources (second half; 40% and 60% respectively). When agreements were made in the second half of the game, when they were able to engage in extractive activities, lower average resource extraction and depletion were recorded throughout the game as compared to when agreements were made during the first half, before they were permitted to extract.

Following each session, the moderator asked the players to discuss the differences between their own strategies and those of others. During this discussion, players referred to the sessions according to whether: 1) agreements were made during the first game half, 2) agreements were made only during the second game half, or 3) existing agreements were modified, which only occurred during the second half of the game. Following this classification, we differentiated sessions according to the quantity of agreements made or modified, and the game half in which they were made: only in the first half, only in the second, or in both halves. Some players referred to those who initiated agreements only in the first half as "hasty"; those who initiated them only in the second half as "relaxed"; and those who initiated agreements in both halves as "changing", as the agreements made in the second half typically were modifications of those made in the first half. While precise terms for referring to making agreements were not used in all sessions, players continually referred to differences that arose in the game depending on when agreements were reached. Therefore, for analysis we classified the sessions as "hasty", "relaxed", and "changing" according to when agreements were made (Figure 3).

Figure 3: Distribution of agreements made during the game "Managing the Territory" according to when in the game they were made by players in Tarapacá, Colombia.



"Hasty" sessions resulted in extraction of the most gold, fish, game, and timber. "Relaxed" sessions resulted in the least depletion of resources for subsistence and extractive resources. Finally, more extractive resources were used and more subsistence resources depleted during the "changing" sessions than during "the relaxed" sessions, but less than during the "hasty" sessions (Figure 4).

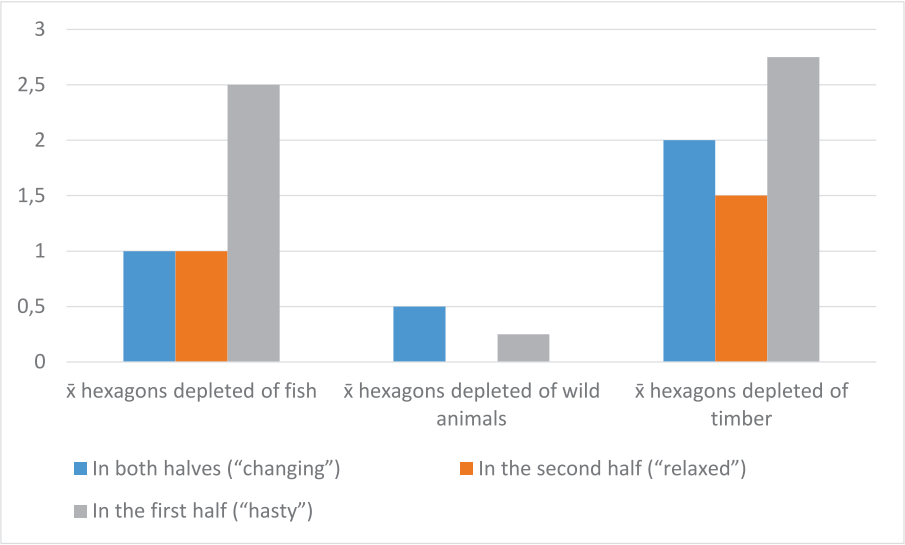


Figure 4: Average ($\bar{x}$) numbers of hexagons in which fish, wild animals, and timber were depleted according to when agreements were made during the game "Managing the Territory", as played in Tarapacá, Colombia

During the "hasty" sessions, players held a discussion in the *maloca* before each individual had had the chance to fully contemplate the matter in an attempt to quickly reach an agreement. They implied that this meant "respecting", "caring", and "thinking first". Upon reaching agreements during an early stage of the game, players` interests were not totally defined, which placed pressure on collective decision making, as these agreements did not take into account how the game would develop, nor individual interests and potential resource depletion, thereby hindering the possibility of reaching later agreements. In these "hasty" sessions, players` attempts to modify previous agreements were perceived as modifying quotas regarding use of resources of the territory, which could interfere with the plans and interests of the others. Meanwhile, not modifying agreements allowed for avoiding conflicts of interest. This was expressed in phrases such as, "If others are focused on their own work, how can I interfere with their plans and modify existing agreements?", and "If I go to the *maloca*, it`s because I see people are converting forest into pasture, but if I myself am the one who

is [raising cattle], I would be acting against my own interests" (Jhonatan Palma, *cabildo*[13] governor Alto Cardozo).

Players associated the "hasty" sessions with communities that make agreements without contemplating possible changes in individual interests, and therefore these agreements are not sufficient to regulate the impulses of community members to appropriate more than what the community considers ethically correct. These agreements are based on principles that are accepted as "correct", but in practice the agreements do not respond to community members` heterogeneous visions, nor do they anticipate their changes in interests or in the conditions of the territory. Therefore, they are inadequate for avoiding resource exploitation.

"Relaxed" sessions consisted of players preferring to use territorial resources without making prior agreements. At the beginning, they trusted that others would not appropriate more than what they needed and therefore would not deplete resources. They only considered it necessary to make agreements when trust was not sufficient because the option was presented to carry out extractive activities or because one or more players depleted a resource for another reason. Without ever formalizing it, the players generally used the land for subsistence, depleted few resources, cultivated *chagras*, gathered wild foods from fallows, and met at the *maloca* only to prohibit fellow players from extracting gold and raising cattle, while fishing, logging, and hunting were not much of an issue.

Such cultural norms are practiced by communities with relatively strong customary norms that value the role of family and community relations in social cohesion. This in turn provides them with greater strength of resistance and autonomy in the face of other actors that may have influence in their territories. The indigenous members of these communities perceive cattle raising and gold mining as threats to their subsistence activities, and they see them as associated with highway construction, cultures they consider foreign, water contamination, and increased alcohol consumption. These communities face strong dilemmas when they must negotiate with other social groups that do not share their vision of the territory due to clashes in priorities and values, cultural misunderstandings, threats to their subsistence activities, and threats to their autonomy.

In the "changing" sessions, players made agreements from the start, but unlike in the "hasty" sessions, when they saw that the agreements did not effectively regulate individual interests, they opted for modifying the agreements. In these "changing" sessions, opinions differed regarding how to regulate or prohibit appropriation of resources in the territory, and despite consisting of the greatest number of agreements, "changing" sessions resulted in more depletion of trees and fish than "hasty" and "relaxed" sessions. In these sessions players' interests were more oriented toward extractive

resource use compared to the other sessions. Modifying agreements was their way of responding to situations with direr consequences, which led to internal tension as these modified agreements were promoted by some actors and passively accepted by others. This was manifested through statements such as, “Internal rules are only [in place] by requirement of the indigenous organization [AATI]… evidence that each community has them, but they don’t work in in any real sense” (Jesús Marín, *cabildo* leader, Bajo Cardozo).

The players explained cases of communities in which modifying or attempting to modify an agreement leads to intracommunity division and envy. In the game, envy was manifested when some players extracted more resources than they needed, leading to resource depletion, representing communities that are more likely to become involved with extractive economies and that see life plans and community agreements as possible means of legitimating their interests in participating in these economies (Figure 5).

Figure 5. Session of the game Managing the Territory, Tarapacá, Colombia, 2018

Photo by Pablo De La Cruz

Making an agreement was a key moment for reflecting on how to regulate territorial resource use and reconcile differences of interests. In sessions in which agreements were made too soon (hastily), or modified (changing), the negative impact of individual interests was not sufficiently controlled, resulting in greater resource depletion. Neither of these types of agreements were effective in protecting territories from the consequences of extractive activities. When agreements were modified in the interest of merely distributing the benefits of extractive activities, they tended to awaken the individual interests

of some, and in others the perception of reaching new agreements as the only possible solution for halting resource depletion. Meanwhile, when agreements were made too hastily, players did not adequately evaluate the new conditions, heterogeneity of interests, players` potential changes in interests, or potential consequences of the extractive economies. Such agreements tended to result from players romanticizing principles of indigenous territorial management and were ineffective in detaining resource depletion or players` involvement in extractive activities.

For the indigenous organizations and communities of Tarapacá, reaching agreements regarding management of their resources has not been easy due to the apparent economic benefits of extractive economies as well as the heterogeneity of territorial interests. Studies document that agreements have been established in the lower Putumayo River based on reciprocity among communities and organizations that have set aside reserves and managed areas such as lakes, hunting sites, and forests subject to logging. Other agreements regulating hunting, fishing, and logging have been made by families and community associations (Jarrett *et al.*, 2021, p. 8). For example, communities have agreed to restrictions on fishing by community members and other people in *salados*[14], including not allowing them to fish with *barbasco*[15] due to its ecological consequences. Ancestral agreements persist among Tikuna peoples and other ethnic groups which allow them to access hunting sites. Furthermore, informal agreements between timber associations made up of non-indigenous local residents allow hunting within areas where the associations have logging rights granted by the regional environmental agency, CORPOAMAZONIA, as these areas contain *salados* that the indigenous consider to be sacred as well as sites of high abundance of fauna (Jarrett *et al.*, 2021, p. 3).

Gold mining, commercial fishing, illegal logging, and drug trafficking by local and external actors have weakened management pacts and divided the indigenous peoples regarding their territory based on their interests (Acosta *et al.*, 2020, p. 12). The influence of extractive economies may lead to establishing, restoring, or abandoning a territorial management pact or other agreement (Pinedo *et al.*, 2000, p. 11). The ways in which extractive economies in the Amazon impact human groups largely depends on their cultural values, as well as their socioeconomic conditions. The impacts are different in indigenous communities with internal conflicts than in those with greater cohesion and organization, whether this organization be for opposing or keeping to the margin of extractive activities, or participating in them and obtaining income and territorial control of the factors of production and distribution of benefits (Salazar Cardona *et al.*, 2019, p. 42). This situation has led to new challenges regarding territorial governance by organizations and communities, including regarding changes in values of community organizations, and in strategies to reach agreement on new forms of management based on cultural and ecological principles that inspire novel responses to extractive economies.

Types of game sessions and territorial management

Upon moderating the game, the first author observed some patterns of strategies with respect to the amounts of resources appropriated and the hexagons in which the players chose to appropriate them, without any previous agreements having been made guiding their decisions. In the game, it was established that in the hexagons closest to the centre where one resource was available, that resource could never be depleted, regardless of how many times fish, timber, or game were appropriated, such that a player could supply themselves with fish and game without having to move to farther hexagons. The reason for this rule was to provide players with the option of obtaining necessary food without having to move farther, and thereby observe where they preferred to obtain resources. Despite the fact that the first author, as game moderator, repeatedly stressed that these hexagons could never be depleted, the players preferred to move to farther hexagons. In some sessions, players noted that the rule preventing nearby hexagons from being depleted by a single resource was contradictory to reality. Furthermore, although in some hexagons they could use more than one resource without depleting all the resources in that hexagon, they preferred to take advantage of a single resource. Such decisions by the players followed a rationale indicating a tacit agreement that resources in some zones are not to be used, and that in other zones not all resources may be used.

During game sessions, players explained the reasons for some of their actions that did not appear to follow a strategy of obtaining resources using the least possible effort. As mentioned above, they avoided appropriating resources close to the village, preferring to travel to farther sites. Several players explained the criteria by which in real life they choose hunting and fishing sites (locally known as “forage zones”) and determine the amount of resources to use. It was obvious to players that it would be difficult to find adequate hunting or fishing grounds or timber close to the village and that in the farthest zones there would be more probability of obtaining these resources. Furthermore, upon appropriating a single unit of food, game, or timber in a farther hexagon, in which there were 2 to 5 resources available, they prevented that the hexagon be entirely depleted of resources. Thus, what in the game was recorded as an “individual” decision may be understood as a manifestation of cultural practices internalized by the players that reveal certain values and rationales underlying the way in which the indigenous peoples of the southern Colombian Amazon relate to their territories; their decisions were not individual in an economic sense, nor isolated cases, but rather manifestations of a value system sustaining a particular type of territorial management. This was evidenced by players` strategies that were not oriented toward maximizing individual utility; rather, players posed adaptations to the game which were not aligned with capitalist mercantile rationales, following community territorial management principles that

minimize risks in the face of extractive economies (Freire, 2014, p. 687). These strategies were guided by territorial management pacts and the principles of sufficiency and reciprocity.

Indigenous territorial management pacts

Analysis of players` commentaries allows for inferring how certain decisions are made based on environmental ethical principles, known in the region as territorial management pacts. Berlandi commented:

> "You can see no one took the risk of fishing here [near the centre of the board] where there`s only one fish, because if you take one here there´s no more for fishing (…). Using timber near the community to sell or for firewood means that we`re depleting that which is close by, and for another season we`ll have to go farther".

Jair Rincón of ASOAINTAM explained how hunting is carried out according to species` reproductive cycles.

> "We know that during the reproductive season we have to minimize hunting because many young will be affected. The same with forests; [we have to fell] trees that are not in their fruiting season. In general, they [don`t all have] the same fruiting period; (…) they`re very diverse forests. If we analyse the fishing period, there`s going to be a season of fish spawning".

According to Harold Rincón of ASOAINTAM, this management results from the teachings of the grandfathers and grandmothers based on their knowledge, and forms part of the traditional management pacts that the indigenous peoples make for a specific territory.

> "For example, when they cut down the jungle to plant *chagra*, (…) obviously they`re taking life, but (…) the person who is planting *chagra* has to be very conscious and their responsibility is to return [other plants to the cleared land]. If I fell [a tree], I plant *chontaduro* (*Bactris gasipaes*); if I fell a *platanillo* (*Heliconia*) then I plant banana, and that way I`m doing ecological management of that territory. I have to ask permission from the spirit owners of that territory in which I`m taking life and make a management pact."

Territorial management pacts are affirmed through social relations that prohibit excessive hunting and fishing in places and seasons where this would interfere with reproduction of the species. The players highlighted that while management pacts exist, due to cultural change they have not been taught to younger generations and should be restored and translated into written and graphic forms. For this reason, local organizations have shown interest in translating these management pacts into tools such as ecological calendars and life plans, as well as more formal regulations regarding resource use.

Sufficiency

In the game, the principle of sufficiency[16] was reflected in the players' interactions as trust in the others that they would take only what they need, which perhaps relates to the maxim coined by Sahlins (1983, p. 39), "*while there* is plenty for *today* never *care* about *tomorrow*". To some extent, this trust allows for maintaining reciprocity among players and balance in the territory. For example, excessive hunting may have negative effects on group social relations, while hunting and gathering only what they need for subsistence allows for animal populations – and therefore social relations - to persist.

Players expressed the principle of sufficiency in phrases such as, "You have to plant *chagra* so that the *guara* (*Dusicyon australis*) also eats, [and] the *boruga* (*Dinomys branicki*), and so I can eat also". Sufficiency is to the economy of abundance what scarcity is to the market economy (Sahlins 1983, p. 39). The principle of scarcity assumes that rational individuals, as consumers and producers, wish to maximize utility and benefits from their economic activities (Kallis, 2019, p. 13). By contrast, the principle of sufficiency involves valuing resources because they are abundant, as well as for their essential properties such as their ecological relationships and cultural meanings. However, currently valuing resources according to the principle of sufficiency tends to be combined with economic valuing of "scarce" resources such as timber, *arawana* (*Osteoglossum bicirrhosum*) fish, and minerals, oriented toward commercial markets.

Reciprocity and equilibrium

In some game sessions, management pacts and the principle of sufficiency were compromised when a player took more than one resource, even depleting it, which occurred above all when the players had to obtain both resources and money. This situation led to one of two scenarios: promoting that the others also deplete resources ("hastiness"), or modifying existing agreements ("changing"). Although in some session's agreements were modified expressly to prohibit extractive activities, in other cases these activities were only regulated so that all players be benefitted equally, without paying much heed to potential environmental consequences which later might negatively affect all.

"Hasty" and "changing" game sessions illustrated situations in which relations of reciprocity are broken. According to Graeber (2012, p. 75), reciprocity defines a type of exchange in which both parties assume that the other will do the same as they do, but this does not necessarily mean they will. The game sessions suggest that hastily made agreements tend to weaken reciprocity among players as well as ecological equilibrium of their territory. The communities may seek forms of restoring reciprocity and equilibrium, whether by modifying ("changing") agreements or simply by ("hastily")

allowing the players to compensate according to their own criteria. The first case is exemplified by the communities of the Cotuhé River that - after mining began in their territory - made agreements with the miners to benefit from the revenue. Over time, the communities became opposed to mining (or those opposing voices were more influential) and the negative impacts became more evident, and the agreements between community members and the miners were broken, although mining continued (Salazar Cardona *et al.*, 2019, p. 31).

Dilemmas in territorial management

During the test and implementation phases of the game, players confronted crossroads involving ethical and moral dilemmas, confronting a choice between two or more options, all of which provided them with some benefit, although none was clearly preferable, nor correct or incorrect (MacIntyre, 2001, p. 54). The dilemmas led to cognitive dissonance which players expressed as a conflict between wishing to behave as "indigenous" and acting as "white". In the game, this consisted of a dilemma between acting based on two types of rationality: one more relational, reflecting the values of reciprocity of indigenous societies, involving an informal pact based on trust that other players would not deplete resources, and the other instrumental, influenced by urban-industrial society, involving making formal agreements regarding extractive activities based on convenience or individual interest.

In response to this potentially reductionist classification, some of the leaders clarified that they do not necessarily associate all which is bad with white and all which is good with indigenous. For some players, it was simply a way of noting the differences in values and interests of the social groups and their relationships with territory, which they referred to as "each person`s way of thinking". Nevertheless, this distinction allowed in turn for distinguishing that which for them is indigenous territorial management and that which is exploitation. In the words of Octavio Falcón, traditional authority of the Cocama *cabildo*, "I understand this game in two way of thinking: one way of thinking from the culture, expressed throughout history, and [the other being] the vision of today which is science and its institutions, with the *peso* sign (…)".

For indigenous leader Alci Gabino, an agreement reflects the thought of those who make it, shaping the type of game strategy, which he expresses as, "Each person will direct [the agreement] toward their supposed reality (…). This game explores the thought that exists among everyone, according to who plays it". The reference to white and indigenous "thought" was accepted as a simple distinction, which the group nevertheless qualified as "a way of saying things" in an intercultural social environment. Furthermore, Berlandi Gabino clarified that "when we speak of the Indian and the white person (…), we have to specify not all whites, but rather those with an industrial or business mentality".

Final observations regarding implementation of the game

Using the anthropological approach of games helped to discern the motives and principles underlying land management related decisions of the indigenous people of the Colombian Amazon given the possibility of participating in extractive economies. Territorial management presented dilemmas for the players upon confronting decisions that could have ethically questionable outcomes. The fact that the game allowed players to jointly establish rules regarding resource use led them to interpret situations using metaphors evoking ways of being and feeling with respect to the territory. Furthermore, creating a space to explore different types of agreements allowed for exploring possible responses to these dilemmas and illustrating the motivations and rationales that explain why players may adopt a critical ethical position and defy strategies of "success" and "accumulation" imposed by extractive economies.

It is important to recognize limitations as well as the potential for use of board games as a research tool in indigenous contexts. In our experience, despite the fact that "Managing the Territory" allows players to establish rules regarding resource use, the interpretations of the ethnography are limited, and more precise knowledge is needed regarding indigenous territorial management, for example in relation to ecological cycles, as well as cultural restrictions regarding specific resources. While such specialized knowledge may be investigated using other types of techniques, adaptations of the game may provide greater detail regarding territorial management.

Finally, given the benefits of innovating research with fun performative research tools, this study invites researchers to transcend traditional participatory methods, developing scenarios using techniques and procedures that stimulate creativity and inspire learning. The possibility of acting in a scenario and sharing thoughts during a game may allow for exploring dilemmas and the consequences of different possible decisions and courses of action. Designers and players of serious board games should maintain an open attitude toward plural, even contradictory experiences. The objective of carrying out research with such games is not only to standardize the criteria for constructing models and to observe players` behaviour - such as whether the game content accurately represents the player's decisions in a given context, but also to contribute to developing games which create encounters which allow players to expand their inquisitiveness, explore their emotions and thoughts, and engage in mutual learning in order to apply the resulting knowledge in their contexts.

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Notes

[1] In the 1960s, Garret Hardin predicted the tragedy of the commons due to imminent depletion of resources not regulated through property rights.

[2] The theory of neoinstitucionalism focuses on the economic and sociological study of institutions, defining the behaviour of actors in relation to their social context.

[3] A "life plan" is a concept adopted by indigenous organizations as well as government agencies to refer to indigenous communities` development plans, intended to promote recognition of indigenous governance. In contrast to conventional development plans, they provide indigenous peoples with greater autonomy and power in negotiating with government agencies.

[4] We understand an extractive economy to be that which is dependent on harvesting or extracting a natural resource on a large scale, principally for non-local sale.

[5] In Colombia, a resguardo is a collective landholding belonging to one or more indigenous communities, governed by indigenous authorities according to rulings by traditional courts as well as national laws.

[6] In the Amazon, the term indigenous territorial management refers to making decisions regarding land use based on customary norms and traditional knowledge.

[7] Non-cooperative games may have two types of results: those in which gains by one or more players necessarily involve net losses by other players (win-lose), and those in which all players win as a result of the interactions (win-win). These are distinguished from competitive games, in which the only possibility is win-lose.

[8] "Non-municipalized areas" are those with no legal recognition according to the 1991 Constitution.

[9] AATI are civil society organizations which represent indigenous communities and their cabildos (councils) and administer indigenous resguardos. Since 2001, AATI

belong to the Permanent Indigenous Coordinating Council and work with authorities of the Amazonas Department (territorial demarcation roughly equivalent to a state) and government agencies making up the National System of Environmental Institutes.

[10] Designed by María Paula Baquero (second author).

[11] With the purpose of simplifying the game, all fish, game, and products of the chagra used to feed the family were standardized into units.

[12] Traditional spaces for family and communal use by the indigenous peoples of the Brazilian, Colombian, and Peruvian Amazon

[13] In the Colombian Amazonia, a "cabildo" is a local indigenous governance body or council that represents and governs the indigenous communities of the region.

[14] In the Amazon, salado refers to an area where some animals seek natural salts.

[15] Barbasco, whose active principle is rotenona, is traditionally used for fishing by some indigenous peoples of the Amazon, typically killing fish in large numbers.

[16] During application of the “Game of Chagras” (De La Cruz et al., 2020, p. 38), sufficiency emerged as a principle that mediates economic, social, and cultural exchanges, for example when chagras are planted in collective workdays, called mingas.

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