

Economies of honey at the agrarian commodity frontier

How diverse economies emerge from the
territorial fractures in the Bolivian Chiquitanía

Stefan Ortiz-Przychodzka



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Bolivian Chiquitanía

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To my wonderful family. To Natasha, Rafael,
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love and life prevail.

A los líderes sociales de América Latina, cuya
fortaleza y dignidad sostiene a comunidades enteras,
humanas y no humanas.

Table of Contents

Acknowledgments.....	I
Abstract.....	III
Resumen.....	V
Zusammenfassung.....	VII
List of publications and manuscripts	X
Additional publications.....	XI
Preface	XII
Chapter 1. General framework. Economies of honey at the agrarian commodity frontier: How diverse economies emerge from the territorial fractures in the Bolivian Chiquitanía.....	1
1. Introduction.....	2
2. Research questions.....	5
3. Theories and concepts.....	6
3.1. A relational approach to assess diverse economies.....	6
3.2. Diverse economies	7
3.3. Assemblages	9
3.4. Usefulness, instrumental and relational values	10
3.5. Agrarian extractivism and territorial reconfigurations.....	13
4. Research approach	15
4.1. Overview	15
4.2. Epistemological and ontological considerations.....	16
4.3. Methodological aspects.....	17
4.4. Methods.....	19
4.5. Regional context and case studies.....	23
5. Results.....	31
5.1. Diverse economies from a relational and more-than-human perspective	33
5.2. Manifestations of more-than-human agencies in everyday economic lives	34
5.3. Narratives of people's experiences of commodification.....	36
5.4. How honey economies emerge and shape territorial relations.....	37
6. Discussion.....	39
6.1. A synthesis: key contributions to understanding diverse economies at agrarian commodity frontiers.....	39

6.2. A political ecology and ontology of diverse economies and territorial transformations	43
7. Conclusions.....	45
References.....	46
Chapter 2. Rethinking economic practices and values as assemblages of more-than-human relations	57
Chapter 3. More-than-human synchronizations expose the fractures of the agrarian commodity frontier in the Bolivian Chiquitanía	67
Chapter 4. Can non-utilitarian economies help to remake meaningful territorial relations at the heart of agrarian extractivism in Bolivia?	97
Chapter 5. Honey economies weave meaningful territorial relations in Bolivia's Chiquitanía.....	127
Appendix.....	150
1. Author declaration	150
2. Ethics review committee approval	151
3. Supplementary materials for Chapter 2.....	153
4. Supplementary materials for Chapters 3 and 4	159
5. Supplementary materials for Chapter 5.....	161
6. Elements of participatory action-research and transdisciplinarity	166
7. Author contribution statement	174

List of figures and tables

Chapter 1

Figure 1: Honey collection in a forest patch in 16 de marzo Cordillera.	1
Figure 2: Chiquitano dry forest in the Chiquitanía.	23
Figure 3: Frontier expansion for cattle ranching.....	24
Figure 4: Recent deforestation in the Chiquitanía.....	25
Figure 5: Map locating the study area in Bolivia's Eastern lowlands.....	26
Figure 6: Map of the Chiquitano dry forest ecosystem in Santa Cruz and locations of the interviews.	26
Figure 7: Map locating the case studies at the agrarian commodity frontier.	27
Figure 8: Soybean field in 16 de marzo Cordillera.....	29
Figure 9: Cattle ranch and dry forest in San Juan.	30
Figure 10: Thesis overview with chapter's objectives and main contributions.	32
Figure 11: Representation of diverse economies as assemblages of more-than-human relations	34
Figure 12: Representation of diverse economies as synchronizations of meaningful instrumental relations at the agrarian commodity frontier.....	41
Figure 13: Beekeeping in a forest patch in Cordillera.	57
Figure 14: Native stingless bees (<i>Tetragonisca fiebrigi</i>) in their boxed hive located in a patio in San Juan	67
Figure 15: On the way to collect honey in a chaco in San Juan de Lomerío	97
Figure 16: Aftermath of honey collection in a chaco in San Juan de Lomerío.....	127
Table 1: Overview of the research questions and the chapters of this thesis	16
Table 2: Number of interviews during the two fieldworks for data collection	20
Table 3: Key conceptual elements of diverse economies	40

Chapter 2

Figure 1: Conceptualization of diverse economies as assemblages.	60
Figure 2: Diverse economies of human and bees assembling in the Bolivian Chiquitanía	62

Chapter 3

Figure 1: Location of Cordillera 16 de marzo, San Juan de Lomerío, Chiquitanía, city of Santa Cruz de la Sierra, Department of Santa Cruz.....	74
--	----

Table 1: Number of interviews at the regional and community levels per type of actor.....	75
---	----

Chapter 4

Map 1: Location of Cordillera 16 de marzo, San Juan de Lomerío, Chiquitanía, city of Santa Cruz de la Sierra, Department of Santa Cruz.	104
--	-----

Table 1: Non-utilitarian values unveiled in narratives of territorial reconfigurations.	119
--	-----

Figure 1: Multiple values involved in territorial reconfigurations leading to agrarian extractivism and to potential non-extractivist alternatives.	120
--	-----

Chapter 5

Map 1: Location of the two communities.	133
--	-----

Table 1: Number of interviews per community.	134
---	-----

Table 2: Examples of meaningful instrumental relations, more-than-human agencies, and blending values underpinning honey economies.	137
--	-----

Maps 2 and 3: Location of human-bees encounters.....	141
--	-----

Figure 1: Interacting values that constitute meaningful instrumental relations.	144
--	-----

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Abstract

At agrarian commodity frontiers, multiple life forms intersect and produce different arrangements amidst the tensions of converging social-ecological crises. These crises are linked to rapid land-use changes due to the deforestation of highly biodiverse areas, the overexploitation of natural resources, and the expansion of monocrops of agricultural commodities. The literatures on agrarian change and extractivism show that the expansion of agrarian commodity frontiers often deteriorates Indigenous people's diversified livelihoods, due to their close interdependence with biodiversity. Most research agrees that agrarian extractivism, supporting frontier expansion and led by powerful political and economic actors, relies on commodifying land and the extracted materials and energy to place them in globalized markets and processes of capital accumulation. Moreover, extractivism exploits and forces many local livelihoods to adopt its economic logics, usually spreading socioeconomic precariousness and homogenization. Yet, some studies have shown that diverse relations persist and support the inter-related lives of human and non-human beings amidst the extractivist devastation. In particular, a general focus on the material conditions of economic reconfigurations at the frontiers risks overlooking the diversity of economic practices and values and their immaterial manifestations. It is key to acknowledge people's experiences of different affections, reactions, and frictions involving their relations among humans and with non-humans, which do not simply wait to be used as resources for extractivism and capital accumulation.

To understand the diversity of economies unfolding at agrarian commodity frontiers, there is a need to assess: (1) how economic values and practices go beyond commodification and can involve human and non-human agencies (i.e. more-than-human agencies); (2) how diverse economies emerge in adverse contexts of extractivism and commodification; (3) how everyday experiences and practices can shape territorial and place relations. My research addresses these needs by drawing on the literature on diverse economies, more-than-human assemblages, and agrarian extractivism. In this thesis, I investigate people's experiences of more-than-human entanglements in their everyday economic lives at Bolivia's most active agrarian commodity frontier, the Chiquitanía. I posit that economic life goes well beyond the spheres of commodity production and monetarized market relations.

My research seeks to understand to what extent more-than-human entanglements constitute diverse economic practices and values, and shape place-based territorial relations. To address this question, I combined qualitative methods allowing people to tell and express their experiences and values, including semi-structured and walking interviews, participatory mapping, and participant observation. This thesis consists of five chapters. In Chapter 1, I frame and summarize the central aspects of my research, including the theoretical and methodological frameworks, the results and discussions. In Chapter 2, I present a conceptual perspective in which I define diverse economies as assemblages through which

humans and non-humans co-constitute and negotiate the provisioning practices and abilities that support their interrelated livelihoods. I explain how economies can act on places through concrete practices underpinned by blends of instrumental and relational values, and places can act on economies through more-than-human agencies (**Paper 1**). In Chapter 3, I describe how people experience their economic lives as a mix of spatio-temporal synchronizations shaped by extractivist dynamics and more-than-human trajectories illustrated by honey-economies (**Paper 2**). In Chapter 4, I analyze how multiple non-utilitarian values guide diverse economies through non-extractivist logics despite the weakening of meaningful territorial relations due to commodification (**Paper 3**). In Chapter 5, I focus on the intimate encounters of honey economies to assess how they entail meaningful instrumental relations and more-than-human agencies that can shape territorial relations (**Paper 4**).

My findings show that, while dominant, agrarian extractivism is not the only economy shaping territorial relations at the frontier. Extractivism produces deep territorial fractures, along which diverse economies emerge. The case of honey shows the centrality of everyday human and non-human encounters that form meaningful relations guided by non-utilitarian values (instrumental and relational). Such encounters occur across many places (e.g. forests, croplands, and villages) where honey-economies intersect with other economies, and with non-human trajectories. Diverse economies are fundamental for Indigenous people, because they support their livelihoods and relations to non-human beings. This case illustrates how, through assemblages, diverse economies can shape non-utilitarian territorial relations, which partially escape the homogenizing logics of commodification and extractivism.

These findings make a case for thinking about diverse economies as ethical and political actions influenced by more-than-human relations. They are ethical, because by involving interconnected assemblages with multiple agencies, economic practices and values involve the questions of which relations are important to people and which transformations are considered acceptable in light of their impact on life-trajectories. They are political, because meaningful instrumental relations are difficult to replace and to commodify, and therefore frontier dynamics trigger the question of who has the right and the power to decide on economic and territorial transformations. Frontiers become disputed when commodification reinforces the agency of the few dominant agents of agrarian extractivism, while diverse economies rely on the distributed agency of more-than-human assemblages.

Overall, my research provides a kaleidoscopic picture of frontier dynamics, in which diverse economies unfold as a reminder of both the limits of commodification and the complex webs of relations and agencies that constitute economic lives. Further research is needed to understand the politics of assembling diverse economies, and to what extent they can promote more responsible territorial relations that acknowledge the interdependencies between human and non-human livelihoods.

Keywords: assemblages, more-than-human agency, territorial transformations, agrarian extractivism, commodification, non-utilitarian values.

Resumen

En las fronteras agrarias de commodities, múltiples formas de vida se entrecruzan y producen diferentes configuraciones en medio de las tensiones de las crisis socioecológicas convergentes. Estas crisis están relacionadas con los rápidos cambios en el uso de la tierra debido a la deforestación de zonas con gran biodiversidad, la sobreexplotación de los recursos naturales y la expansión de los monocultivos de productos agrícolas. La literatura sobre el cambio agrario y los valores socioambientales muestra que la expansión de las fronteras agrarias de commodities a menudo deteriora los medios de vida diversificados de los pueblos indígenas, debido a su estrecha interdependencia con la biodiversidad. La mayoría de las investigaciones coinciden en que el extractivismo agrario, que sustenta la expansión de las fronteras y está liderado por actores políticos y económicos poderosos, se basa en la mercantilización de la tierra y de los materiales y la energía extraídos para colocarlos en los mercados globalizados y en los procesos de acumulación de capital. Además, el extractivismo explota y obliga a los medios de vida locales a adoptar dinámicas extractivistas, lo que suele propagar la precariedad socioeconómica. Sin embargo, algunos estudios han demostrado que persisten relaciones diversas que sustentan la vida interrelacionada de seres humanos y no humanos en medio de la devastación extractivista. El enfoque general en las condiciones materiales de las reconfiguraciones económicas en las fronteras corre el riesgo de pasar por alto la diversidad de prácticas y valores económicos y sus manifestaciones inmateriales. En particular, es fundamental reconocer las experiencias de las personas en cuanto a los diferentes afectos, reacciones y fricciones que implican sus relaciones entre humanos y con los no humanos, que no se limitan a esperar a ser utilizados como recursos para el extractivismo y la acumulación de capital.

Para comprender la diversidad de economías que se desarrollan en las fronteras agrarias de commodities, es necesario evaluar: (1) cómo los valores y las prácticas económicas más allá de la commodificación involucran a agentes más allá de lo humano (es decir, agentes más que humanos); (2) cómo surgen economías diversas en contextos adversos de extractivismo y commodificación; (3) cómo las experiencias y prácticas cotidianas pueden dar forma a las relaciones territoriales y de lugar. Mi investigación aborda estas necesidades basándose en la bibliografía sobre economías diversas, ensamblajes más que humanos y extractivismo agrario. En esta tesis, investigo las experiencias de las personas con los ensamblajes más que humanos en su vida económica cotidiana en la frontera agrícola más activa de Bolivia, la Chiquitanía. Considero que la vida económica va mucho más allá de las esferas de la producción de commodities y de las relaciones monetarias de mercado.

Mi investigación busca comprender en qué medida los ensamblajes más allá de lo humano constituyen prácticas y valores económicos diversos y configuran las relaciones territoriales basadas en lugar. Para abordar esta cuestión, he combinado métodos cualitativos que permiten a las personas representar sus

experiencias y valores, incluyendo entrevistas semiestructuradas y recorridos, mapeo participativo y observación participante. Esta tesis consta de cinco capítulos. En el capítulo 1, marco y resumo los aspectos centrales, incluyendo los marcos teóricos y metodológicos, los resultados y las discusiones. En el capítulo 2, presento una perspectiva conceptual en la que defino las economías diversas como ensamblajes mediante los cuales los seres humanos y los no humanos co-constituyen y negocian las prácticas y capacidades de aprovisionamiento que sustentan sus medios de vida interrelacionados. Explico cómo las economías pueden actuar sobre los lugares a través de prácticas concretas sustentadas por mezclas de valores instrumentales y relacionales, y cómo los lugares pueden actuar sobre las economías a través de agencias más que humanas (Artículo 1). En el capítulo 3, describo cómo las personas experimentan sus vidas económicas como una mezcla de sincronizaciones espacio-temporales moldeadas por dinámicas extractivistas y trayectorias más que humanas ilustradas por las economías de la miel (Artículo 2). En el capítulo 4, analizo cómo, a pesar del debilitamiento de las relaciones territoriales significativas debido a la commodificación, múltiples valores no utilitarios guían diversas economías fuera de la lógica extractivista (artículo 3). En el capítulo 5, me centro en los encuentros íntimos de las economías de la miel para evaluar cómo implican relaciones instrumentales significativas y agencias más que humanas que pueden configurar las relaciones territoriales (artículo 4).

Mis hallazgos muestran que, aunque dominante, el extractivismo agrario no es la única economía que configura las relaciones territoriales en la frontera. El extractivismo produce profundas fracturas territoriales, a lo largo de las cuales surgen diversas economías que cuestionan la hegemonía del extractivismo. El caso de la miel muestra la centralidad de los encuentros cotidianos entre humanos y no humanos que forman relaciones significativas guiadas por valores no utilitarios (instrumentales y relacionales). Estos encuentros se producen en muchos lugares (por ejemplo, bosques, tierras de cultivo y pueblos) donde las economías de la miel se cruzan con otras economías y con trayectorias no humanas que se influyen mutuamente. Las economías diversas son fundamentales para los pueblos indígenas, ya que sustentan sus medios de vida y sus relaciones con los seres no humanos. Este caso ilustra cómo, a través de ensamblajes interconectados, las economías diversas configuran relaciones territoriales no utilitarias, que escapan en parte a la lógica homogeneizadora de la mercantilización y el extractivismo.

Estos hallazgos abogan por considerar las economías diversas como acciones éticas y políticas influenciadas por relaciones más allá de lo humano. Son éticas porque, al involucrar ensamblajes interconectados con múltiples agencias, las prácticas y los valores económicos son una cuestión de qué relaciones son importantes para las personas y qué transformaciones se consideran aceptables a la luz de su impacto en múltiples trayectorias de vida. Son políticas porque las relaciones instrumentales significativas son difíciles de sustituir y mercantilizar y, por lo tanto, las dinámicas fronterizas plantean la cuestión de quién tiene el derecho y el poder de decidir sobre las transformaciones económicas y territoriales.

Las fronteras se disputan cuando la mercantilización refuerza la agencia de los pocos agentes dominantes del extractivismo agrario, mientras que las economías diversas se basan en la agencia distribuida de ensamblajes más allá de lo humano.

En general, mi investigación ofrece una imagen caleidoscópica de las dinámicas fronterizas, en las que se desarrollan diversas economías que nos recuerdan los límites de la commodificación y las complejas redes de relaciones y agencias que constituyen la vida económica. Se necesita más investigación para comprender la política de ensamblaje de economías diversas y en qué medida pueden promover relaciones territoriales más responsables que reconozcan las interdependencias entre los medios de vida humanos y no humanos.

Palabras clave: ensamblajes, agencia más allá de lo humano, transformaciones territoriales, extractivismo agrario, mercantilización, valores no utilitarios.

Zusammenfassung

An den Grenzen der Agrarrohstoffproduktion kreuzen sich verschiedene Lebensformen und entstehen unterschiedliche Konstellationen inmitten der Spannungen konvergierender sozial-ökologischer Krisen. Diese Krisen stehen im Zusammenhang mit raschen Landnutzungsänderungen aufgrund der Abholzung artenreicher Gebiete, der Übernutzung natürlicher Ressourcen und der Ausweitung von Monokulturen für Agrarrohstoffe. Die Literatur zu agrarem Wandel und Umweltwerten zeigt, dass die Ausweitung agrarer Rohstofffronten aufgrund ihrer engen Verflechtung mit der Biodiversität häufig zu einer Verschlechterung der vielfältigen Lebensgrundlagen indigener Völker führt. Die meisten Forschungsarbeiten stimmen darin überein, dass der Agrarextraktivismus, der die Ausweitung der Fronten unterstützt und von mächtigen politischen und wirtschaftlichen Akteuren vorangetrieben wird, auf der Kommodifizierung von Land und den gewonnenen Rohstoffen und Energien beruht, um diese auf globalisierten Märkten zu verkaufen und Kapital zu akkumulieren. Darüber hinaus beutet der Extraktivismus die lokalen Lebensgrundlagen aus und zwingt sie, sich der extraktivistischen Dynamik anzupassen, was in der Regel zu sozioökonomischer Prekarität führt. Einige Studien haben jedoch gezeigt, dass vielfältige Beziehungen bestehen bleiben und das miteinander verflochtene Leben von Menschen und Nicht-Menschen inmitten der extraktivistischen Zerstörung unterstützen. Die allgemeine Fokussierung auf die materiellen Bedingungen wirtschaftlicher Umgestaltungen an den Grenzen birgt die Gefahr, dass die Vielfalt wirtschaftlicher Praktiken und Werte sowie deren immaterielle Ausprägungen übersehen werden. Insbesondere ist es wichtig, die Erfahrungen der Menschen mit unterschiedlichen Affekten, Reaktionen und Reibungen in ihren Beziehungen untereinander und mit Nicht-Menschen anzuerkennen, die nicht einfach darauf warten, als Ressourcen für Extraktivismus und Kapitalakkumulation genutzt zu werden.

Um die Vielfalt der Ökonomien zu verstehen, die sich an den Grenzen der Agrarrohstoffproduktion entfalten, muss Folgendes untersucht werden: (1) Wie beziehen wirtschaftliche Werte und Praktiken jenseits der Kommodifizierung Akteure jenseits des Menschlichen (d. h. mehr als menschliche Akteure) mit ein? (2) Wie entstehen vielfältige Ökonomien in einem ungünstigen Kontext von Rohstoffabbau und Kommodifizierung? (3) Wie können alltägliche Erfahrungen und Praktiken territoriale und räumliche Beziehungen prägen? Meine Forschung befasst sich mit diesen Lücken, indem sie auf die Literatur zu vielfältigen Ökonomien, mehr-als-menschlichen Assemblagen und agrarem Rohstoffabbau zurückgreift. In dieser Arbeit untersuche ich die Erfahrungen von Menschen mit mehr-als-menschlichen Verflechtungen in ihrem alltäglichen Wirtschaftsleben an der aktivsten agrarischen Rohstoffgrenze Boliviens, der Chiquitania. Ich gehe davon aus, dass das Wirtschaftsleben weit über die Sphären der Rohstoffproduktion und monetarisierten Marktbeziehungen hinausgeht.

Meine Forschung versucht zu verstehen, inwieweit nicht-menschliche Verflechtungen vielfältige wirtschaftliche Praktiken und Werte prägen und ortsbezogene territoriale Beziehungen gestalten. Um diese Frage zu beantworten, habe ich qualitative Methoden kombiniert, die es den Menschen ermöglichen, ihre Erfahrungen und Werte darzustellen, darunter halbstrukturierte Interviews und Spaziergespräche, partizipatives Mapping und teilnehmende Beobachtung. Diese Arbeit besteht aus fünf Kapiteln. In Kapitel 1 skizziere und fasse ich die zentralen Aspekte zusammen, darunter die theoretischen und methodischen Rahmenbedingungen, die Ergebnisse und Diskussionen. In Kapitel 2 stelle ich eine konzeptionelle Perspektive vor, in der ich vielfältige Ökonomien als Assemblagen definiere, durch die Menschen und Nicht-Menschen gemeinsam die Versorgungspraktiken und Fähigkeiten konstituieren und aushandeln, die ihre miteinander verbundenen Lebensgrundlagen sichern. Ich erkläre, wie Ökonomien durch konkrete Praktiken, die auf einer Mischung aus instrumentellen und relationalen Werten beruhen, auf Orte einwirken können und wie Orte durch mehr als menschliche Handlungsweisen auf Ökonomien einwirken können (Paper 1). In Kapitel 3 beschreibe ich, wie Menschen ihr Wirtschaftsleben als eine Mischung aus räumlich-zeitlichen Synchronisationen erleben, die durch extraktivistische Dynamiken und mehr als menschliche Trajektorien geprägt sind, die anhand von Honigökonomien veranschaulicht werden (Paper 2). In Kapitel 4 analysiere ich, wie trotz der Schwächung bedeutungsvoller territorialer Beziehungen durch die Kommodifizierung vielfältige nicht-utilitaristische Werte verschiedene Ökonomien außerhalb der extraktivistischen Logik leiten (Paper 3). In Kapitel 5 konzentriere ich mich auf die intimen Begegnungen in Honigwirtschaften, um zu beurteilen, wie sie bedeutungsvolle instrumentelle Beziehungen und mehr als menschliche Handlungsagenturen mit sich bringen, die territoriale Beziehungen prägen können (Paper 4).

Meine Ergebnisse zeigen, dass der vorherrschende agrarische Extraktivismus zwar dominant ist, aber nicht die einzige Wirtschaft ist, die territoriale Beziehungen an der Grenze prägt. Der Extraktivismus führt zu tiefen territorialen Brüchen, entlang derer vielfältige Ökonomien entstehen, die die Hegemonie

des Extraktivismus in Frage stellen. Der Fall des Honigs zeigt die zentrale Bedeutung alltäglicher Begegnungen zwischen Menschen und Nicht-Menschen, die sinnvolle Beziehungen bilden, die von nicht-utilitaristischen Werten (instrumentellen und relationalen) geleitet sind. Solche Begegnungen finden an vielen Orten statt (z. B. in Wäldern, Ackerland und Dörfern), wo Honigwirtschaften mit anderen Wirtschaften und mit nicht-menschlichen Entwicklungen in Wechselwirkung treten. Diverse Wirtschaften sind für indigene Völker von grundlegender Bedeutung, da sie ihre Lebensgrundlagen und ihre Beziehungen zu nicht-menschlichen Wesen sichern. Dieser Fall veranschaulicht, wie durch miteinander verbundene Assemblagen diverse Wirtschaften nicht-utilitaristische territoriale Beziehungen prägen, die sich teilweise der homogenisierenden Logik der Kommodifizierung und des Extraktivismus entziehen.

Diese Erkenntnisse sprechen dafür, vielfältige Wirtschaftssysteme als ethische und politische Handlungen zu betrachten, die von mehr als nur menschlichen Beziehungen beeinflusst werden. Sie sind ethisch, weil durch die Einbeziehung miteinander verbundener Assemblagen mit mehreren Akteuren wirtschaftliche Praktiken und Werte eine Frage dessen sind, welche Beziehungen für die Menschen wichtig sind und welche Veränderungen angesichts ihrer Auswirkungen auf verschiedene Lebenswege als akzeptabel angesehen werden. Sie sind politisch, weil sinnvolle instrumentelle Beziehungen schwer zu ersetzen und zu kommerzialisieren sind und daher Grenzkonflikte die Frage aufwerfen, wer das Recht und die Macht hat, über wirtschaftliche und territoriale Veränderungen zu entscheiden. Grenzen werden umkämpft, wenn die Kommerzialisierung die Handlungsmacht der wenigen dominanten Akteure des agrarischen Extraktivismus stärkt, während vielfältige Ökonomien auf die verteilte Handlungsmacht nicht-menschlicher Assemblagen beruhen.

Insgesamt liefert meine Forschung ein kaleidoskopisches Bild der Grenzkonflikte, in denen sich vielfältige Ökonomien entfalten und uns an die Grenzen der Kommodifizierung erinnern, sowie der komplexen Beziehungsgeflechte und Handlungsmöglichkeiten, die das wirtschaftliche Leben ausmachen. Weitere Forschungen sind notwendig, um die Politik der Zusammenführung vielfältiger Ökonomien zu verstehen und um herauszufinden, inwieweit sie verantwortungsvollere territoriale Beziehungen fördern können, die die gegenseitigen Abhängigkeiten zwischen menschlichen und nicht-menschlichen Lebensgrundlagen anerkennen.

Schlüsselwörter: Assemblagen, mehr als menschliche Handlungsfähigkeit, territoriale Transformationen, agrarischer Extraktivismus, Kommodifizierung, nicht-utilitaristische Werte.

List of publications and manuscripts

Chapter 2

Ortiz-Przychodzka, S, Benavides-Frías, C, Raymond, C. M, Díaz-Reviriego, I, Hanspach, J. (2023). Rethinking economic practices and values as assemblages of more-than-human relations. *Ecological Economics* 211 (107866). Doi: 10.1016/j.ecolecon.2023.107866

Chapter 3

Ortiz-Przychodzka, S, Keleman-Saxena, A, Benavides-Frías, C, Díaz-Reviriego, I, Hanspach, J (submitted to the *Journal of Rural Studies*, reviews received in April 2025). More-than-human synchronizations expose the fractures of the agrarian commodity frontier in the Bolivian Chiquitanía.

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10.1016/j.jrurstud.2025.103846

Chapter 4

Ortiz-Przychodzka, S, Díaz-Reviriego, I, Hanspach, J (submitted to *Agriculture and Human Values* in April 2025, under review). Can non-utilitarian economies help to remake meaningful territorial relations at the heart of agrarian extractivism in Bolivia?

Chapter 5

Ortiz-Przychodzka, S, Hanspach, J (submitted to *People and Nature* in May 2025, under review). Honey economies weave meaningful instrumental relations in Bolivia's Chiquitanía.

Additional publications

- Allen, K, **Ortiz-Przychozka, S**, Coelho-Junior, M, Herrmann, T, Atchley, M, Benra, F, Chavez, V, Darwin, E, McCabe J, Nahuelhual, L, Horiye Rodriguez, C, Muraca, B. (2024). Grassroots relational approaches to agricultural transformation in Latin America. *Ecosystems and People* 20 (1). Doi: 10.1080/26395916.2024.2390470
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Preface

“All day long, their thoughts were occupied only by the word of merchandise”. (...) “The breath of our life is worth more than that!” Davi Kopenawa (2014)²

When I first arrived in the city of Santa Cruz de la Sierra, in Bolivia, I felt familiar with the landscape, food, and people. Many aspects reminded me of my country’s lowlands, in Colombia, such as the fried food, the corn and cassava breads and empanadas, the fruits, the sugary drinks, the warm and humid air, the giant trees and palms, the noisy motorcycles and colorful minibuses. I quickly felt at home, walking through the vibrant street life and breathing the air of the tropics. However, something particular caught my attention: the dominant presence of farming supply stores promoting machinery, pesticides, fertilizers, and hybrid seeds, and the huge billboards offering vast and fertile lands for sale. Santa Cruz appeared to me as an agroindustrial territory, while its landscapes welcomed me to one of Latin America’s most active agrarian frontiers.

Previous conversations with Bolivian researchers had already revealed a complex reality in the lowlands, marked by a devastating farming model based on deforestation, cattle ranching, and monocrop expansion on biodiverse lands. Such a reality quickly materialized during my first trip to the Chiquitanía region with members of Fundación Tierra, one of the main Bolivian NGOs working on land conflicts and Indigenous land rights. During many hours of road travel, I observed landscape changes, following the expansion of the agrarian frontier. As we left the large soybean monocultures behind, the marks of the most recent deforestation appeared, until we reached the areas where the dry forest still dominates the landscape, where many Indigenous people live. On each trip back to the Chiquitanía, I witnessed the frontier’s advance over the dry forest and other ecosystems. It became clear to me that any research about diverse economies in the Chiquitanía had to be grounded in this reality of frontier expansion.

My initial ideas to study the diversity of economic lives in Indigenous territories were based on my previous work in rural areas in my home country, combined with the curiosity sparked by Bolivia’s unique trajectory of political and socio-economic change. However, as I immersed myself in the Chiquitanía, I realized that I had to silence my previous notions of how Indigenous economies work and focus on listening to people’s stories about how they make a living in such a rapidly changing place. While I had worked before on agrarian frontiers, this was different due to the magnitude of deforestation and territorial reconfigurations. It was hard for me to comprehend how a country with a unique historical and revolutionary political and economic process of inclusion of Indigenous worldviews could harbor

² Albert, B., Kopenawa, D. (2014). *La chute du ciel*. Terre Humaine Pocket.

so much social-ecological devastation. I understood that my research could not encompass this complexity, but it had to be situated within it. I thought I could use my research to analyze and to stress the experiences of those who live every day the reconfigurations of their livelihoods and territories at the agrarian frontier amidst the pressures of an apparently unstoppable devastation.

With this research, I wanted to get closer to people's lived experiences and everyday realities. I embarked on this journey through parts of the Chiquitanía, aware of the power of research to notice and connect overlooked aspects of how economic lives and territories are shaped. I was motivated by a will to understand and document experiences that are often silenced by the dominant economic narratives of agricultural development and frontier expansion. With this in mind, I analyzed people's experiences and narratives of their economic lives. In particular, I followed the case of honey economies to illustrate how non-humans participate in the constitution of diverse economies, within more-than-human entanglements that reflect dynamic territorial relations at the Chiquitanía's agrarian commodity frontier. Through this thesis, I provide a situated perspective of how economic life unfolds in Indigenous territories amid the tensions produced by larger processes of economic homogenization.

Chapter 1. General framework. Economies of honey at the agrarian commodity frontier: How diverse economies emerge from the territorial fractures in the Bolivian Chiquitanía.



Figure 1: Honey collection in a forest patch in 16 de marzo Cordillera.

Author: Stefan Ortiz-Przychodzka, Nov. 2021

1. Introduction

Life at agrarian commodity frontiers seems caught up in the frenetic rhythms of extractivism. Territories made of diverse life-forms are often overexploited and depleted, and large agricultural monocrops and cattle ranches spread out of control (Levy et al., 2024; Serje, 2024). Agrarian commodity frontiers are spaces where commodity agriculture expands, generally in the form of large-scale monocultures (del Giorgio et al., 2022; Volpato et al., 2022; Zorzoli, 2025). The sacrifice of vast territories to satisfy the need for resource extraction and capital accumulation seems unstoppable, but the reality is more nuanced. Beneath the visible devastation lie interconnected, human and non-human life trajectories that do not passively give way to agrarian extractivism (Mingorría, 2021; Moore, 2015; Tsing, 2015). In this thesis, I analyze different manifestations of such unruly relations (Tsing, 2015) that constitute diverse economic livelihoods at the agrarian commodity frontier (hereafter, “frontiers”) in Bolivia.

Frontiers are generally portrayed either as sites of multiple crises or as lands of opportunities. Several studies have described the magnitude of the crises afflicting frontiers worldwide, including massive deforestation of biodiverse areas, water depletion, and extended wildfires (le Polain de Waroux et al., 2018; Meyfroidt et al., 2024; Romero-Muñoz et al., 2019; Segarra et al., 2024). Land-use change is a key characteristic of frontier dynamics (Meyfroidt et al., 2024), especially the conversion of forests and wetlands into cropland for agricultural commodities or pastures for livestock. In addition, land speculation to capture rent is a critical driver of land-use change and land-grabbing (Borras & Franco, 2024; le Polain de Waroux et al., 2018), and frequently involves the dispossession of local communities, making their livelihoods more vulnerable and dependent on extractivist logics (Veltmeyer & Ezquerro-Cañete, 2023). Many frontier dynamics affect Indigenous people’s livelihoods, which largely depend on the fate of the threatened ecosystems. Such descriptions of multiple social-ecological crises contrast with the enthusiastic narratives by governments and agribusinesses interested in promoting frontier expansion. They recurrently represent frontiers as empty or lawless spaces with devalued social structures, or areas to colonize that are full of natural resources, requiring development, modernization and market integration (Borras & Franco, 2024; Serje, 2024). When considering the needs of local populations, narratives of frontier-expansion promise economic prosperity and job creation with commodity-entrepreneurship as the main success model (Castañón Ballivián, 2024; Li, 2014). Many farmers are drawn in, encouraged to adopt monocrop agriculture and to expand their farming areas, but the promises of prosperity are hardly ever fulfilled, and smallholder farmers’ engagement with frontier dynamics is usually more complicated (Castañón Ballivián, 2024; Li, 2023a). As several studies have shown, frontier dynamics often exacerbate the economic precariousness of local populations and shatter their social, economic, and territorial fabrics (Cabral et al., 2023; Kröger, 2021; Li, 2014; Serje, 2024).

Research on agrarian commodity frontiers has discussed and evidenced the alliances of economic and political interests that promote an extractivist expansion across global, national, and regional scales. The large agricultural projects that accompany this expansion tend to view communities, crops, land, and ecosystems as cheap and nearly disposable commodities that are useful only as long as they bring profits (Borras et al., 2024; McKay, 2018; Tsing, 2015). For example, Borras et al. (2016) have described the role of “flexcrops”, or export-oriented agricultural commodities that reduce the risks of investment due to their uses as animal feed, food ingredients, energy sources, or input for cosmetics (e.g. soybeans, sorghum, palm oil). For governments, such commodities provide fiscal revenue to finance their policy priorities, although some research has shown that tax collection is limited and subsidies and credits end up benefiting private agribusinesses (e.g., Cabral et al., 2023; Czaplicki Cabezas, 2024; Ioris, 2020; Oxfam, 2024). Moreover, profit expectations usually attract complex networks of actors moving within and across national borders to bet on land speculation, cattle, or commodity agriculture (Borras et al., 2016; le Polain de Waroux et al., 2018; Meyfroidt et al., 2024). Such land-rush (Borras & Franco, 2024) includes large players, such as soybean growers and Mennonite communities in South America (le Polain de Waroux et al., 2018), and smallholder farmers, or landless populations in search of work or income opportunities (Meyfroidt et al., 2024). The latter can get involved in debt-schemes, in which capital owners do not need to own land because they offer packs of inputs, seeds, or machinery to smallholders, in exchange for workforce and land-use rights. Smallholders often end up indebted if yields are insufficient (Castañón Ballivián, 2024; Colque et al., 2021). Such economic dynamics usually drive more frontier expansion, increasingly including forested lands, diverse ecosystems, and Indigenous territories (Meyfroidt et al., 2024).

Bolivia’s lowlands, and especially the Chiquitanía region, are a critical case of frontier expansion, as I explain in chapters 3 and 4 (see the description of the context and case studies below). Bolivia’s massive deforestation and wildfires (Czaplicki-Cabezas, 2023; He et al., 2025; Maillard et al., 2024) are manifestations of a systemic connection between economic export-oriented policies, agribusiness, commodity agriculture, and social-ecological crises typical of agrarian extractivism (McKay, 2017; Veltmeyer & Ezquerro-Cañete, 2023). In this context, peasant and Indigenous agricultures are entangled with agrarian extractivism and frontier dynamics, involving the precarization of their economic lives and the false expectations created by dominant narratives of economic prosperity through commodity agriculture (Castañón Ballivián, 2024; Colque et al., 2021; de la Vega-Leinert, 2020; McKay & Colque, 2021). Studies assessing the territorial reconfigurations involving Indigenous and peasant economies reveal the wide dynamics of land-use change (le Polain de Waroux et al., 2016), and the productive, monetary, and political dimensions across scales (Colque et al., 2022; McKay, 2018b). However, the impact of frontier dynamics on diverse economies that are fundamental for Indigenous and peasant livelihoods in Bolivia’s lowlands is only marginally mentioned, such as non-timber forest uses, hunting, wild honey collection, and traditional medicine (Arrien, 2008; Nuñez del Prado, 2009; Rodríguez et al., 2023;

Townsend et al., 2021; Vides-Almonacid et al., 2007). The case of honey economies is particularly relevant at Bolivia's agrarian frontier (see section 4.5) because it connects multiple relations constituting Indigenous livelihoods, such as those between people, bees, honey, forests, and cropland (Adler et al., 2023; Crespo Cordero et al., 2024; Morón et al., 2023; Radding, 2001; Rodríguez et al., 2023; Townsend et al., 2021).

The existing literature on agrarian commodity frontiers provides an understanding of how their expansion entails social-ecological crises and commodification processes embedded in globalized market dynamics. It focuses mainly on the large land-use changes and impacts of the integration of local livelihoods and ecosystems to market dynamics. Several studies challenge and pluralize the narratives of frontiers as lands of opportunity, showing how extractivism and commodity agriculture, based on the prioritization of monetarized utilitarian values (i.e. commodification) over other forms of economic and social-ecological relations, render economic lives precarious and vulnerable (de la Vega-Leinert, 2020; McKay, 2018b). However, current research overlooks that, in addition to the negative impacts of extractivism and globalized markets, diverse economic arrangements can unfold with open-ended results, which challenge fixed frontier representations. Such arrangements involve agencies beyond the human (Tsing, 2015) and unfold at the margins of commodification, not completely absorbed by the logics of extractivism (Jasser et al., 2022). They can be better observed at the scale of people's everyday experiences. There, people's own descriptions of the relations that matter, and in which they participate, reveal motley economic realities that are difficult to grasp at wider scales of analysis (Jasser et al., 2022; Tsing, 2012). Failing to understand the emergence of diverse economies risks painting frontiers merely as linear and homogeneous processes inevitably heading towards agrarian extractivism.

To better understand diverse economies in the context of agrarian commodity frontiers, five main research needs should be addressed. First, the non-utilitarian values and practices guiding diverse economies (Gibson-Graham & Dombroski, 2020b) and their interplays with commodification need to be assessed. Second, most research analyzing economic relations at the frontiers still regards agency as something exclusive to humans and globalized markets, so it is important to integrate the perspective of more-than-human agencies to evidence the nuances of diverse economies (Miller, 2020). Third, instead of analyzing diverse economies in isolation from frontier dynamics, it is important to assess how they emerge in relation to commodification and agrarian extractivism (Li, 2014; Moore, 2015). Fourth, linking people's everyday experiences of their economic lives to wider territorial and place relations (Escobar, 2008; Jankowski et al., 2025; Ulloa, 2023) can provide insights about the capacity of diverse economies to shape frontiers. Finally, much research focuses on material aspects (e.g. income, productive systems, access to land and capital) while disregarding the cultural aspects (e.g. people's experiences, values, narratives) that can shape economic lives (Castañón Ballivián, 2024; A. Tsing, 2015; Zein-Elabdin, 2009). I address these gaps by focusing on people's experiences of diverse economic

arrangements reflecting more-than-human entanglements at one of the most active frontiers in South America, the Chiquitanía region in Bolivia.

This chapter is outlined as follows: In section 2, I describe my research objective and questions. In section 3, I present the main theories and concepts guiding my thesis. In section 4, I describe my research approach, including my methods and the case studies. In section 5, I summarize the main results and contributions of each chapter. In section 6, I discuss the overall contributions across all chapters, and in section 7, I provide closing remarks and an outlook for future research.

2. Research questions

This thesis aims at understanding to what extent more-than-human entanglements constitute diverse economies, and shape territorial relations at the Bolivian agrarian commodity frontier. For this, I focus on people's experiences and narratives of their everyday economic lives, which I illustrate through the case honey economies. I seek to contribute to the previously mentioned needs, by addressing four interconnected research questions. The first one is conceptual, and sets the framework for the other three, which are empirical:

- (1) How can diverse economies be conceptualized from a relational and more-than-human perspective?
(addressed in Chapter 2; which corresponds to paper 1)
- (2) What are the manifestations of more-than-human agencies in everyday economic lives?
(Chapters 3 and 5; manuscripts 2 and 4)
- (3) To what extent do non-utilitarian values guide economic practices and support meaningful relations? (Chapters 4 and 5; manuscripts 3 and 4)
- (4) How do assemblages trigger the emergence of diverse economies and shape territorial relations?
(Chapters 2 to 5; paper 1 and manuscripts 2 to 4)

By addressing these questions, I seek to contribute to the literature on agrarian commodity frontiers, through bridging multiple theoretical and conceptual frameworks, in particular diverse economies, assemblage thinking, and agrarian extractivism. I also use empirical evidence, based on qualitative methods, to describe how diverse economies unfold at the Bolivian frontier. Furthermore, I suggest elements of discussion to the literature on environmental values supported by my empirical work. In particular, I reflect on the interactions between different specific values (instrumental and relational) (IPBES, 2022) and their links to meaningful instrumental relations. Finally, I join the calls of several social scientists, human geographers and political ecologists, many of them feminists scholars, to take research beyond a mere “gazing at the environmental devastation” (Segarra et al., 2024, p. 22), and instead unveil diverse relations that are silenced and distorted by dominant utilitarian narratives (Gibson-Graham & Dombroski, 2020a). I do so by discussing how diverse economies reveal interrelated forms of existence

and meaningful relations that can still sustain “liveable worlds” (Tacchetti et al., 2022, p. 1383) amid the ruins (Tsing et al., 2024) of agrarian extractivism.

3. Theories and concepts

3.1. A relational approach to assess diverse economies

In this thesis, I employ a theoretical and conceptual framework to acknowledge the more-than-human relations³ that constitute diverse economies and the multiple agencies acting within those relations. This framework follows a relational approach to assess diverse economies through concepts that facilitate adopting a non-dualistic epistemological perspective of the relations between humans and the rest of nature (Muraca, 2016; West et al., 2024). I draw on theories and concepts through which humans, and therefore economies, are understood as part of nature (Miller, 2020). Thus, this framework rejects the hierarchical “hyperseparation” between humans, which are endowed with an exclusive agency, and nature, considered as a set of passive entities (including humans with lower agency) or objects to be organized, managed, measured and exploited (Allen et al., 2024, p. 2). As I explain in Chapter 2, a relational approach can use discrete categories or duals as an analytical tool without being dualistic, and also expand the focus to the relational processes “up to the point where the discrete categories cease being the center of attention” (Ortiz-Przychodzka et al., 2023, p. 2). Thus, duals and discrete categories are still a useful reference in relational approaches⁴. While epistemological bifurcations might be inevitable (Raymond et al., 2021) (e.g. my research focuses on *human* experiences of more-than-human relations and I differentiate between “humans” and “non-humans”), a relational approach can help to unveil the interrelatedness and networked agencies that constitute economic lives, as I explain below.

Dualism is ingrained in dominant economic paradigms, which place the human-led capitalist economy at the top of a vertically managed world in which the rest of economies, involving human and non-human entities, are resources to be appropriated for capital accumulation (Moore, 2015b; West et al., 2024). This hierarchical perspective reflects a colonial understanding of the world that permeates the spheres of social-environmental politics, economics, culture, and science (Mignolo et al., 2014). Adopting a relational approach allows recognizing the force of capitalism as a globally hegemonic system driving reconfigurations of more-than-human relations across scales (Moore, 2015b). However, it also helps to unveil the frictions generated by the persistence of heterogeneous relations that resist dualisms

³ Throughout the thesis, I use the term “more-than-human” because relations can include entanglements of human-human, human-nonhuman, and nonhuman-nonhuman elements. The boundaries between the “human” and the “non-human” can be hard to distinguish even in mostly human-dominated landscapes such as large-scale monocrops (Durand & Sundberg, 2022; Miller, 2020).

⁴ Using dual categories is not the same as assuming that only duals exist, i.e. a dualistic perspective.

(e.g. capitalist vs. non-capitalist; market vs. non-market; global vs. local), as they fit better into hybrid dynamics (in-betweens) (Li, 2014; Tsing, 2015).

In order to adopt a relational approach, I draw on interdisciplinary fields such as Ecological Economics, Political Ecology, and Critical Human Geography. The main theories and concepts that guide my thesis come from four main bodies of literature at the intersection of those interdisciplinary fields: diverse economies, assemblage thinking, environmental values, and agrarian extractivism.

The concept of diverse economies (Gibson-Graham & Dombroski, 2020a), i.e. the assemblages through which humans and non-humans co-constitute their interrelated livelihoods (Ortiz-Przychodzka et al., 2023), allows me to stress those economic practices and values that are non-utilitarian and reflect more-than-human agencies. The notion of assemblages, i.e. the ongoing arrangements of heterogeneous entities through which agency is distributed and affects economic life (Miller, 2020), allows to depict multiple agencies. The concept of relational values (within the environmental values literature) refers to meaningful relations between people and the rest of nature, or between people through the rest of nature (Chan et al., 2016; Himes & Muraca, 2018; IPBES, 2022). Such non-utilitarian value concept has shaped approaches to human-nature relations and their values (Himes & Muraca, 2018; Stålhammar & Thorén, 2019). Finally, following the critical perspectives of the literature on agrarian extractivism (e.g. Gudynas, 2020; McKay, 2017; Svampa, 2022), I consider that the current emergence of diverse economies cannot be understood in isolation from the wider processes of capital accumulation that appropriate the work of humans and non-humans at the frontiers (Moore, 2023). In this section, I will describe how these theoretical and conceptual elements frame my wider research.

3.2. Diverse economies

The literature on diverse economies joins the long-standing criticism to so-called Neoclassical Economics (Gibson-Graham & Dombroski, 2020b), which places rational and self-interested individuals, with organized preferences for consumption of goods and services to maximize their utility, at the center of analysis (Levine et al., 2015). In Neoclassical Economics, utility is a measure of individual satisfaction derived from the consumption of goods and services, and generally expressed in monetary terms⁵ (Levine et al., 2015; Washington & Maloney, 2020). As I show in Chapter 2, economic utilitarianism reinforces commodification, a process that seeks to make the value of multiple relations and entities commensurable and legible for markets through pricing mechanisms (Ortiz-Przychodzka et al., 2023; Smessaert et al., 2020). Thus, more-than-human relations are considered valuable as long as a price can be attributed to them (Muradian & Gómez-Baggethun, 2021). Neoclassical Economics, which frames

⁵ Such utilitarian perspective differs from the wider philosophical school, in which “utility” can refer to material and immaterial experiences including happiness, pleasant experiences, or preferences without a monetary equivalence (Levine et al., 2015; Varner, 2008).

capitalism as the only relevant system, still dominates economic thinking and is highly influential in economically-led environmental research and policies (Gowdy et al., 2010; Pirgmaier, 2021; Spash & Hache, 2022).

The field of diverse economies calls to reframe economic thinking in ways that acknowledge and enable a diversity of structures, agencies, practices, and values (Miller & Gibson-Graham, 2019). Such a field understands research as a work process that is not external to the realities it observes. Instead, research can “bring into being what it theorizes” by redirecting the attention towards hidden relations, and helping to unveil and act on heterogeneous economic lives beyond utilitarian logics and practices (Gibson-Graham & Dombroski, 2020a, p. 7). Initially focused on human relations, the literature on diverse economies has integrated wider relational approaches by recognizing that the livelihoods of humans and non-humans are interrelated (Gibson-Graham & Miller, 2015). Accordingly, economic lives cannot solely be considered a human domain; instead, they are interdependent with the rest of the living world.

The idea of community in diverse economies includes non-human beings as active agents instead of passive objects (Gibson-Graham & Miller, 2015). The acknowledgment of interdependencies implies that economic practices involve ethical decisions that include interrelated livelihoods shaped by the combination of agencies (Miller, 2020). For example, decisions on how to manage an agricultural land are influenced by how people value human and non-human lives (e.g. are soils, rivers, forests merely resources for agriculture?), and by the non-human’s abilities and behaviors that affect those decisions (e.g. pests can ravage crops, pollination makes agriculture possible). Thus, economies are ethical practices, or ways of doing (Sakdapolrak, 2014) that entail mutual affections, tensions and negotiations about the conditions that sustain interrelated livelihoods (Gibson-Graham & Dombroski, 2020a). In consequence, research on diverse economies can unveil and support those practices that, for example, enable more balanced power-relations, mutually beneficial and diverse entanglements, in contrast to the totalizing logics of commodification.

Accordingly, I conceive economic practices as everyday actions, i.e. routinized and habitual, which include embodied ways of doing and saying that are the product of relations (Sakdapolrak, 2014). This perspective draws on Bourdieu’s theory of practice, as described by Sakdapolrak (2014), in which social practices are shaped by habitual pre-reflexive actions informed by practical senses and knowledge. Accordingly, practices are simultaneously constrained by wider structures and open to novelty through agency: “...highlighting the space in which marginalized people make meaningful choices without losing sight of the causal structure of marginalization” (Sakdapolrak, 2014, p. 22). In my thesis, this conception of practices translates into diverse economies (including practices and values) as emerging from

everyday relations, while also being constrained by wider frontier processes. I focus on people's narratives as an indication of the practices and values involved in economic lives. Narratives⁶ are influenced by the interplays between structural discourses, e.g. through utilitarian narratives and commodification, and everyday relations and values (see chapter 4) (West, 2016). Focusing on narratives allows me to acknowledge people's everyday experiences, and situate them in wider frontier dynamics.

3.3. Assemblages

In this thesis, I understand more-than-human entanglements from the perspective of assemblage thinking (Legun & Dwiartama, 2024), to analyze economic life as heterogeneous, changing and conflictive (e.g., practices and values can challenge commodification) (Müller, 2015). In an assemblage, disparate entities come together and form a collective whole whose functioning relies on distributed agencies. Such distribution can be unequal, involving power-relations and hierarchies. Retaking the ideas of the philosophers Deleuze and Guattari, Müller (2015) synthesizes five features of assemblages:

- (1) Assemblages are relational arrangements: their functioning as a whole cannot be explained by the individual properties of the parts (entities), but by the relations between them. For instance, in chapters 3 and 5 of this thesis I explain the existence of honey economies (an assemblage) in the Chiquitanía through the relations that people engage in and experience with honey and bees. People's experience of honey's usefulness as a unique medicine and the frequent encounters with bees trigger the reproduction of honey-economies in daily life.
- (2) They are productive, because they transform and create new relations and manifestations of new realities. For instance, in chapter 3 to 5, I discuss honey-economies' capacity to generate territorial transformations through more-than-human agencies and overlapping trajectories that resist homogenization.
- (3) They are heterogeneous, because they emerge from the relations of disparate entities with open-ended results. In my thesis, I call this a process of encounter of more-than-human life-trajectories. In chapter 3, I use the term "synchronizations" to stress the importance of meeting temporalities or life-rhythms in the formation of diverse economies.
- (4) They are dynamic, and can be disassembled ("deterritorialization") and reassembled ("reterritorialization") in many ways (Müller, 2015, p. 29). In this thesis, I describe how frontier expansion forces the synchronization of diverse economies with globalized market-dynamics (Chap-

⁶ Narratives are social representations of actions and events experienced individually or collectively. Some authors differentiate "narratives" (collective articulations of shared human experiences) from "narrations" (individual stories that give sense and infer meaning from everyday experiences) (Koch et al., 2021). In my thesis, I use the term "narrative" without differentiating it from "narrations", because my aim is to identify people's experiences of meaningful relations, independently from their individual or collective character.

ter 3), and commodification weakens meaningful territorial relations in the Chiquitanía (Chapter 4). Simultaneously, meaningful territorial relations can emerge from new relations or from persisting ones, as in the case of handicrafts and honey economies (Chapters 4 and 5).

- (5) They are “desired” (Müller, 2015, p. 29), in the sense that they possess a force of attraction through which assemblages can produce new relations. Chapters 3 and 5 show examples of the attractiveness of honey economies. For instance, bees fascinate people with their character and behavior; beekeeping gives a reason to landless women to fight for land; honey-collection attracts for its medicinal properties, which could turn honey into a desired commodity.

Assemblage thinking provides a lens through which the politics of diverse economies can be considered. In particular, assemblages draw attention to change and stability and to the conditions that produce them (Gibson-Graham & Dombroski, 2020a; Müller, 2015). They also expand the idea of conflicts, negotiations, and disputes to non-humans (with humans), adding to the idea of more-than-human agencies. Moreover, assemblage thinking allows for the acknowledgment that diverse economies entail power-relations acting at multiple scales (Gibson-Graham & Dombroski, 2020a), including the wider capitalist dynamics in which they are embedded, such as frontier expansion and commodification, and situated dynamics specific to the immediate spatio-temporal contexts (Legun & Dwiartama, 2024). By considering the multiple scales in which power-relations unfold, an assemblage perspective can expose the fragilities of commodification (Gibson-Graham & Dombroski, 2020a) without ignoring the historical force of capitalist expansion and domination (Moore, 2015). In my thesis, I use such a lens to understand the dynamics of frontier expansion both as an overwhelming force driven by the commodification and exploitation of more-than-human relations, and a process leaving deep territorial fractures from which new arrangements can emerge.

3.4. Usefulness, instrumental and relational values

One way in which people experience economic assemblages is through the values they assign to their constitutive relations. Values express the importance of such relations. Among the many conceptualizations of values in economic, social and environmental sciences (Kenter et al., 2016; Massenberg et al., 2023; Raymond et al., 2023), in my research I link two groups of values that cut across economies and more-than-human relations: use and exchange value, and relational and instrumental values.

Use value and exchange value

In political economy, use-value refers to the material properties embodied in goods and services that satisfy human needs and wants (Pirgmaier, 2021). Such goods and services can be objects obtained from ecosystems, or their functions that benefit humans. The transformation of non-human relations, processes or functions into something useful for humans, which under capitalist relations often serves accumulation processes, is often called “appropriation of nature” (Moore, 2015; Pirgmaier, 2021, p. 2).

People's relations to non-human entities give form to multiple use-values (or usefulness), depending not only on the material properties but also on the sociocultural contexts including practices, norms, symbols, tastes or preferences (Pirgmaier, 2021). Use-values are highly diverse, because one same entity can have many uses (Harvey, 2017). For example, wild honey is useful as a sweetener, as medicine, as food, and as a symbol of cultural identity (see Chapter 5). Exchange-value refers to the quantitative worth of a useful good or service, expressed in terms of another useful good or service (Pirgmaier, 2021). Therefore, it entails an exchange of use-values made commensurable (Harvey, 2017). In capitalist market-systems, money is the common measure of the exchange value of commodities (i.e. goods and services meant to be valued in monetary terms through market-exchange) (Pirgmaier, 2021). Such market dynamics allow the owners of the means of production (i.e., productive capital) to extract the surplus value (i.e., profits) in addition to the use value. This is a source of tensions in capitalist markets, when profit seeking enhances exchange value up to a point that impedes the access to the good or service (its use-value) by those in need⁷ (Harvey, 2017). As I illustrate in Chapters 3 and 4, commodification fuels such tensions, because it replaces those economic relations based on use-values (in paper 3, I explain how usefulness can form “meaningful instrumental relations”) by ones based on exchange-values (commodified relations).

Classical political economy provides an important theoretical basis to understand economic relations within capitalist dynamics. However, it falls short of capturing those more-than-human relations, not limited to capitalist markets. Thus, to answer my research questions, I draw on the environmental values literature, in particular, the notions of instrumental and relational values.

Instrumental and relational values

To understand the importance that multiple human-nature relations hold for people, the literature on environmental values has proposed the analytical categories of specific values, namely intrinsic, instrumental, and relational values (IPBES, 2022). Increasingly, studies have been using these value categories to understand different ways in which humans relate to a non-human nature, and their implications for sustainability transformations in different contexts, such as biodiversity conservation and farming (e.g. Allen et al., 2024; IPBES, 2022; Riechers et al., 2024; Vizuite et al., 2025).

Intrinsic values express the importance of entities and relations for their own sake, independently of their relation to humans (Muraca, 2016), giving non-humans agency beyond their relation to humans (including non-humans' capacity to influence human lives) (IPBES, 2022). Intrinsic values are not directly related to economies, which entail instrumental relations, but can help to identify possible effects

⁷ From a Marxian perspective, the process of production and exchange of commodities is the basis of the reproduction and expansion of capital. When a commodity is exchanged, the initial investment to produce it is recovered (in monetary terms), plus an additional amount (surplus value, i.e. a form of profit). Part of that surplus is reinvested in a new production process (allowing the reproduction of capital, including the labor force through salary), while the other part is accumulated by capital-owners. Thus, capital-owners have an incentive to squeeze workers' salary (exploitation) to increase surplus value (Harvey, 2017; Pirgmaier, 2021).

of non-human agencies on economies. In contrast, instrumental values express the importance of relations as means-for-something, especially to satisfy human needs (IPBES, 2022). Thus, utilitarian values, i.e. importance of relations as means to maximize humans' utility, represent one form of instrumental value among others. Use-values and exchange-values can also be described as instrumental values (Ortiz-Przychodzka et al., 2023). Finally, relational values express the importance of relations (human and more-than-human) as ends-in-themselves (IPBES, 2022)⁸. Drawing on Himes and Muraca (2018), relational values can refer both to instrumental and non-instrumental relations⁹.

One key feature of values, and of the relations they involve, is their degree of replaceability (or substitutability) and commensurability. Relational values include relations that contribute to a good life, therefore involving instrumental aspects (Deplazes-Zemp & Chapman, 2021), and notions of more-than-human co-dependence and reciprocity, which make them difficult to replace or compensate (Jones & Tobin, 2018). Instrumental values are, in principle, easier to replace. Nevertheless, and similar to the findings of Vizuite et al. (2025), my research suggests that non-utilitarian instrumental values can blend and interact with relational ones, making their replaceability more difficult. For example, many use-values are shaped by sociocultural and more-than-human relations, providing senses of identity, place, and territorial belonging, as I show in Chapters 2, 4, and 5. Therefore, some instrumental values can involve relational aspects. On the contrary, utilitarian values are, in principle, easier to replace due to their commensurability in monetary terms: any relation that allows maximizing a monetarized utility can replace others that do not (Ortiz-Przychodzka et al., 2023). Therefore, considerations on values are key to understanding the impacts of change and transformations in shaping diverse economies and their dependence on concrete more-than-human relations, considering the ways through which people engage in the world.

Values shape people's relations and are shaped by them. Valuation is a relational human process, because it depends and emerges from relations. The idea of values, and their discrete categories, refer to social representations and narrations of the concrete experience of relating to others. However, before becoming discrete categories, values emerge from ongoing processes and embodied experiences (Raymond et al., 2018; Stålhammar & Thorén, 2019). This distinction between discrete representations of values and embodied experiences is important to understand how the values that shape diverse economies emerge from more-than-human encounters, as I explain mainly in Chapters 4 and 5.

⁸ The relational values literature responds to concerns about the prevalence of a moral anthropocentrism and dualism in the ecosystem services literature, in which nature is portrayed mainly as a service-provider (Barron & Hess, 2020; O'Connor & Kenter, 2019). This dualism has raised concerns about the persistence of utilitarian views on human-nature relations, especially economic ones (Muradian & Gómez-Baggethun, 2021).

⁹ Although in most recent values literature, relational values have been limited to non-instrumental relations (Himes & Muraca, 2018), I do not adopt this narrow sense because I seek to assess meaningfulness in instrumental relations, which I argue is key to understand the emergence of diverse economies (Chapters 4 and 5).

Finally, values reflect people's subjectivities and experiences, and can denote different ontologies, i.e. the conceptions that people have about the entities and relations that exist and form the world (Boelens et al., 2022; Kenter & O'Connor, 2022; Ulloa, 2021). Ontologies provide a basis to think, to experience and engage in the world, and therefore, influence how the world is shaped through practices and values¹⁰ (Blaser, 2024; de la Cadena, 2015; Escobar, 2015). This connection between ontologies, values, and world-shaping practices frames much of the theoretical and empirical work on environmental values (and the values of more-than-human relations) (Himes et al., 2025) and human-ecological social science (Keleman Saxena et al., 2018). Hence, by considering values and practices constituting diverse economies, I also inquire about their links to concrete territorial transformations (Chapters 3 to 5).

3.5. Agrarian extractivism and territorial reconfigurations

The concept of agrarian extractivism is critical to understand the economic dynamics unfolding at agrarian commodity frontiers. "Extractivism" has been a widely employed term in Latin American political ecological literature, to denote a set of economic practices, values and narratives promoting the rapid and large extraction of resources, orientated towards exportation or the transfer out of their places of origin (Agramont-Lechín & Seoane Flores, 2025; Gudynas, 2020). Extractivism can generate a sense of prosperity in the short-term, generally only temporary, while leaving traces of destruction of the social-ecological fabric that holds territories and landscapes together (Gudynas, 2020; Svampa, 2022). In this line, agrarian extractivism involves the expansion of agrarian commodity frontiers (Serje, 2024), and the resulting territorial overexploitation (McKay, 2017; Veltmeyer & Ezquerro-Cañete, 2023).

The term "agrarian" indicates the multiple relations that constitute rural territories, including the productive and extractive relations of agriculture, livestock farming and forestry, and their intersections with wider economic, cultural, political, and social-ecological relations (Bernstein, 2015; Borrás & Franco, 2024; McMichael, 2023). It is commonly employed to address the embeddedness of agrarian change, such as frontier expansion, in the historical dynamics of capitalism in rural territories (Bernstein, 2015). Such dynamics entangle many actors of agrarian extractivism together, including governmental agents, economic elites, cross-border investors and land-rentiers, as well as workers, farmers and settlers following economic opportunities (le Polain de Waroux, 2019; Meyfroidt et al., 2024; Pratzner et al., 2024).

By analyzing diverse economies within agrarian extractivist dynamics, I seek to provide situated accounts of the territorial reconfigurations of frontier expansion, without disconnecting them from the

¹⁰ Many scholars prefer to use the plural "worlds" to stress ontological multiplicity (Blaser, 2024; de la Cadena, 2015; Escobar, 2015).

wider global-capitalist dynamics (Moore, 2022). However, I also refrain from unidimensional and unidirectional explanations of territorial transformations, by unveiling the multiplicity and patchiness that constitute economic lives beyond capitalist relations, albeit entangled with them (Tsing et al., 2024).

The notion of “territory” is central in agrarian studies and is deeply rooted in the Latin American literature on agrarian change and extractivism. According to Haesbaert and Mason-Deese (2020), territories from a Latin American perspective are living spaces, build through relations, everyday practices, cultural symbols, and processes of social organization. This definition draws on Indigenous relational ontologies (Cassino et al., 2025; Gallegos-Riofrio et al., 2022), in which territories come into being through the encounters, dialogues, and conflicts between humans and non-human beings, involving multiple meanings and temporalities (Haesbaert & Mason-Deese, 2020). From this perspective, territories entail experiences of belonging and senses of place (Sandoval et al., 2017), from which collective actions can emerge in defense of common ontologies and conceptions of life (Escobar, 2015).

When frontiers expand, their extractivist dynamics cause agrarian changes expressed in deep territorial reconfigurations (Levy et al., 2024; Serje de la Ossa, 2017). Particularly, frontier expansion requires a translation of the diverse values and practices constituting territorial relations into terms that are legible for globalized markets (Li, 2014; Serje, 2024; Tsing, 2015). Commodification is one such translation processes, which transforms economic practices and values constituting diverse livelihoods into capital and resources that can be exploited and accumulated (Svampa, 2015). Commensurability facilitates translation, which is why agents of frontier expansion and extractivism (e.g., agribusiness and governments) promote utilitarian values through narratives of entrepreneurial success, economic irrelevance of peasant and Indigenous livelihoods, and land-emptiness or land-availability for appropriation (Li, 2023a; Serje, 2024; Svampa, 2022; Tsing, 2005).

Paying attention to frontier narratives can shed light on the value dimensions of commodification processes, their material practices, and territorial impacts. Furthermore, it can reveal a nuanced picture of how territorial relations unfold, not only as a linear consequence of commodification but also as a motley process (Jasser et al., 2022) assembling multiple trajectories and agencies (Castañón Ballivián, 2024; Levy et al., 2024; Oliveira & Hecht, 2016; Stiernström & Arora-Jonsson, 2022). A plural understanding of the territorial reconfigurations at frontiers is necessary to acknowledge the motley character of frontier territories in Latin America (Escobar, 2016). As I explain in Chapters 3 and 4, such territorial reconfigurations include diverse economies that cannot be explained merely in utilitarian terms, but are entangled through the superposition of economic values and practices, somewhat synchronized, sometimes unarticulated, and dialectically constituted (Rivera Cusicanqui, 2018; Tsing, 2015; Zavaleta Mercado, 2015)¹¹.

¹¹ Bolivian sociologists Zavaleta Mercado (2015) and Rivera Cusicanqui (2018) inspire this perspective of agrarian change in my thesis. According to them, Bolivian and Latin American territories involves multiple societies and economies that coexist without totally blending. This heterogeneity reflects the incompleteness of the National

4. Research approach

4.1. Overview

In this section, I present my guiding epistemological aspects, methods, and case studies. As previously mentioned, with this research, I aim to improve the understanding of how more-than-human entanglements constitute diverse economies and shape territorial relations at the Bolivian agrarian commodity frontier. I address this objective through one conceptual and three empirical questions posed in section 2 of this chapter (Table 1). The first question guides me through the conceptualization of diverse economies from a relational perspective that considers economic lives beyond utilitarianism and human agency. This question creates the conceptual basis for the empirical research. The second question revolves around the manifestations of more-than-human agencies in people's everyday lives. The third question inquires about the expression of non-utilitarian values amidst meaningful economic relations. The fourth question gathers all the previous ones to build an empirically based understanding of how diverse economies emerge from assemblages that can shape territorial relations. My object of study is more-than-human assemblages forming diverse economies. My analysis takes place at two levels: a regional level (Chiquitanía frontier) and a local level (community level: two case studies). The unit of observation is individuals' experiences (narratives, practices, values). In Table 1, I give an overview of how I approach the research questions and link them to the research needs, and in Table 2, I represent the links between the research questions and each chapter's objectives.

State's consolidation, and the lack of a unitary social construct. Such a plural society challenges linear explanations of economic history and invites acknowledging change and discontinuity.

Table 1: Overview of the research questions and the chapters of this thesis

Research objective: to understand to what extent more-than-human entanglements constitute diverse economies and shape territorial relations at the Bolivian agrarian commodity frontier.

Research needs*	Research questions	Chapters	Research approach	
N1, N2	RQ1. How can diverse economies be conceptualized from a relational and more-than-human perspective?	Chap. 2	Theoretical and conceptual basis for the empirical research.	Deductive
N2, N4, N5	RQ2. What are the manifestations of more-than-human agencies in everyday economic lives?	Chap. 3, 5	Primarily inductive conceptualizations from empirical data that inform the theoretical model.	Iterative
N1, N3, N4, N5	RQ3. To what extend do non-utilitarian values guide economic practices and support meaningful relations?	Chap. 4, 5	Primarily deductive (Chap. 4) analysis based on the theoretical model, with inductive elements (Chap. 5).	
N1, N2, N3, N4, N5	RQ4. How do assemblages trigger the emergence of diverse economies and shape territorial relations?	Chap. 2, 3, 4, 5	Combinations of deductive and inductive analysis, merging elements of the previous research questions to provide an empirical illustration and feedback to the theoretical model.	

*N1. Assessing non-utilitarian values and practices in diverse economies. N2. Integrating the perspective of more-than-human agencies. N3. Analyzing interplays between diverse economies and commodification. N4. Linking everyday experiences to wider territorial relations. N5. Understanding the subjective aspects that shape diverse economies.

4.2. Epistemological and ontological considerations

My research draws on interpretive approaches to understand the subjective meanings that guide diverse economies. In particular, I focus on people's experiences of encountering others (humans and non-humans) to identify the narrative manifestations of values and practices that arise through those encounters. Interpretive approaches underscore the ways in which meaning emerges and shapes human actions (West, 2016), and how humans make sense of the relations in which they are involved (Bryman, 2012). Such approaches are especially relevant to explore theoretical and methodological alternatives to the utilitarian model of self-interested, rational and mechanical economic agents.

In interpretive approaches, meaning and subjectivity are exclusive capacities of humans (Bryman, 2012). In contrast, much research on more-than-human assemblages is not centered on the human ex-

perience, and considers subjectivity to be also present in non-human beings, e.g., multispecies ethnography (Keleman Saxena et al., 2018) and post-humanist political ecology (Durand & Sundberg, 2019). In my research, I maintain a focus on people's subjectivity and their experiences of meaningfulness, while considering that non-humans participate in the formation of such experiences. Therefore, I follow an epistemic anthropocentric perspective (e.g., diverse economies are a human experience, and valuing is a human action), combined with non-anthropocentric considerations of agency (e.g., non-humans can influence economies, i.e., assemblage thinking) (Miller, 2020) and morality (non-humans are worthy of moral consideration; i.e., relational approach to values) (Himes & Muraca, 2018).

In line with interpretivism, I adopt a constructivist ontology (Bryman, 2012) by considering economic life to be made of unfolding relations, constantly in the making, instead of being a pre-given system, or a totality with predictable dynamics (Miller, 2020). For instance, Chapters 3 and 4 describe frontiers as manifold processes involving more-than-human relations and diverse economies with open-ended results, rather than a fixed entity driving unidirectional flows of commodification. Accordingly, my conception of economic practices includes embodied (Ellis, 2022; Raymond et al., 2018; Ulloa, 2021), narrative (Koch et al., 2021), and value dimensions emerging from everyday encounters, and influenced by structural processes (e.g., agrarian extractivism). In this sense, meaning is constructed through interaction and practical action (Bryman, 2012), and is informed by narratives and values (West, 2016).

4.3. Methodological aspects

My methodological approach draws on patchwork ethnography, thick description and participatory action-research, all forms of knowledge production in social science, especially in Anthropology, relying on principles of trustful and committed relations between researchers and research subjects (Fals Borda & Rahman, 1991; Gibson-Graham, 2014; Günel et al., 2020). Such principles do not depend on the classical long ethnographic fieldwork, but on balanced research strategies considering both the needs of research subjects and those of researchers, "rendering research closer to life" (Günel & Watanabe, 2023, p. 132).

In this thesis, I conceive research and fieldwork as relational processes that go beyond the instrumentality of data collection and the researcher's total detachment from the studied empirical realities (Fals Borda & Rahman, 1991; Günel & Watanabe, 2023). Moreover, I acknowledge that research and methodological choices are defined by the researcher's personal life-trajectories, and the wider socio-political circumstances in which research takes place (Günel & Watanabe, 2023). My fieldwork spanned the years 2020 to 2024, including three visits to the Chiquitanía of about three months each (see more details below), characterized by frequent interruptions due to the Covid-19 pandemic in 2020-2021, increasing political unrest in Bolivia, and caring responsibilities with my family. Therefore, I embraced

fieldwork and research, as iterative, non-linear and intermittent processes with “constant switches between “home” and “field” (Günel & Watanabe, 2023, p. 134), but still connected through rigorous engagement with research subjects in the Chiquitanía. Such a patchy research process is the basis of a “seam-full engagement with knowledge production” (Günel & Watanabe, 2023, p. 131).

Thick description and participatory action-research involve both a systematic scientific approach to knowledge production and an ethical commitment to transformative action. According to Gibson-Graham (2014), thick description is an interpretive method that analyzes and documents the multiplicity of nuances, meanings, and values underpinning everyday economic practices that cannot be defined merely as modelled on- vs. opposite to capitalism¹². By documenting multiplicity, thick description can break down dominant economic narratives (Gibson-Graham & Dombroski, 2020a), thereby widening the field of “economic realities” and bringing them to the surface (Gibson-Graham, 2014, p. 149). This makes thick description and the notion of diverse economies both epistemological and ontological research projects. In a similar line, participatory action-research, with roots in Latin American social sciences, is a form of transdisciplinarity that produces useful critical knowledge through a commitment to grassroots movements in search of common goals of social transformation (Fals Borda & Rahman, 1991), as I explain in Appendix 6.

To build my own notion of commitment, I rely on “ethics of entanglement” (Sundberg, 2015), through which I consider my research as a situated practice within my own life trajectory that intersects with others’ own situated practices and daily struggles. As a Latin American, urban dweller, non-Indigenous researcher, I have had the chance to encounter and collaborate with many rural Indigenous and peasant communities. I have learned from their experiences of shaping their economic lives in complex entanglements with the all-encompassing logics of capitalist markets and rural economic policies. In particular, I share people’s concern about the inescapable need for capitalist markets to make a living, which also brings about homogenization, unequal power relations, and oppressive dictates. Such dynamics often produce dispossession and territorial devastation. However, I am also captivated by the persistence of heterogeneous economic practices based on deep territorial relations that cannot be defined merely in terms of capitalist markets. Hence, I have tried to use my research to highlight the capacities of Indigenous and peasant communities to build their own economies based on their deep understanding and intimate relationships with the places they inhabit. I do not consider myself in the position to provide normative prescriptions to Indigenous people about how political actions or social-ecological transformations should look like in their territories to counter the devastation left by oppressive economic

¹² In contrast to “thick description”, Gibson-Graham (2014) define “thin description” as a method of “strong theory”, or the organization of scientific observations of economic practices and values through capitalocentric theories of economic behavior with partially predictable trajectories. In contrast, “thick description” builds “weak theory”, moving away from the certainty of unidirectional change towards the nuances and emergent of heterogeneous processes and motley trajectories of change.

models. Instead, I trust the capacity of research to promote critical thinking, support and provide recommendations to existing initiatives, and highlight those places where economic fractures can become new openings. Finally, I care about Indigenous and peasant territories, with which I feel deeply related, and upon which the possibilities of a more just and sustainable future depend.

4.4. Methods

This thesis addresses my research questions through different qualitative methods that demonstrate an iterative strategy combining deductive and inductive approaches (Bryman, 2012). The theoretical and conceptual framework (deductive) proposed in chapter 2 informs my empirical research described in Chapters 3 to 5. These, in turn, inductively enlighten the theoretical model by suggesting concepts and analyses that emerge from the interpretation of the data (Table 1) (Rudestam & Newton, 2014). Thus, my thesis builds an empirically grounded theoretical proposal for diverse economies from case-based knowledge, as I discuss in section 6 of this chapter. Furthermore, as I explain in Appendix 6, my research includes forms of communicative strategies and knowledge systematization based on participatory action-research.

To build the theoretical and conceptual framework that I present in Chapter 2, I conducted a narrative literature review (Bryman, 2012; Paré et al., 2015). This allowed me to understand how diverse economies can be defined from relational and more-than-human perspectives by connecting the concepts of relational values, assemblages, and senses of place. Common in interpretive research, narrative reviews lead to forming an initial conceptual and analytical lens, which can be modified according to the new conceptualizations emerging from the data (Bryman, 2012). Typically, the reviewing process is flexible and non-systematic, similar to a “discovery” pathway focused on the emergence of topics amidst a wide thematic frame (Bryman, 2012). To undertake my narrative review, I followed a snowball process, with an initial thematic search of conceptual and empirical papers in scientific databases. Then, I used the papers’ references or new searches for literature to widen the review, until forming a sufficient basis (thematic saturation) to build my theoretical and conceptual model (see Appendix 3).

My empirical research, presented in Chapters 3 to 5, is based on two fieldwork periods in the city of Santa Cruz de la Sierra and in several locations in the Chiquitanía (see Figure 5). Before my first trip to Bolivia, I had several online meetings¹³ with researchers from Fundación Tierra¹⁴ and Indigenous community leaders in the Chiquitanía to present my initial research ideas, and to identify common interests

¹³ Due to travel restrictions because of the Covid-19 pandemic.

¹⁴ Fundación Tierra is a Bolivian NGO supporting Indigenous and peasant communities with strategies for territorial planning and legal defense of their threatened land rights. For the duration of my Ph.D. research, I was a research associate at the Leuphana University of Lüneburg for the research project “Biocultural diversity in farming landscapes of the Global South”, led by Dr. Jan Hanspach. Fundación Tierra was the main project partner, and therefore a key ally of the initial phase of my Ph.D. project. (See <https://www.bioculturaldiversity.de/>).

and possible contributions to community-led initiatives. For instance, we agreed that my research could provide inputs for Fundación Tierra’s argumentation about Indigenous people’s special relation to their land and territorial rights, and useful information for the shaping of community territorial and economic planning. These meetings helped me refine my research design, as I sought to produce useful knowledge and include elements of participatory action-research, mainly in terms of knowledge communication (see Appendix 6). The high uncertainty brought by the Covid-19 pandemic on the possibilities to do fieldwork and to establish a close and continuous contact with project partners was the reason for not adopting a transdisciplinary process from the beginning (e.g., research design, common research questions, and knowledge co-production). Instead, I maintained a close partnership and communication with community leaders to design and produce communication outputs with materials from my fieldwork throughout my research process. During a third fieldwork in 2024, without data collection, I presented my study results to research partners and participants, and facilitated a number of outreach and communication events that I describe in Appendix 6. Below, I describe the first two fieldworks in which I collected the data for this research.

Table 2: Number of interviews during the two fieldworks for data collection

		First fieldwork 2021			Second fieldwork 2022		
		Individuals	Women	Men	Individuals	Women	Men
Regional level		28	12	16	-	-	-
	NGO and development cooperation	10	5	5	-	-	-
	Research	5	4	1	-	-	-
	Private organization	3	0	3	-	-	-
	Indigenous leader	6	2	4	-	-	-
	Local radio stations	4	1	3	-	-	-
Community level	San Juan de Lomerío	33	12	21	35	18	17
	Age < 20 years old	4	2	2	4	2	2
	20 – 40	11	4	7	13	8	5
	40 – 60	4	1	3	6	3	3
	> 60	14	5	9	12	5	7
	16 de marzo Cordillera	27	12	15	21	10	11
	Age < 20 years old	1	1	0	0	0	0
	20 – 40	8	2	6	3	2	1
	40 – 60	9	6	3	8	2	6
	> 60	9	3	6	10	6	4
	Total	88	36	52	56	28	28

First fieldwork:

The first fieldwork, from October to December 2021, allowed me to start the empirical research and collect the data that resulted in the work that I present in Chapters 3 and 4. This fieldwork aimed at identifying and deciding on the focus of my empirical research, identifying key economic practices, values and social-ecological conflicts in the region, and selecting case studies. During this first visit, I completed a process of prior informed consent with the leaders of the communities where my research took place. I also ensured prior consent for each interview, in written form, when possible, otherwise orally¹⁵, and in accordance with the approval of Leuphana University's Ethics Review Committee (EB-Antrag_202004-05-23-Hanspach_BioKultDiv).

Chapters 3 and 4 result from common methods, implemented during the three months of fieldwork in the city of Santa Cruz de la Sierra and in the Chiquitanía. I conducted semi-structured interviews leaving space for unstructured conversations and the emergence of people's own narrations within the thematic frame in my interview guide (see Appendix 4). The guiding themes included: (1) the main daily economic activities; (2) key economic activities in the region and in the communities; (3) changing social-ecological dynamics; (4) environmental conflicts and implications for people's daily life.

I selected the interviewees through a snowball sampling at two levels. On the regional level, I included those actors whose narratives refer to the whole Chiquitanía region. With the support of Fundación Tierra, I built a list of key institutions and leaders of Indigenous organizations in Santa Cruz de la Sierra and different locations of the Chiquitanía. I then asked each interviewee about other relevant actors to discuss the social, economic, and environmental dynamics in the region. Thus, I completed 28 interviews with Indigenous leaders, NGO members, private organizations (especially small entrepreneurs), journalists, and researchers (Table 2). On the Indigenous community level, together with local Indigenous leaders, we compiled a list of those individuals known for being especially knowledgeable in the main economic activities of the community (e.g. hunters, farmers, loggers, carpenters, and wild honey, plants, or fruits collectors). At the end of each interview, I asked about additional people to interview following the same criteria, until completing 60 interviews in two Indigenous communities. I present the detailed number of interviews in the corresponding Chapters.

I recorded and transcribed all interviews, when authorized, took field notes, and kept a field diary with personal annotations on the research process, observations, and emerging ideas. To analyze the data, I first conducted a deductive coding of the transcriptions of interviews and field notes, highlighting key information about economic practices, indications of commodification processes, non-market-based practices, social-environmental conflicts, and manifestations of the importance to people and meanings

¹⁵ I obtained oral consent when no possible otherwise (e.g. literacy), or when a collective consent was obtained, signed by legal representatives of the communities.

of human-nature relations, among others. Afterwards, I conducted an inductive coding and noted emerging topics that added information to respond to the research questions (see Appendix 4).

Second fieldwork:

The second fieldwork, which took place between September and November 2022, drew on the results of the first fieldwork and aimed at a deeper inquiry into the dynamics of diverse economies. Through this data collection, I completed the research described in Chapter 5. I focused on honey collection and beekeeping in two Indigenous communities, with the objective of assessing how people experience assemblages in such honey economies (see Appendix 5). I chose honey economies as a central case because of their reiterative emergence in the interviews and conversations during my first fieldwork, where people mentioned honey as an important link between different aspects of community daily life. Contrary to other key activities, such as hunting or logging, more interviewees had an intimate experience with honey collection in surrounding ecosystems or through beekeeping in the villages, and through its consumption or use as medicine. Later, I confirmed the importance of honey in the Chiquitanía by reviewing the scarce literature on the topic (see Chapters 3 to 5).

I selected the interviewees through a snowball sampling, starting with key individuals and community leaders identified during the first fieldwork and asking them about other people they considered knowledgeable about honey. I completed 56 semi-structured interviews (Table 2), with questions about the process of collecting honey, and descriptions of encounters with bees in specific places. As in the first fieldwork, I left space for unstructured conversations. Additionally, I conducted a participatory mapping exercise (Brown et al., 2020; Chambers, 2006) with most interviewees. Some mapping was done during sedentary interviews at people's homes, where I used satellite images to locate the places of their narrations about recent encounters with bees. Other interviews involved walks to those places of encounter, to trigger deeper and embodied narrations, meanings, and experiences that are motivated by the active and informal character of walking interviews (Di Masso et al., 2025; Evans & Jones, 2011). I collected GPS coordinates of such places, and completed participatory mapping with spatial referents, and land covers identified during meetings with Indigenous leaders.

As previously, I recorded all interviews when authorized. I first conducted a deductive coding of the transcribed interviews, including characterizations of human-bees encounters (trajectories, temporalities, agencies, affections), practices (what people were doing when encountering bees), values, senses of place, and territorial relations. Then, through an inductive coding within the deductive categories, I identified information about spatial referents, specific narrations of encounters, and information about people's and bees' reactions and behaviors, among others (see coding structure in Appendix 5).

Additional information on the materials and data involved in the elaboration and analysis of the chapters of this thesis were archived at the publication office of the Leuphana University of Lüneburg. Please contact the author for details if needed.

4.5. Regional context and case studies

Regional context: the Chiquitanía

The Chiquitanía is a region located in the Department of Santa Cruz, in Bolivia's Eastern lowlands, covered by a large tropical dry forest of around 16.5 million hectares¹⁶, as well as shrublands and savannas, which are unique in Latin America (Vides-Almonacid et al., 2007). The Chiquitanía is an area of important social-ecological transition between the Amazonian rainforest in Northern Bolivia, the wetlands of the Brazilian Pantanal, and the drylands of the Chaco, shared by Bolivia, Argentina, Paraguay and Brazil (Maillard et al., 2024; Vides-Almonacid et al., 2007). It is also home to many Indigenous communities, including the Chiquitano (the largest), the Guaraní, the Ayoreo and the Guarayo (Vides-Almonacid et al., 2007). Out of its 20.5 million hectares, around 51% are public land (including protected areas), 25% is private (mostly large agribusinesses), 13% are Indigenous territories (collective land tenure with autonomous governance structures), and 11% are smallholders (which can include collective titles of Indigenous people) (Fundación Tierra, 2021a).



Figure 2: Chiquitano dry forest in the Chiquitanía. Author: Stefan Ortiz-Przychodzka, Oct. 2022.

The Chiquitanía is also one of the most active agrarian commodity frontiers in Latin America. Its diverse landscapes have suffered the ravages of frontier expansion, with close to 3.3 million hectares deforested between 1990 and 2018, following the trend of Santa Cruz, which is by far the department

¹⁶ Out of a total of 25 million hectares distributed between Brazil and Bolivia (Vides-Almonacid et al., 2007).

with the highest deforestation rates in Bolivia (R. Müller et al., 2024; Quintanilla et al., 2023)¹⁷. Wild-fires have also devastated the Chiquitanía. More than 3 million hectares were burned in some municipalities in the Chiquitanía in 2024 alone, according to data from Fundación Tierra (2024b) from September of that year¹⁸. Several studies have shown how frontier expansion is driven by cattle ranching, which is heightened by expectations of increasing meat exports, especially to China (Müller et al., 2024; Oxfam, 2024). Large-scale and export-oriented soybean monocrops also drive frontier expansion and deforestation (Oxfam, 2024; Song et al., 2021). The soybean agroindustry is closely related to rent-seeking actors and cross-border agribusinesses (le Polain de Waroux 2019; Pratzner et al. 2024) that have found common ground for negotiation of favorable conditions with the Bolivian governments (Colque et al., 2021, 2022; Czaplicki Cabezas, 2024; Oxfam, 2024). Chapters 3 and 4 provide a more detailed description of the economic and political context favoring agrarian extractivism in Bolivia.



Figure 3: Frontier expansion for cattle ranching Author: Stefan Ortiz-Przychodzka, Oct. 2022.

¹⁷ With around 7 million hectares deforested between 1990-2018, Santa Cruz accounts for around 80% of total deforestation in Bolivia (Colque et al., 2021, 2022; Quintanilla et al., 2023). Around 3.3 million hectares were deforested in recent areas of frontier expansion, mainly in the Chiquitanía's frontier (Colque et al., 2021). In 2023, Bolivia was the third country with higher tropical primary forest loss (Weisse et al., 2024).

¹⁸ 2024 was a particularly tragic year due to the historical magnitude of fires in Bolivia (He et al., 2025). In Santa Cruz, around 7 million hectares were burnt in 2024 (70% of all Bolivia's burnt areas) (Fundación Tierra, 2024b).



Figure 4: Recent deforestation in the Chiquitanía. Author: Stefan Ortiz-Przychodzka, Oct. 2021

Such frontier dynamics have affected the many Indigenous and peasant populations in the region differently. Indigenous territories have seen rapid livelihood and territorial reconfigurations. In the last 40 years, they have suffered the loss of ecosystems upon which they have traditionally relied (Zambrana Lineo, 2020). Moreover, their economies have experienced frantic changes brought on by new agricultural practices, emerging markets, population dynamics (e.g. increasing population, and arrival of new settlers), and land speculation and grabbing (Colque et al., 2021; de la Vega-Leinert, 2017; Inturias et al., 2019; Jasser et al., 2022; Rodríguez et al., 2023). Such a motley mixture of territorial reconfigurations makes the Chiquitanía a key case for understanding the social, political, economic and ecological dynamics behind the aggressive expansion of agrarian commodity frontiers.

The shaping of the Chiquitanía as an agrarian commodity frontier can be seen as a historical colonial continuum. The Spanish and European colonization in the 15th Century set the foundations for the exploitation of the region. In the 16th Century, the Jesuit missions imposed new forms of societal organization in exchange for some degree of protection from the violence of settlers, colonizers and fortune-seekers (Arrien & Viana Chuvé, 2007; Balza Alargón, 2001). Such organization included the relocation of diverse Indigenous communities and the centralization of social, economic and political life in villages, which facilitated cultural and religious homogenization through the imposition of Catholic habits and the establishment of Chiquitano and Spanish as the common languages (APCOB, 2016; Arrien & Viana Chuvé, 2007; Balza Alargón, 2001). Moreover, the installation of *hacienda* systems relying on slavery and other forms of labor exploitation (whose remnants persist today) allowed for the development of large plantations (e.g., sugarcane), cattle ranches, and forest-resource extraction (e.g., timber, rubber, minerals) (Arrien & Viana Chuvé, 2007; Balza Alargón, 2001; Vides-Almonacid et al., 2007).

Currently, the messy reality of frontier expansion in the Chiquitania is being shaped by the dynamics of commodity agriculture (soybean, sorghum, sunflower) and cattle ranching, as well as the accompanying transport infrastructure projects (USAID, 1979), at the pace of agrarian extractivism and globalized markets (McKay, 2018b).

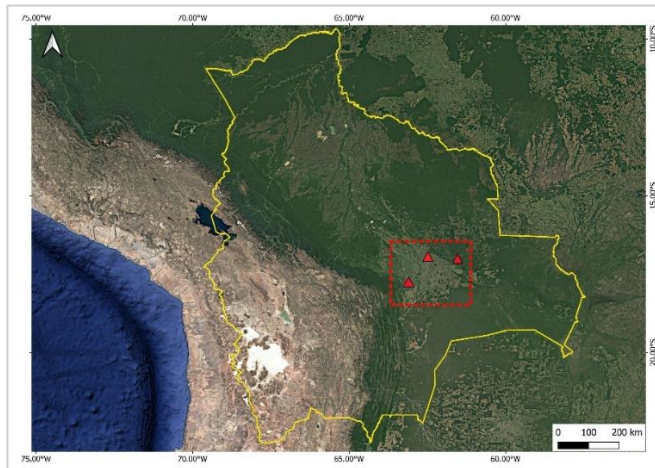


Figure 5: Map locating the study area in Bolivia's Eastern lowlands.

The triangles show the sites where I conducted interviews: the city of Santa Cruz de la Sierra to the left, 16 de marzo Cordillera in the middle, and San Juan de Lomerío to the right. **Source:** the author with information from Mapbiomas, GeoBolivia, October 2024.

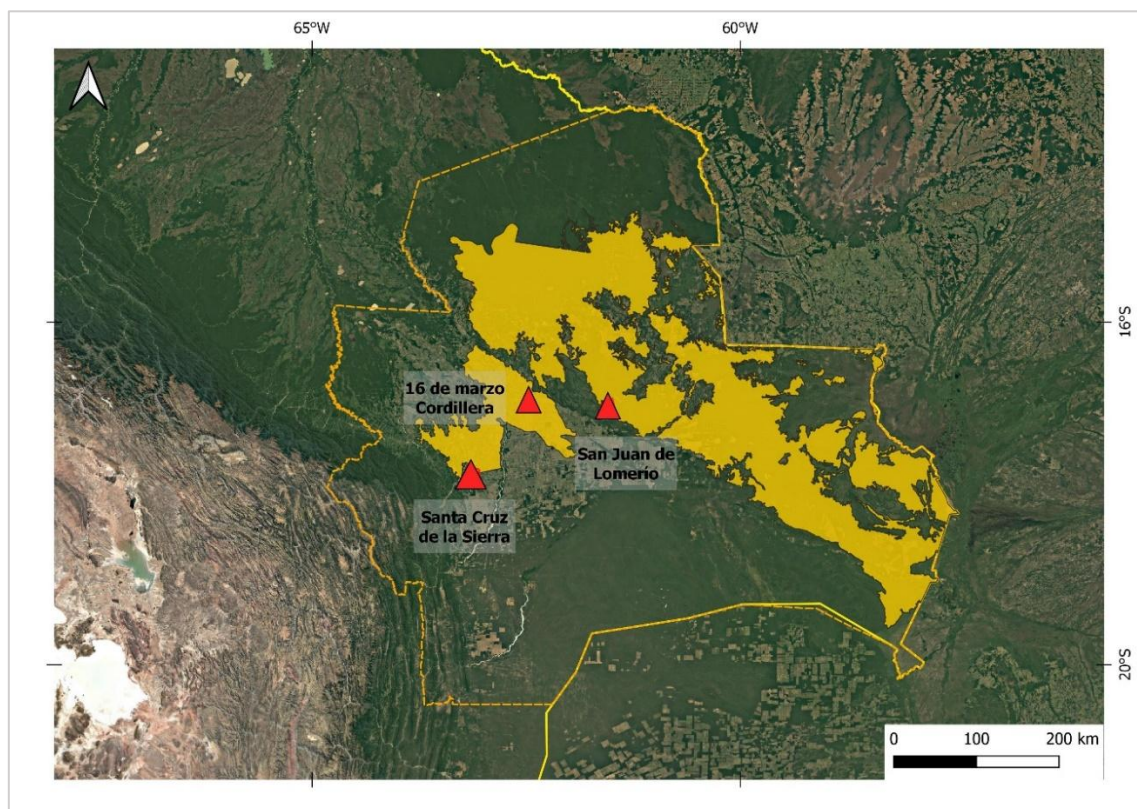


Figure 6: Map of the Chiquitano dry forest ecosystem in Santa Cruz and locations of the interviews.

The yellow polygon corresponds to the Chiquitano dry forest ecosystem within Bolivia. The yellow dotted line represents the limits of the department of Santa Cruz. The yellow solid line is the Bolivian border with Brazil. **Source:** The author with data from Mapbiomas, GeoBolivia, April 2025.

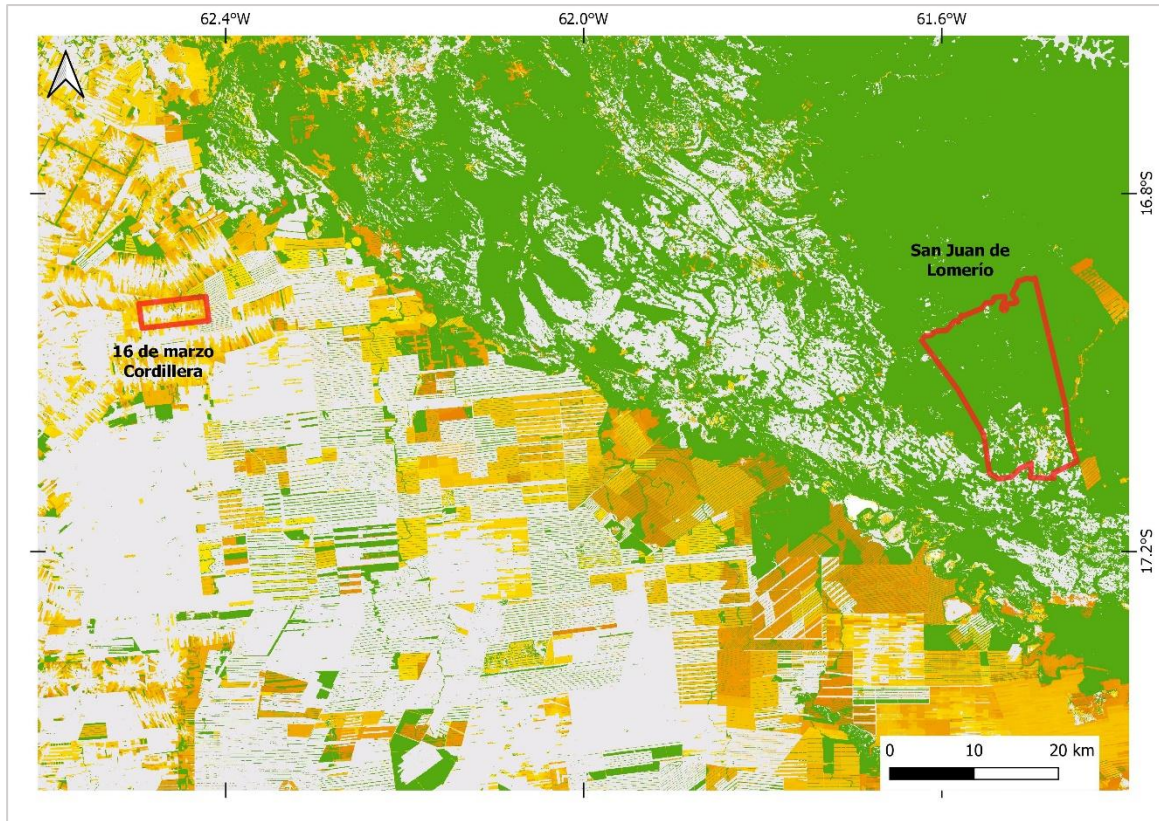


Figure 7: Map locating the case studies at the agrarian commodity frontier.

Green: forest cover (from year 2000). Orange: deforestation from 2000 (lighter) to 2020 (darker). Light grey, non-forest cover: monocrop plantations to the West and South-West; non-forest ecosystems to the East and Northeast, such as grasslands and hilly landscapes with rocky soils. **Source:** The author with data from Map-biomas, GeoBolivia, and the Amazon Network of Georeferenced Socio-Environmental Information (RAISG), October 2024.

Case studies

Qualitative case studies are particularly suitable for conducting thick descriptions of everyday practices, situated narratives, and unfolding relations, which are hard to grasp at wider scales or with studies aiming at generalization (Bryman, 2012; Helmcke, 2022). Consequently, in this research, I conducted two case studies to analyze situated accounts of diverse economies while considering the wider historical, political, and economic contexts and the cross-scalar relations to which they are entangled (Helmcke, 2022). My research unveils “partial aspects” of people’s experiences in two Indigenous communities (Tacchetti et al., 2022, p. 1386), which I connect to the wider contexts of extractivism in the Chiquitanía and Bolivia (see Chapters 3 and 4). Instead of suggesting definite causal explanations, I remain attentive to the uncertain and open-ended processes that constitute diverse economies, in line with Helmcke’s (2022) recommendations for elaborating political-ecological case studies.

In this context, my research focused on two Indigenous communities located at contrasting sites in the agrarian commodity frontier in the Chiquitanía: the Guaraní community of 16 de marzo Cordillera (hereafter, “Cordillera”) and the Chiquitano community of San Juan de Lomerío (“San Juan”). These communities are exemplifying cases (Bryman, 2012) of how frontier dynamics unfold and affect territorial relations, both at the heart of frontier expansion (Cordillera) and at its margins (San Juan) (Figure 7). They are also critical cases (Bryman, 2012) for my theoretical development, as they allow for the assessment of emergences of diverse economies amidst intense processes of commodification and extractivism. Through my study, I trace the relations of honey economies in both communities, and I present a narrative that highlights commonalities within two contrasting cases.

The community of 16 de marzo Cordillera was founded in 1979 in the municipality of San Julián, the epicenter of frontier expansion in the 1980s (Fundación Tierra, 2023). During the 1970s, this region attracted large migratory movements from the Andean highlands and valleys. Such movements followed work opportunities in expanding agribusinesses, especially in sugarcane plantations, and land distribution policies (Colque et al., 2021; Haas, 2023). Guaraní families coming from the Chaco region, South of Santa Cruz, some of which were already working under highly exploitative conditions in the plantations, founded the community of Cordillera. Their long search to escape the modern version of the *haciendas*¹⁹ and for a fertile land to settle seemed to be accomplished when they obtained 2400 hectares in San Julián, and formed a community (Haas, 2019). Originally, the collective title allowed each family to use 50 hectares. However, today the community has 153 families (around 900 inhabitants) which makes it impossible to ensure enough land for all. In consequence, many families have no land to cultivate and own only a small plot. This has obliged younger generations to start a new wave of migration towards new lands, joining the Chiquitanía’s many newcomers that get entangled in the dynamics of frontier expansion (Colque et al., 2021; Haas, 2019). Furthermore, as people in Cordillera adopted the dominant model of commodity agriculture, with thousands of soybean monocrops spreading over the region, no forest was left in the community. This has affected the close relation that Guaraní families have had with ecosystems, including the collection of timber, wild fruits and honey (Haas, 2019). The intensive agricultural model has caused soil fertility loss due to the use of agrochemical inputs, and strong winds erode the soil due to reduced tree cover. In consequence, families have had to rent their land under unfavorable conditions to neighboring farmers that possess the machinery and financial resources to establish large soybean, sorghum and sunflower monocrops (Colque et al., 2021; Haas, 2019).

¹⁹ *Haciendas* were a colonial system that left remnants in today’s plantations (Chao et al., 2023), in which landlords owned large surfaces of land where Indigenous families could live and keep a small plot for self-subsistence in exchange for offering their workforce for the plantations. Working conditions were slavery-like, with violent abuses from the landlords (Haas, 2019).



Figure 8: Soybean field in 16 de marzo Cordillera Author: Stefan Ortiz-Przychodzka, Oct. 2022.

The community of San Juan de Lomerío was founded by Chiquitano families at the end of the 19th Century in the municipality of San Miguel de Velasco, at the heart of the Chiquitanía, surrounded by extensive dry forests and shrublands. Its founders were former workers from cattle *haciendas* and rubber extractive systems, where they suffered exploitation and enslavement (Fundación Tierra, 2022). From its beginning, San Juan's inhabitants witnessed the multiple forms of violence of different frontier dynamics. These included the abuses by landowners in surrounding *haciendas*, the violent encounters with nomadic Ayoreo communities expelled from their territories, and the internal and external wars in which many Indigenous people from the lowlands were recruited by the militarist governments (e.g., the Chaco war against Paraguay in 1932). Today, San Juan's residents (ca. 500 people) hold 37000 hectares, including 18000 hectares of a collectively managed forest. Although the community is located at the outskirts of the frontier, cattle ranches and large plantations are rapidly closing in, and creating strong tensions among neighbors (Fundación Tierra, 2022). People in San Juan are mainly dedicated to raising cattle for self-consumption, hunting, forestry, and seasonal work in surrounding agribusinesses. Forest and other ecosystem uses are common, including the collection of medicinal plants and wild honey (Fundación Tierra, 2022). The community's dependence on external markets is increasing, as self-subsistence crops diminish partly because of longer droughts that make agriculture difficult. Moreover, as families grow, pressure on the protected forest rises, due to the need for new land to allocate the new members, and a timber market that covets San Juan's forest, given the growing scarcity in other parts of the Chiquitanía.



Figure 9: Cattle ranch and dry forest in San Juan. Author: Stefan Ortiz-Przychodzka, Oct. 2022

Honey economies

The topic of honey economies figures throughout this thesis. Its relevance emerged during exploratory conversations and observations in the first fieldwork, where honey was widely mentioned as an important source of medicine and a reason for quotidian human-bees interactions. Honey's importance became more apparent during the Covid-19 pandemic. While other economies were also relevant (e.g., handicrafts, hunting, traditional medicine, home gardening, and domestic care), honey was particularly pervasive in my conversations and interviews. Thus, I decided to explore it in depth, as a case to illustrate assemblages of diverse economies. For this, I included questions on honey collection, beekeeping, and relations with bees in the prompts for snowball sampling and in my interviews.

Additionally, several studies have shown the richness of human-bees relations and their environmental, territorial, and political-economic implications. For example, Phillips (2020) analyzes how human-bees interrelations entail different experiences of temporalities in practices of beekeeping. Several authors reflect on the historical entanglements of Indigenous territories and people's relations with bees (e.g., Delgado et al., 2022; Hill et al., 2019; Márquez-Osuna, 2024). Other studies show the importance of Indigenous and local knowledges related to the links between bees, pollination, biodiversity, and agriculture, among others (e.g. Aldasoro Maya et al., 2023; Cely-Santos, 2021; Delgado et al., 2022; López Barreto, 2021; Maderson & Elsner-Adams, 2024; Nakagawa et al., 2025). Finally, some studies analyze

the conflictive intersections of human-bees relations with extractivism and the risks of commodification (e.g. Ay, 2024; Ellis, 2022; Knezevic & Marshman, 2021).

The Chiquitanía is a land of wild bees, with 27 registered species of native stingless bees roaming across its different landscapes (Crespo Cordero et al., 2024; Mamani et al., 2010; Morón et al., 2023; Townsend et al., 2021). While the Covid-19 pandemic renewed interest in honey as medicine (Cavallero, 2020; IRFA, 2020), little attention has been paid to the impacts of frontier expansion on bees and honey, including wildfires, deforestation, and ecosystem degradation (Ribera Arismendi, 2023; Rodríguez et al., 2023). Furthermore, to the best of my knowledge, no abundant literature on people-bee relations in the Chiquitanía exists. However, a few studies and brief mentions of Indigenous people's practices and interactions with bees and honey for instrumental and non-instrumental reasons have been made. These include food, medicinal, and commercial uses of honey and wax (Adler et al., 2023; Arrien & Viana Chuvé, 2007; Maldonado & Torrico, 2014; Morón et al., 2023; Radding, 2001; Rodríguez et al., 2023; Townsend et al., 2021), and intangible relations, e.g., wild bees possessing their own protective spirits (Arrien & Viana Chuvé, 2007; Lennon, 2012). Wild honey collection and, more recently, domestic beekeeping have been practices that bring families together. Honey economies contribute to the social fabric of Indigenous communities: people use it at home, in exchange with neighbors, or in local markets. Women have led many of these practices, building a beneficial economy that supports domestic care activities, collective organization through beekeeping, and occasional income opportunities (Adler et al., 2023; Nostas Ardaya & Sanabria, 2010; Rodríguez et al., 2023). These characteristics have made honey and bees (including European honeybees and native stingless bees) the object of community projects financed by NGOs and development institutions, integrating beekeeping and wild honey collection in some economic projects (Lastarria-Cornhiel et al., 2008) and environmental territorial planning (CICOL, 2019; Inturias et al., 2019).

5. Results

In this section, I summarize the key results of my research, detailed in Chapters 2 to 5, by highlighting their main empirical contributions. I show how each chapter addresses its specific objectives and provides elements of response to the research questions of my thesis (Figure 10). I also show how each chapter's results link and expand on the key theoretical considerations of Chapter 2.

Research question	To what extent do more-than-human entanglements constitute diverse economies and shape territorial relations at the Bolivian agrarian commodity frontier?			
Specific questions	How can diverse economies be conceptualized from a relational and more-than-human perspective?	What are the manifestations of more-than-human agencies in everyday economic lives?	To what extent do non-utilitarian values guide economic practices and support meaningful relations?	How do assemblages trigger the emergence of diverse economies and shape territorial relations?
Chapter objectives	Chapter 2: To build a relational perspective of economic practices and values.	Chapter 3: To understand how people experience assemblages in their economic lives.	Chapter 4: To analyze the narratives of people's experiences of commodification.	Chapter 5: To assess how diverse economies emerge and shape territorial relations.
Approach and methods	Deductive Narrative literature review	Iterative Interviews: semi-structured, unstructured		Iterative Semi-structured, unstructured, walking interviews, participatory mapping
Chapter's main contribution	Ch.2: Conceptualization of diverse economies as assemblages of more-than-human relations involving the co-constitution and negotiation of interrelated livelihoods.	Ch.3: Description of forced synchronizations of territorial relations to the rhythms of agrarian extractivism, contrasting with more-than-human synchronizations of diverse economies.	Ch.4: Experiences of destruction, remaking and persistence of meaningful territorial relations, non-utilitarian and not fully commodified.	Ch.5: Characterization of honey economies as combinations of meaningful instrumental relations and more-than-human agencies , which can act on territorial transformations.
Economies of honey at the agrarian commodity frontier. How diverse economies emerge from the territorial fractures in the Bolivian Chiquitanía				

Figure 10: Thesis overview with chapter's objectives and main contributions.

Note: orange dotted box: theoretical, conceptual. Blue dotted box: empirical research.

5.1. Diverse economies from a relational and more-than-human perspective

Chapter 2 offers a way to conceptualize diverse economies from relational and more-than-human perspectives, drawing on the work of Gibson-Graham and Miller (2019). This chapter defines diverse economies as assemblages through which humans and non-humans constitute and negotiate their inter-related livelihoods. Some of these assemblages are meaningful and difficult to replace, because they involve blends of non-utilitarian instrumental and relational values, and senses of place shaped by people's encounters with other human and non-human beings. Diverse economies gather heterogeneous entities that produce mutual affections through networked agencies (Miller, 2020). Hence, the idea that people experience meaningful instrumental relations in their daily economic lives, through blends of non-utilitarian values, contrasts with common conceptualizations of utilitarian economies, which are made of replaceable relations according to their capacity to maximize people's utility.

This conceptual perspective provides the deductive elements that I use to develop my empirical research. It builds on theoretical and empirical literature on diverse economies (Gibson-Graham & Dombroski, 2020b), environmental values, and senses of place. The logic through which I combine this literature is illustrated in Figure 11, which represents the conceptual model in four key considerations: (1) Assemblages are processes of entanglement of heterogeneous entities, open to adjustments and change through interactions with other assemblages. (2) People experience assemblages when their trajectories intersect with those of other human and non-human entities. Such encounters can stimulate senses of place, or meaningful spatio-temporal entanglements that people experience through values and practices. (3) Assemblages form diverse economies when they involve processes of co-constitution and negotiation of interrelated livelihoods. (4) Spatio-temporal encounters (i.e. place relations) and diverse economies shape each other.

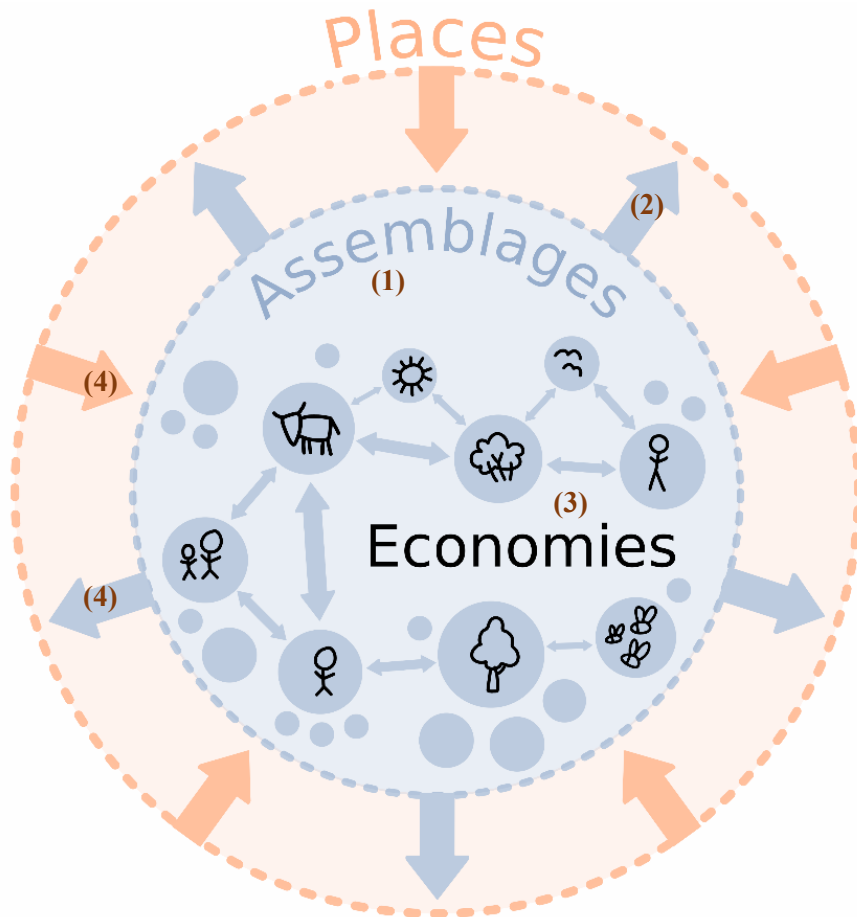


Figure 11: Representation of diverse economies as assemblages of more-than-human relations

(1) assemblages are dynamic webs of relations; (2) senses of place emerge from people's experience of assemblages; (3) economies are a type of assemblage that include values, practices and abilities involved in the co-constitution and negotiation of interrelated livelihoods; (4) economies produce places, and places produce economies. **Source:** Ortiz-Przychodzka et al. (2023). **Figure design:** Jan Hanspach

These four considerations guided me through the empirical analysis of diverse economies at the Chiquitanía frontier. As Chapters 3 to 5 unfold, my analysis feeds back into the theoretical model, adding concepts that emerge from the interviews, such as “more-than-human synchronizations” in Chapter 3, “meaningful territorial relations” in Chapter 4, and “meaningful instrumental relations” in Chapter 5.

5.2. Manifestations of more-than-human agencies in everyday economic lives

Chapter 3 presents evidence that more-than-human agencies emerge at the territorial fractures caused by agrarian extractivism in Cordillera and San Juan. This study shows that people experience frontier expansion as the forced synchronization of their economic lives with the rhythms of globalized capitalist markets. The term “synchronization” originates in my observation that people's narrations of frontier

expansion and territorial lives reveal different trajectories intersecting in common spatio-temporal contexts. Thus, synchronizations are manifestations of assembling processes in space and time. Forced synchronizations imply a sense of lack of alternatives, as those economies that relied on people's relations to forests, and on interconnected human and non-human livelihoods, disappear. In particular, the loss of economic diversity and self-sufficiency is linked to deforestation and unregulated logging. Nevertheless, this research also shows a nuanced picture of frontier dynamics, by unveiling how other synchronizations take place, exposing the fractures of frontier expansion and following unexpected trajectories.

The case of honey economies illustrates how more-than-human synchronizations unfold in different places in both communities. Honey economies exist because of the persistence of human-bees entanglements amidst the violent expansion of agrarian extractivism. Their synchronizations involve multiple life trajectories and more-than-human agencies. Chapter 3 describes three assemblages that form honey economies: forest-economies (honey collection), farming economies (honey harvesting), and village/household economies (beekeeping).

For instance, in San Juan's community forests, honey collection is a fortuitous practice, which originates in unexpected and sometimes conflictive encounters between people and wild bees during logging or hunting activities. Such encounters imply mutual affections depending on the behaviors, reactions, as well as the conflicts and negotiations between people and bees over the possibility of collecting honey or cutting down the trees that host beehives. Therefore, people-bees encounters are meaningful events that can trigger new events in unpredictable ways. Stories about bees and honey collection spread throughout San Juan, creating shared experiences out of intimate relations that are at least as important as collecting honey. In San Juan and Cordillera's croplands, honey economies emerge from land management, and agricultural practices. Especially in Cordillera, land clearing and pesticide use force bees to synchronize with the flowering of monocrops, or to move elsewhere in search of food resources. This triggers new synchronizations; for example, when bees move to the villages, and make a home in people's patios and home gardens. New encounters and relations emerge from these trajectories, including those that allow beekeeping to exist and provide reasons for collectives of women to organize, to care for the bees, and sometimes sell honey to complement their household income.

The case of honey economies helps to understand how more-than-human agencies are expressed in spatio-temporal synchronizations that persist amidst the homogenizing forces of agrarian extractivism, providing a variegated picture of frontier processes. Additionally, it brings evidence linked to the four key considerations of the conceptual model of chapter 2, in particular: (1) honey economies are assembling processes (synchronizations) that are open to change. (2) People experience synchronizations as meaningful encounters, i.e. intersecting trajectories in specific places (spatio-temporal entanglements). (3) Honey economies entail conflicts and negotiations between people and bees, unveiling interrelated

livelihoods. (4) Honey economies and people-bee encounters shape each other, while also being shaped by wider territorial reconfigurations.

These results from Chapter 3 provide new conceptual and empirical insights that are taken up in Chapters 4 and 5. In particular, the notion of meaningful relations is expanded in Chapter 4. Chapter 5 takes up the spatio-temporal emphasis of economic assembling processes, and elaborates on the interplays between the intimacies of more-than-human encounters in specific places and wider territorial reconfigurations.

5.3. Narratives of people's experiences of commodification

Chapter 4 shows how diverse economies persist despite the destructive territorial reconfigurations fueled by commodification in the Chiquitanía. This study presents three contrasting frontier-narratives. First, it unveils narratives defining economic success through a utilitarian value-scale, simplistically portraying agribusiness at the top of the scale, and Indigenous farmers at the bottom. Second, it analyzes place-based narratives about how agrarian extractivism destroys meaningful territorial relations due to massive deforestation, water depletion, and crop diversity loss. Third, it reveals narratives of remaking perseverant, meaningful territorial relations with non-extractivist economies illustrated by the cases of handicrafts and honey. These narratives reflect economic relations that are not fully commodified, but could be if they fall into the enchantments of a bonanza (i.e., a sudden profitability, which is merely temporal).

This study unravels how people experience the functioning of commodification. It shows how its utilitarian logics produce the myth of agribusiness efficiency and racialized descriptions of Indigenous people's economies as inferior and prone to subordination. In contrast, diverse economies of handicrafts and honey build on non-extractivist arrangements. For example, the case of handicrafts suggests the possibility of shaping careful market-relations by valuing the encounters between urban entrepreneurs, Indigenous artisans, and the ecosystems where they collect plant fibers. Thus, commercialization can become a process of encounter and careful synchronization guided by non-utilitarian values. The case of honey shows how people perceive its commercialization both as an opportunity and as a risk. The narratives analyzed reflect overlapping instrumental and relational values. Such overlap is visible in narratives stressing honey's importance for strengthening community bonds and for raising awareness of the wider ecological interactions and life-rhythms without which honey would not exist. Moreover, narratives suggest that market opportunities could trigger the overexploitation and the disassembling of territorial relations, of which honey is a part, which could mean yielding to utilitarian values and to commodification.

Finally, Chapter 4 contributes to the conceptual model of Chapter 2 (Figure 11), by showing that: (1) the meaningful relations of handicrafts and honey economies can be weakened, and even destroyed by

commodification, in benefit of homogenized relations guided by utilitarian values; or can resist it, and be re-invented in non-utilitarian terms. (2) People experience markets as places of encounter that give the opportunity to acknowledge the multiple life-rhythms (trajectories) that allow for the production of handicrafts and honey. Such encountering trajectories can strengthen collective bonds and meaningful territorial relations based on careful practices and non-utilitarian values. (3) Handicrafts and honey economies depend on the negotiation and synchronization of rhythms within market relations. For example, conflicts and negotiations emerge from the encounters between consumers, urban entrepreneurs, artisans, and ecosystems in the case of handicrafts, and those of bees, people, and forests in the case of honey. (4) When multiple trajectories and life-rhythms intersect in markets, different territorial relations are shaped (e.g., weakening or remaking/reinventing meaningful relations). Likewise, territorial relations and encounters can shape markets, for example, by promoting non-utilitarian relations amidst commercialization processes.

Chapter 4 provides empirical insights on the notion of meaningful territorial relations. Chapter 5 takes up this notion and elaborates it further with a description of the links between honey economies, meaningful instrumental relations, and territorial relations in Cordillera and San Juan.

5.4. How honey economies emerge and shape territorial relations

Chapter 5 examines instrumental relations beyond utilitarian values. Through the case of honey-economies, it shows that use-value and relational values are not opposed to each other, but intertwined. Moreover, this study provides examples of value blending and more-than-human agencies, and presents them as central features of meaningful instrumental relations.

This study delves deeper into the intimate relations of people and bees that shape honey economies. Specifically, it depicts the emergence of meaningful instrumental relations from the unique use-value of honey, and the meaningfulness of the practice of collecting and harvesting it. Meaningfulness refers to the idea that honey has an irreplaceable use-value (e.g., its collection and harvesting can create social bonds and strengthen territorial relations among people). In addition, the process of encountering bees and collecting honey is not only a means to an end (e.g. consuming, exchanging or selling the honey), but also an end in itself (e.g., it is a source of reputation and identity). Bees' and honey's agencies shape the meaningfulness of instrumental relations. Both have the capacity to affect people's experiences and life-trajectories. For instance, honey has different effects on those who consume it, involving senses of taste and medicinal properties. Some types of honey can render people sick depending on how they consume it. Bees also have agency, shaped by their behavior, charisma and reactions to people's pres-

ence. Through their agency, bees inspire reflections on community life, including notions of cooperation and hard work, and observations of how their life-trajectories are entangled with wider territorial and ecological relations.

Meaningful instrumental relations emerge from the quotidian and intimate character of people's encounters with bees and honey. Such encounters happen in different places within the community space, and take different forms depending on the elements involved, such as the practices, the places, the activities, or the intersecting more-than-human trajectories. Those elements are shaped by changing territorial dynamics, such as deforestation, agriculture, village activities, and community daily life. However, through their capacity to affect people's values and practices, honey economies can also act on territorial dynamics.

People's narrations of encountering bees and collecting and harvesting honey reveal the role of blending and interacting non-utilitarian values in the formation of honey economies. The notion of blending values (also in Vizuite et al., 2025) refers to the difficulty of separating instrumental and relational values in narrations about meaningful instrumental relations. Following the idea that relational values have an instrumental component (Deplazes-Zemp & Chapman, 2021), Chapter 5 also suggests that use-values have a relational component, e.g., honey has an irreplaceable instrumental value. This indication of non-substitutability of honey economies shows a potential limit to their commodification: some incommensurable values (Lowrey, 2008) cannot be traded and measured in monetary terms, or translated into utilitarian values.

Through these results, Chapter 5 provides empirical ground for the conceptual model in Chapter 2, through its four key considerations. (1) Honey economies assemble everyday intimate encounters between people, bees, and honey. (2) Such intimate encounters shape people's experiences, including senses of belonging and senses of place. (3) Meaningful instrumental relations entail the possibility of valuing relations with bees as means-for-something, while acknowledging their life-trajectories and interdependences. By experiencing meaningfulness in honey economies, people also experience livelihood interrelation. (4) By combining more-than-human agencies and blending values, honey economies enable people's experiences of livelihood interrelation and mutual affections. Honey economies and territorial relations can influence each other.

6. Discussion

In this thesis, I present a theoretical model for understanding diverse economies from a relational and more-than-human perspective. My empirical research, based on a thick description of diverse economies at the Bolivian agrarian commodity frontier, provides inductive elements feeding back to the initial theoretical model. It does so by proposing spatio-temporal notions of assembling processes (i.e., synchronizations and place-based territorial relations), more-than-human agencies, and non-utilitarian blends of values and practices (i.e., meaningful instrumental relations). In this section, I revisit the discussions of each chapter in light of the key results and scientific contributions of this thesis. I reflect on those contributions through the literature on diverse economies, environmental values, and agrarian extractivism.

6.1. A synthesis: key contributions to understanding diverse economies at agrarian commodity frontiers

The conceptual and empirical insights of my thesis build on each other to provide a relational lens through which to analyze diverse economies at agrarian commodity frontiers. Altogether, the notions of synchronization, more-than-human agencies, and meaningful instrumental relations enrich the definition of diverse economies presented in Chapter 2, which draws on Gibson-Graham and Miller's (2015) idea of ecological and interrelated livelihoods. Accordingly, I propose a definition of diverse economies as synchronizations of meaningful instrumental relations through which humans and non-humans co-constitute and negotiate their interrelated livelihoods and shape territorial relations (see Table 3). My thesis's conceptual proposal is informed by the empirical context of Bolivia's agrarian extractivism and frontier expansion and the case studies I developed. The resulting theoretical model (Figure 12) on diverse economies can support analogical inferences in other contexts of agrarian extractivism and commodification. Analogical inferences involve the identification of "salient attributes" of one case that can be projected onto another case, using the lessons learned to navigate "new scenarios that we deem roughly analogous" (Levine et al., 2015, p. 28). This interpretive process requires caution to avoid erasing the original context of each case study, which would subsume the observations into generalizations lacking the situated explanatory elements, therefore risking overlooking "large consequential differences" and falling into errors of judgement (Helmcke, 2022; Levine et al., 2015, p. 28).

Table 3: Key conceptual elements of diverse economies

Key conceptual elements of diverse economies at the Bolivian agrarian commodity frontier				
Ch. 2	Diverse economies are assemblages through which humans and non-humans co-constitute and negotiate the provisioning practices and abilities that support their interrelated livelihoods.			
	(1) Assemblages are dynamic entanglements of heterogeneous entities.	(2) Human and non-human encounters, and intersecting trajectories, stimulate senses of place and meaningful entanglements.	(3) Diverse economies assemble through more-than-human processes of co-constitution and negotiation of interrelated livelihoods.	(4) Place-territorial relations and diverse economies shape each other.
Ch. 3	Honey economies are synchronization processes open to change.	People experience synchronizations as meaningful encounters in specific places.	Honey economies entail conflicts and negotiations between people and bees, unveiling interrelated livelihoods.	Honey economies and people-bees encounters shape each other, while being shaped by wider territorial relations.
Ch. 4	Meaningful relations can be weakened by commodification, or can resist it and be re-invented in non-utilitarian terms.	People experience markets as places of encounter and intersecting life-rhythms. Encounters can strengthen territorial relations based on careful practices and non-utilitarian values.	Handicrafts and honey economies rely on negotiations and synchronizations of life-rhythms within market relations.	Markets shape territorial relations (e.g., weakening or reinvention of meaningful relations), and territorial relations shape markets (e.g., promoting non-utilitarian values and careful encounters).
Ch. 5	Honey economies assemble everyday intimate encounters between people, bees, and honey.	Intimate encounters shape people's experiences, such as senses of belonging and senses of place.	Meaningful instrumental relations entail use-values and relational values, including the acknowledgment of livelihood interdependencies.	Value blending and more-than-human agencies in honey economies enable people's experiences of livelihood interrelation and mutual affections.
Synthesis	(1) Diverse economies assemble heterogeneous trajectories through synchronizations at the fractures of the agrarian commodity frontier.	(2) Meaningful instrumental relations emerge from people's experience of more-than-human synchronizations.	(3) Diverse economies combine more-than-human agencies and blends of non-utilitarian values that cannot be fully commodified.	(4) Diverse economies and territorial relations shape each other. (5) Diverse economies emerge at the fractures of agrarian extractivism.
Diverse economies are synchronizations of meaningful instrumental relations through which humans and non-humans co-constitute and negotiate their interrelated livelihoods and shape territorial relations.				

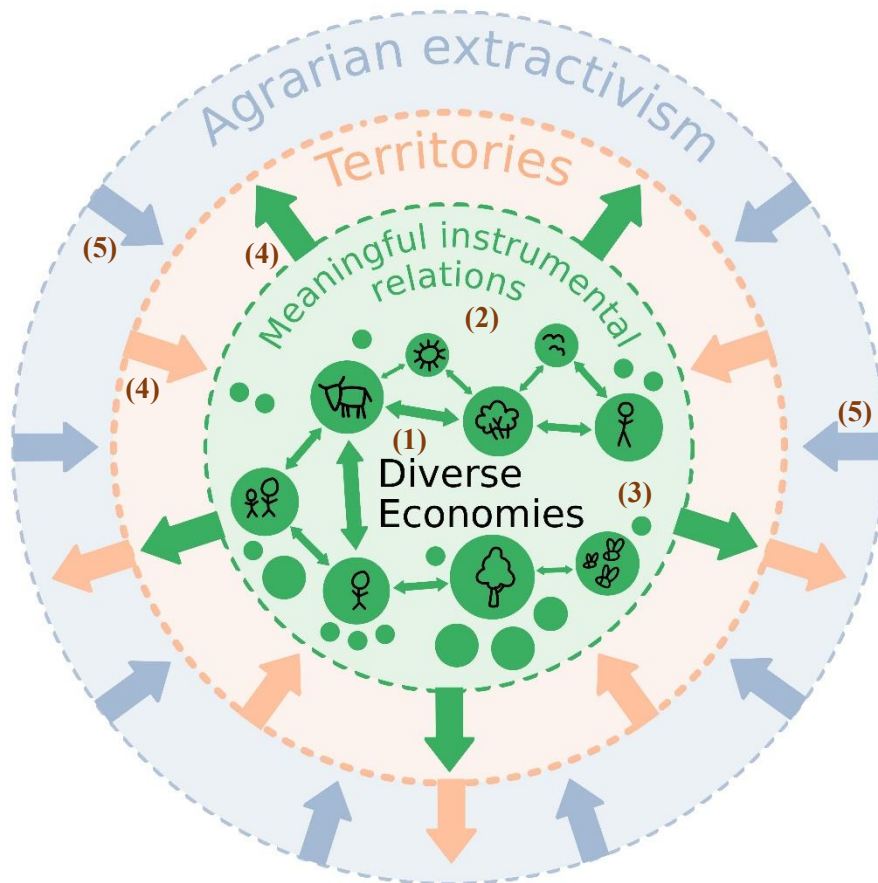


Figure 12: Representation of diverse economies as synchronizations of meaningful instrumental relations at the agrarian commodity frontier

(1) Diverse economies assemble heterogeneous life-trajectories through **synchronization** processes. (2) **Meaningful instrumental relations** emerge from people's experience of more-than-human synchronizations. (3) Diverse economies combine **more-than-human agencies and blends of non-utilitarian values** that cannot be fully commodified. (4) Diverse economies and **territorial relations** shape each other. (5) Agrarian extractivism, through commodification processes, generates deep **territorial fractures** at agrarian commodity frontiers, from which diverse economies can emerge. **Source:** the author, based on Ortiz-Przychodza et al. (2023). **Figure design:** Jan Hanspach.

Here I discuss the main considerations of the theoretical model in Figure 12, which expands Figure 11 (presented earlier) and builds a synthetic representation of the main theoretical and conceptual insights of my thesis (see Table 3).

(1) Diverse economies are synchronization processes

My empirical work illustrates how assemblages synchronize economic dynamics across scales and more-than-human life-trajectories. Synchronizations include the commodifying dynamics of agrarian extractivism (e.g., the expansion of soybean monocrops within unequal power-relations), and the non-utilitarian practices and values that emerge from everyday encounters in diverse economies. Although the literature on diverse economies largely discusses different practices that challenge commodification, it rarely explains how commodification takes place (Gibson-Graham & Dombroski, 2020b). In my the-

sis, I describe how commodification entails forced synchronizations that cause deep fractures in territorial relations. At those fractures, more-than-human synchronizations form, from which honey economies emerge. Hence, those situated economic lives do not form in isolation from wider economic and ecological processes. The conflictual but entangled dynamics between diverse economies and commodification under agrarian extractivism reveal a picture of economic hybridity (Zein-Elabdin, 2009) and cross-scalar interrelations (Li, 2023b; Tsing, 2015).

(2) Diverse economies entail meaningful instrumental relations

In my research, I show how meaningfulness is not unique to non-instrumental relations. Instead, usefulness (or use-value), can involve meaningful instrumental relations when it supports and reflects wider territorial relations. Particularly, some economic relations involve everyday, more-than-human encounters through which people can notice their lives' interdependences with other life-trajectories (i.e., interrelated livelihoods). Meaningfulness does not imply careful and harmonious relations, but it does imply the acknowledgment of some degree of reciprocity and mutual affection. Mainly, the case of honey economies shows that people do not experience "nature" merely as a passive resource for humans' utilitarian benefit. In contrast with utilitarian moralities, meaningfulness can support alternative economic arrangements based on use-values and involving more responsible relations, with moralities of care and ethical negotiations (Gibson-Graham & Dombroski, 2020a; Muradian & Gómez-Baggethun, 2021).

(3) Diverse economies assemble more-than-human agencies and blends of non-utilitarian values

People can experience more-than-human agencies in their economic lives through blending instrumental and relational values. Relational values enable mutual affects even within instrumental relations, because mediums or instruments can act on those employing them. This is the case of bees in my research, which are valued for their honey but also have agency over people's practices and daily lives. Following Muraca's explanation of "concrete relations" (2016, p. 31), instruments can embody complex relations "displayed across space and time, inscribed in its very material structure". The idea that relational values can refer to concrete instrumental relations is central to understanding how diverse economies can meaningfully assemble more-than-human agencies and blends of non-utilitarian values. Moreover, value blending poses a limit to commodification because the incommensurability (Keleman Saxena et al., 2018; Lowrey, 2008) of blends of instrumental and relational values means that they cannot be easily translated into utilitarian-monetary terms and, thus, commodified.

(4) Diverse economies and territorial relations shape each other.

Throughout my empirical results, I show how diverse economies are shaped by encounters, which reflect interconnections of life-trajectories. Each encounter can trigger new dynamics, new encounters and interconnections. Hence, a single economic practice cannot be fully understood in isolation from wider networked dynamics, because it is shaped by them (Miller & Gibson-Graham, 2019). My research

only addresses partial connections between diverse economies and territorial dynamics, ranging from community bonding to an overwhelming commodification. Nevertheless, those partial connections suggest the possibility of multiple other territorial dynamics, many of them unruly, unpredictable, or unexpected (Spiers & Lewis, 2016; Tsing, 2015). Diverse economies and territorial relations, including non-human entities and the non-human nature, are not antagonistic but mutually constituted.

- (5) Agrarian extractivism and its manifestations (e.g., commodification) are a powerful force that generates territorial fractures. However, diverse economies can emerge from them.

Diverse economies cannot be understood in isolation from the historical trajectory of capitalism and its cross-scalar manifestations. One of its manifestations, agrarian extractivism, devastates vast territories made of long-standing relations. The fracturing of territorial relations opens liminal spaces (Mignolo & Tlostanova, 2006; Sonetti-González et al., 2023), challenging frontiers' fixity, from which multiple trajectories emerge, including diverse economies (Berman-Arévalo, 2023). While extractivism feeds on commodified resources produced by human and non-human work and abilities that are not fully under its control (Tsing, 2015), unruly relations unfold that resist commodification (Tsing, 2015). My thesis does not aim at simplifying or suggesting ways to solve such dialectical entanglement (Campbell, 2021; Lowrey, 2008; Svampa, 2015). Instead, it stresses the motley character of frontiers (Jasser et al., 2022; Rivera Cusicanqui, 2018) and provides elements for a deeper understanding of how territorial transformations can be shaped towards more responsible and non-extractivist economic relations.

6.2. A political ecology and ontology of diverse economies and territorial transformations

Throughout my research, I describe how diverse economies exist in tension at multiple scales, including the homogenizing dynamics of agrarian extractivism and commodification, and the more-than-human entanglements in everyday encounters. Such tensions reflect large asymmetries in the ways that territorial reconfigurations are shaped. At a larger scale, agrarian extractivism can fuel frontier expansion because it relies on political and economic alliances and narratives shaped by powerful actors (Serje, 2024; Svampa, 2022; Veltmeyer & Ezquerro-Cañete, 2023). At the local scale, more-than-human encounters can act on everyday territorial relations amidst the massive devastation left by extractivist dynamics. The scales and impacts of both processes are not equal. Through my research, cross-scalar tensions imply dialectical dynamics (Campbell, 2021), for instance, between commodification and unruly economic relations, as observed by scholars working on commodity frontiers (Li, 2014; Serje, 2024; A. Tsing, 2015). As long as there are relations that extractivism cannot appropriate due to value-incommensurability (Lowrey, 2008), the advance of commodification unveils its own limitations and fractures, together with the possibility for diverse economies to emerge.

The relational approach to diverse economies in my thesis can stimulate a dialogue with ontological perspectives within political ecology (Blaser, 2025; Keleman Saxena et al., 2018; Serje, 2024). Accordingly, research on diverse economies at agrarian commodity frontiers should not be limited to assessments of material practices to produce technical solutions and economic designs supposedly leading to sustainable transformations (Feola et al., 2021). Rather, it should highlight the politics of everyday economic life (Ressiore et al., 2024; Smessaert & Feola, 2025), by stressing value dimensions and related practices that reflect world-making processes, because they unveil, enable, or hinder multiple relations that produce environments and territories (Phillips, 2020; Tsing et al., 2024). People's narrations and experiences of encounter bring multiple relations back to the surface, and invite research to notice which "more-than-human worlds" (Jankowski et al., 2025; Seshia Galvin, 2018; Tsing et al., 2024, p. 4) diverse economies support (Miller, 2020; Phillips, 2020). This implies the possibility of considering and acknowledging those worlds that extractivism seeks to render invisible (Jobson et al., 2024).

In this line, research can bring attention to matters of economic justice beyond the redistribution of material welfare (Kenter et al., 2024), to include ontological differences based on value incommensurability (Keleman Saxena et al., 2018). This can activate questions of environmental justice and territorial rights (Haesbaert & Mason-Deese, 2020; Porto-Gonçalves, 2009; Segarra et al., 2024), e.g., the rights of Indigenous people to make a living according to their own experiences of what a meaningful life is (Anguelovski & Martínez Alier, 2014; Eichler & Bacca, 2021; Ulloa, 2017). Following Gibson-Graham, I argue that describing the multiple values through which people make economic decisions and actions is a matter of economic and territorial justice. Such description implies acknowledging "different regimes of value that people judge and move into and out of throughout their daily life", and tracing "how people view temporality and make provision of their own or others' futures" (Gibson-Graham, 2014, p. 151), where "others" are not just humans. Questions of relational values and meaningful instrumental relations can trigger ideas of economic and territorial justice, in dialogue with multispecies perspectives that consider which relations exist in a territorial assemblage (Kröger, 2021), and "how should humans coexist with, and flourish alongside, other living and non-living beings" (Keleman Saxena et al., 2018, p. 4).

Finally, my thesis offers a way to understand everyday economic life, not as a neutrally rational space, but rather as a space of conflict and negotiation that can activate ethical and political actions (Campbell, 2021; Gibson-Graham & Dombroski, 2020b). Future research can elaborate on the conditions that enable such actions. In my research, the presence of everyday politics, i.e., more-than-human and cross-scalar frictions (Tsing, 2005), does not entail a collectively organized anti-extractivist resistance, or a collective political action towards post-extractivist transitions or sustainable territorial transformations (Gudynas, 2023). In fact, the case studies showed that commodification and extractivism are ingrained in people's everyday economic lives. People decry the impacts of extractivism while being deeply entangled with it. At the same time, everyday lives are not fully submissive to extractivism. While I do

not expand on how collective political actions can emerge (Astegiano et al., 2023; Scheidel et al., 2023; Smessaert & Feola, 2025) to change the trajectories of territorial devastation depicted in my thesis, I coincide with Tsing (2005) in the idea that agencies can be formed in the conditions of devastation and despair that arise from frontier expansion. Researching diverse economies at agrarian commodity frontiers requires rendering visible both the conditions of despair, i.e., territorial fractures, and the conditions of possibility of non-extractivist and non-utilitarian economies. Highlighting currently existing frontier dynamics through their everyday more-than-human entanglements might be a powerful way to support diverse economies and their attempts, intentional or not, to escape the conditions of devastation and despair.

7. Conclusions

In this thesis, I elaborated a theorization and conceptualization of diverse economies at agrarian commodity frontiers through the case of honey economies in the Bolivian Chiquitanía. With this work, I seek to understand how more-than-human entanglements constitute diverse economic practices and values and shape place-based territorial relations. I first proposed a theoretical framework of diverse economies from a relational perspective. I then developed an empirical case study through a thick description of people's experiences of the ways in which frontier dynamics affect their economic daily life, and how their intimate territorial relations in honey economies include more-than-human agencies that shape values and practices. The case studies of two Indigenous communities and honey economies allowed me to feed back into the theoretical framework through five central elements: (1) Spatio-temporal notions of assembling processes (i.e., synchronizations and place-based territorial relations). (2) More-than-human agencies that influence daily economic lives and produce meaningful instrumental relations. (3) Non-utilitarian blends of values and practices that cannot be fully commodified. (4) The mutual shaping of diverse economies and territorial relations. (5) The emergence of diverse economies at the fractures of agrarian extractivism. These five elements suggest a way to understand how diverse economies unfold in everyday human and non-human encounters, which are entangled with agrarian extractivism but partially escape its logics. These results contribute to providing a nuanced picture of the agrarian commodity frontier, challenging its fixed representations and homogenizing dynamics.

I discussed the implications and contributions of my research results in light of the literature on diverse economies, environmental values, and agrarian extractivism. Particularly, I stressed how my findings provide analytical elements for understanding the cross-scalar tensions between commodification processes and unruly economic relations that unfold at the frontier. I argued that value-incommensurability limits commodification. The resulting dialectical relation between commodifying dynamics and unruly economies can open space for the emergence of diverse economies. Finally, I argue that research on

diverse economies can attend to matters of economic justice, territorial rights, and ontological difference. Rendering multiple practices and values visible can motivate further reflections on how humans and non-humans can coexist and flourish together, and how their combined agencies can create alternative models to the devastation of agrarian extractivism. Thus, my thesis suggests new ways of exploring diverse economies and everyday economic lives as unfolding spaces of ethical and political action amidst the conditions of despair created by the destructive logics of extractivism and commodification.

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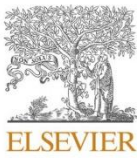
Chapter 2. Rethinking economic practices and values as assemblages of more-than-human relations

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Figure 13: Beekeeping in a forest patch in Cordillera. **Author:** Stefan Ortiz-Przychodzka, Dec. 2021

²⁰ A corrigendum was published in February 2024. It refers to the mistaken statement that the case study is located in Western Bolivia, instead of the Eastern lowlands of Bolivia. Doi: 10.1016/j.ecolecon.2024.108157



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Rethinking Economic Practices and Values As Assemblages of More-Than-Human Relations

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ABSTRACT

The relational turn in the academic literature on environmental values explores ontologies that rethink the dualistic, hierarchical separations of humans from nature. In particular, the consideration of a plurality of values and ways in which humans connect to nature has brought new insights on the dynamic interconnections between people, place and environmental processes, all highly relevant for the world's sustainability challenges. However, many conceptualizations of economic practices and values are still predominantly dualistic and anthropocentric. To overcome this human-nature divide we propose a conceptual integration of relational values with assemblages of more-than-human relations, illustrated with examples from the literature and ongoing empirical research. These concepts offer a way of representing meaningful and dynamic interrelationships, including humans, physical elements, materials (e.g. technologies, tools), immaterial entities (e.g. sounds, lights, colors), and other non-human beings. We argue that such conceptual integration provides a useful framework to rethink diverse economies as the processes through which humans and non-humans co-constitute their interrelated livelihoods. With this, we extend the relational turn to research on economic human-nature connections, following the call of many scholars in the field of ecological economics to unveil non-utilitarian values and consider multiple economic agencies.

1. Introduction

The academic literature on environmental values is currently experiencing a relational turn. This turn is characterized by the exploration of ontologies that seek to rethink the dualistic, hierarchical separation of humans from nature and to consider a plurality of values in order to better understand their dynamic interconnections to face the world's sustainability challenges (Descola, 2013; Pascual et al., 2021). Relational perspectives, with their long-standing tradition in human ecology (Keleman Saxena et al., 2018), can help unpack the multiple ways in which humans connect to the rest of nature and value its importance (West et al., 2020). In this paper, we apply a relational perspective to economic practices and their underlying values (hereinafter referred to

as “diverse economies”). We consider that the relational turn should further explore diverse economies as one important way through which humans and the rest of nature connect with the aim of sustaining their interrelated livelihoods (Gibson-Graham and Miller, 2015).

Many conceptualizations linking economies and human-nature relations are still predominantly dualistic and anthropocentric (Massenberg, 2019; Washington and Maloney, 2020). Heated debates have emerged, for example, around the role of the concepts of ecosystem services (ES) and nature's contributions to people (NCP) in explaining human-nature relations. It has been argued that ES and NCP continue to recognize mainly anthropocentric representations and fall short at rethinking hierarchical separations that are considered a cause of the sustainability crisis (Barron and Hess, 2020; Muradian and Gómez-

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Baggethun, 2021; O'Connor and Kenter, 2019). Additionally, economies involving other purposes than human's utility-maximization are generally overlooked in research informing environmental management for sustainability (Hodgson, 2012; Schill et al., 2019). Scholars from the field of ecological economics have therefore called for unveiling non-utilitarian values and for considering more-than-human agencies in diverse economies to avoid risks of excessive instrumentalization and commodification of nature (Kenter, 2020; Muradian and Gómez-Baggethun, 2021; Washington and Maloney, 2020). This includes propositions for shifting from a "morality of utility" towards one of care, including "the allocation of property rights and the participation of nature in the community of justice" (Muradian and Gómez-Baggethun, 2021).

A non-anthropocentric and relational perspective on economies needs to challenge the conception of humans as subjects with privileged agency over a non-human nature. Drawing on Actor-Network Theory, we refer to the "more-than-human" as a way to acknowledge that fixed boundaries between discrete entities, such as humans, non-humans and nature, get blurred when they are assessed as entwinements of heterogeneous entities constantly affecting each other¹ (Durand and Sundberg, 2019; Keleman Saxena et al., 2018; Latour, 2017). In this line of thought, Assemblage theory affirms that mutual affections and associations can lead entities to temporarily come together and form networked identities called "assemblages", always subject to change and novelty due to the dynamics of relations (Turker and Murphy, 2021; Woods et al., 2021). Assemblages can include non-human species and physical elements in the landscape, materials (e.g. technologies, tools) and immaterial entities (e.g. sounds, lights, colors), and other non-human beings (González-Hidalgo and Zografos, 2020; Larsen and Johnson, 2016; Whatmore, 2018). Such a non-anthropocentric perspective invites research, policy and practice to expand on the role of more-than-human entwinements in the formation of economic values and practices, and to rethink economic relations in terms of interrelated livelihoods.

The concept of diverse economies is one of the few that provide an alternative to the otherwise very anthropocentric literature on economies and human-nature relations. It recognizes that economic processes emerge from more-than-human relations responding to situated realities (Healy et al., 2020; Miller and Gibson-Graham, 2019; Yeung, 2005). Diverse economies are combinations of human and non-human practices and abilities in constant co-constitution and negotiation for securing their interrelated livelihoods (Gibson-Graham and Miller, 2015), as we will further explain in Section 3. Several works in this line suggest that combinations of practices and values produce new understandings about the unfolding connections between people and place (Raymond et al., 2021b), involving entwinements of humans and non-humans (Escobar, 2001; Miller and Gibson-Graham, 2019; Moore, 2015; Tsing, 2005).

The perspectives of diverse economies have found little integration in the environmental values literature so far. Existing work on plural valuation of ES and NCP largely focuses on discrete categories of values (intrinsic, instrumental, relational) and not on the dynamic, relational processes that lead to their formation and change (Himes and Muraca, 2018; Raymond et al., 2018; Stålhammar and Thorén, 2019). Such work mostly assumes that economies relate only to the domain of instrumental and utilitarian values of nature (Massenberg, 2019; Pirgmaier, 2021) and that non-instrumental values are necessarily non-economic (Spangenberg and Settele, 2016). It is therefore not surprising that economies are often perceived as merely antagonistic to nature in dualistic representations leaving little room to understanding their entanglements (Moore, 2015). Focusing on relational processes (Cooke

et al., 2016; West et al., 2021) is a key step in overcoming the dissection of humans from nature, and could provide deeper insights into the processes through which diverse economies emerge (Turker and Murphy, 2021).

In the following sections, we aim to explore a relational perspective on diverse economies particularly through the conceptual integration of economies and place. For this, we consider diverse economies to form in places resulting from multiple processes and more-than-human relations (Gibson-Graham and Miller, 2015) involving embodied practices and negotiated values (Raymond et al., 2018; Raymond et al., 2021c). Hopefully, such an exploration can trigger a productive dialogue with the environmental values literature, especially with the notion of relational values (Himes and Muraca, 2018), and provide novel ideas for research transcending anthropocentric and utilitarian representations of economies (Healy et al., 2020; Miller, 2020).

2. Economic Human-Nature Relations Are Not Only Utilitarian

The association of economies to utilitarian values of nature originates in the longstanding epistemological predominance of so-called neoclassical economics and its strong influence in research, policy and practice at the interface of economic and environmental relations. Neoclassical economics' theories and methods generally build on deterministic conceptions of morality and human behavior characterized by rational, optimizing and self-interested individuals primarily seeking utility-maximization (Levine et al., 2015). Utilitarianism is a wide philosophical family with different approaches in which "utility" can refer to individual or collective happiness, to preferences or to pleasant experiences (Varner, 2008). Nevertheless, its original plurality evolved within neoclassical economics towards a monetized measure of the individual satisfaction obtained from the consumption of goods and services (Krall and Gowdy, 2012; Massenberg, 2019; Riley, 2018).

Utilitarianism translates within capitalist relations into an unrestricted appetite for commodities. These are products whose exchange-value, or the quantitative value relative to other products measured in monetary terms, prevails over other instrumental values such as use-value, an expression of the usefulness of a product depending on its material qualities and the wider production context (Pirgmaier, 2021). With the expansion of capitalist values and power-relations, the monetized version of utilitarianism has been extended to human-nature relations (when referring to "nature", we include non-human and more-than-human relations), in which rational humans supposedly make informed choices with clearly organized preferences on how to use a non-human nature merely as a resource for utility-maximization (Gibson-Graham et al., 2016; Wegner and Pascual, 2011). Utilitarian neoclassical models have been leading global economic and environmental assessments and policies despite theoretical and empirical inconsistencies (Gowdy et al., 2010; Pirgmaier, 2021) and warnings that their widespread real-life application drives ecological degradation and biodiversity loss (Lizarazo, 2018; Muradian and Gómez-Baggethun, 2021).

Critics of the utilitarian emphasis especially target its insistence on unlimited economic growth and its emphasis on monetized exchange-value that drive the commodification of human-nature relations (Himes and Muraca, 2018; Moranta et al., 2021; Muradian and Gómez-Baggethun, 2021). Commodification is a process within the capitalist system that veils diversity as it assimilates all relations and entities to goods and services exclusively produced for sale, and whose value is determined in utilitarian terms within markets through pricing mechanisms and commensurable values (Smessaert et al., 2020). This process subordinates and disregards human-nature relations that cannot be monetized or quantified, encouraging their replacement by commodified relations (Washington and Maloney, 2020). For instance, if the economic importance of ecosystems to people relies just on their contribution to utility-maximization, then a biodiverse ecosystem can easily be replaced by a monoculture, a mine or a dam if, with that, utility

¹ Relational perspectives do not necessarily erase discrete categories or duals, but expand the focus towards the relational processes up to the point where the discrete categories cease being the center of attention. Certainly, duals are still a necessary reference in order to advance towards rethinking dualistic concepts (Gibson-Graham and Dombroski, 2020b, p. 9).

increases.

Some anthropocentric perspectives in biodiversity conservation still appeal to monetized utilitarian values as the main strategy to sensitize towards the need to preserve ecosystems, raising concerns of facilitating commodification (Muradian and Gómez-Baggethun, 2021). Such perspectives imply that ecosystems and species with little monetary value are worth preserving mainly if they are intrinsically valuable. This further alienates economies from nature (Moore, 2015), restricting biodiversity conservation to places in which it can potentially generate monetary benefits (e.g. ecotourism in protected areas), to rare human-free spaces or with limited human presence, or to contexts of weakened land rights risking land grabbing and the displacement of local populations (Elias et al., 2021; Mollett and Kepe, 2019). Hence, commodification denies the possibility to also preserve biodiversity, and its related human-nature entanglements, in places where diverse economies can be compatible with biodiversity conservation independently from its monetized utilitarian value.

The utilitarian emphasis also disregards the plurality of values and practices through which diverse economies entangle in more-than-human relations. It discounts that other entities than humans can take part in the shaping of economies (Dwiartama and Rosin, 2014; Healy et al., 2020; Miller, 2020). For example, pests continuously influence agriculture and food systems by affecting crops and harvests (Contesse et al., 2021); pollinators trigger cultural, economic and ecological processes in farming landscapes (Cely-Santos and Lu, 2019; Shackleton et al., 2018); and affective relations between humans, technologies and plant-varieties shape agricultural practices and their outcomes (Morita, 2017). With commodification, the diversity of spatial-temporal relations is replaced by simplified versions reflecting deterministic and unidimensional understandings of economies (Barron and Hess, 2020; Peck et al., 2020), e.g. forests and diversified agriculture are replaced by plantations and export-oriented monocultures (Cely-Santos and Lu, 2019; Chao, 2022).

Several alternative conceptualizations of diverse economies transcend the neoclassical utilitarian paradigm. They challenge its hegemonic use within capitalist market-based relations, by unveiling the multiplicity of practices that, despite not being totally disentangled, exist amidst complex power-relations within dominant economic systems (Gibson-Graham and Dombroski, 2020b; Massenberg, 2019). Research has revealed a plurality of values in relations constitutive of solidarity and community economies (Gibson-Graham et al., 2013; Wanderley, 2015); economic geographies (Bathelt and Glückler, 2003; Peck et al., 2020); postcolonial (Grosfoguel, 2011; Zein-Elabdin, 2009) and feminist economies and political ecologies (Berman-Arévalo and Ojeda, 2020; Gibson-Graham, 2014; González-Hidalgo and Zografos, 2020; Zelizer, 2012). Some approaches analyze more-than-human relations in largely overlooked economies sustaining rural livelihoods. They include theorizations of agri-food systems (Isakson, 2009; Le Heron et al., 2016; van der Ploeg, 2016), research on territorial struggles in extractive contexts (Caretta and Zaragocin, 2020; Ulloa, 2020), and works on daily-life practices like cooking, home-gardening, seed exchanging or weaving (Baumann, 2021; Díaz-Reviriego et al., 2016; Turner et al., 2020). Such perspectives also provide notions of how links between economies and nature can involve embodied experiences of inequalities, power relations and conflicts, creativity and adaptation to change, and a plurality of affections, meanings and values. More recently, scholars working on diverse economies have built on relational approaches to overcome dualistic and antagonistic perspectives of the links between economies and nature and unveiling a wider spectrum of relations (Healy et al., 2020; Miller, 2020).

3. Introducing A Relational Perspective of Diverse Economies Through Senses of Place and Assemblages

In this section, we present a relational perspective of diverse economies to consider more-than-human entanglements by combining the

concepts of assemblages, senses of place, and relational values (Fig. 1). We draw on Gibson-Graham and Miller's idea that economies are not a "unified domain", but a diversity of processes and interrelations of "livelihood creation", including "processes of coexistence and interdependence" within more-than-human relations (2015, p. 4). Hence, we understand *diverse economies* as assemblages through which humans and non-humans co-constitute and negotiate the provisioning practices and abilities that support their interrelated livelihoods.

Assemblage theory offers a relational perspective of social life considering more-than-human agency within webs of relations. Assemblages are ongoing encounters of disparate elements, including biophysical, material and immaterial ones such as humans, plants, animals, microorganisms, technologies, tools, objects, practices, values, policies and narratives (Hope, 2020; Li, 2007; Woods et al., 2021). These encounters happen through the combination of situated human and non-human practices and abilities (Darnhofer, 2020; Raymond et al., 2018). For example, rural home gardening combines interrelated and heterogeneous elements such as seed sharing, ploughing, breeding, sowing, harvesting, composting, pest-control, insect pollination, associations of plant and animal species, and the metabolism of soil microorganisms. Diverse economies assemble more-than-human relations with different rhythms and autonomous trajectories that intersect at multiple places and spatial-temporal scales (Healy et al., 2020; Miller, 2020; Woods et al., 2021). As a result, a diversity of values and practices unfold and affect how humans experience those relations, which in turn affects the values and practices, while also influencing the abilities of humans and non-humans to sustain their livelihoods (González-Hidalgo and Zografos, 2020; Raymond et al., 2018).

Consequently, the lonely utility-maximizing individual of the neo-classical economic models gives way to a broad web of more-than-human relations that can co-produce assemblages through the

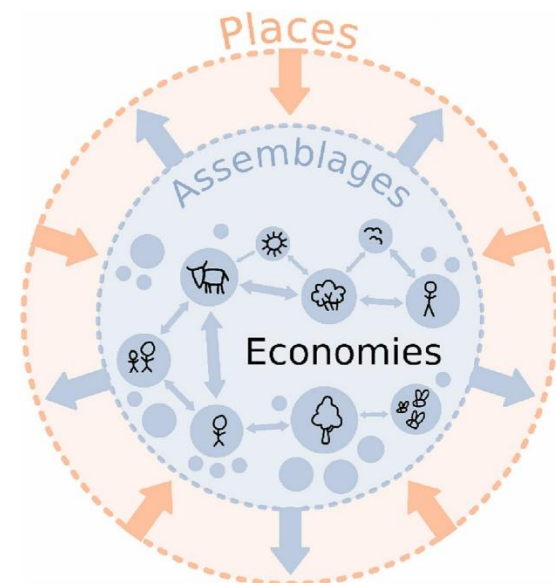


Fig. 1. The conceptualization of diverse economies as assemblages of more-than-human relations involves four key considerations: (1) assemblages are dynamic webs of relations; (2) senses of place emerge from people's experience of assemblages; (3) economies are a type of assemblage that include values, practices and abilities involved in the co-constitution and negotiation of interrelated livelihoods; (4) economies produce places, and places produce economies.

Figure design: Jan Hanspach

combined practices and abilities of the encountering entities. Such relations include mutual affections, negotiations and power dynamics through which economic assemblages are temporarily stabilized, transformed and reassembled (Darnhofer, 2020; Sarmiento, 2020; Turker and Murphy, 2021):

“...human agency has always worked in concert with non-human processes and material objects – from photosynthesis to economic practices of exchange, to research, to the curative powers of medicine, to devices for measurement and valuation – in order to construct a shared world. If our understanding of human agency doesn’t make sense without these processes, objects, devices, measurements and systems of valuation, in what sense is agency confined to the human? (Healy et al., 2020, p. 396).

This perspective entails that agency is not unidirectional but rather distributed (Raymond et al., 2021b). Although the combination of agencies do not necessarily lead to concerted arrangements and can instead generate conflictive ones, both human and non-human entities have an ability to “shape the processes, relationships and outcomes of economic life” (Miller, 2020, p. 402). Thus, the notion of agency is extended to a wider heterogeneity of interdependent entities that affect the processes through which humans and non-humans “make”, “provide” and “receive” their interrelated livelihoods (Miller, 2020, p. 405; Turker and Murphy, 2021).

In this line of argumentation, conceptualizing diverse economies as assemblages implies that their constituent values and practices emerge from encounters between heterogeneous entities occurring in given places through time. These encounters are imbued with meanings associated with human’s lived experiences. Therefore, it is crucial to also consider assemblages with respect to the multiple socio-spatial relations grounded in senses of place as a “plurality of place-related meanings, interpretations and values that are continuously produced, contested, negotiated, reconstructed and embodied by individuals and among collectives of people” (Raymond, Kaaronen, et al., 2021a, p. 6).

The concepts of place and senses of place help unveiling the different ways in which people experience the networked agency of economic assemblages. Places are similar to meaningful events or moments gathering together multiple trajectories, thus creating spatial-temporal entanglements or assemblages (Agnew, 2005; Massey, 2005; Woods et al., 2021). Both human and non-human entities participate in such events by means of their abilities and features that can enable, constrain or dissolve assembling processes (Raymond et al., 2018; Turker and Murphy, 2021). People can experience assemblages by means of their senses of place, involving values, practices, meanings, sensorial embodiments, among others (Miller, 2020; Raymond et al., 2017). For instance, diverse economies can shape places and stimulate senses of place by combining values (e.g. productivity, solidarity, reciprocity), knowledges and technologies (e.g. properties and uses of wild plants, harvesting seasons and tools) in concrete practices (e.g. farming, collecting, trading) (Cooke et al., 2016, p. 832; Gibson-Graham and Dombroski, 2020a; Ober and Sakdapolrak, 2017). The rapid transformation of a place due to irruptive trajectories (e.g. displacement, urbanization, commodification, deforestation) can hinder the experience of place (Drenthen, 2009) and generate fissures in assemblages (Woods et al., 2021). This can spark new trajectories and encounters, potentially disrupting existing senses of place, undermining experiences or triggering new ones (Chao, 2022; Lau et al., 2021). Fig. 2 exemplifies these ideas with the case of wild honey in Western Bolivia: a diverse economy affected by the trajectories of local communities, native bees, globalized agroindustries, timber and honey.

The relational perspective brought by the concepts of place and assemblages emphasizes the dynamism of diverse economies. Relations transform and, with this, economies can be undone, dis-assembled and re-assembled (Turker and Murphy, 2021) (Fig. 2). The encounter of heterogeneous relations triggers negotiations among the participants reflecting their power to define the terms of the assembling processes

(Pierce et al., 2011). In consequence, new pathways and webs of relations are continually being formed (Raymond et al., 2018). This implies that diverse economies are constantly being shaped and re-shaped: for instance, farmers and insect or bird species can share and negotiate their interests and needs in the use of specific plants; there can be complementarities or divergences in the uses, potentially leading to mutually benefiting assemblages, such as farmers-plants-pollinators (e.g. Cely-Santos and Lu, 2019; Shackleton et al., 2018).

Following Massey (2005), the negotiations in place refer to the ordering of the temporary spatial encounters of the participants’ heterogeneous trajectories. They involve different abilities and power-relations in the definition of boundaries, limitations, constraints, of the conditions of assembling, and in the acknowledgment of the existence of others (Turker and Murphy, 2021). In this sense, values and practices reflect and affect the negotiations of co-constituted livelihoods. For example, agricultural practices implicate negotiations between the needs of farmers to meet their livelihoods, the requirements of markets, the quest of birds and insects to forage and reproduce, the need of plants for nutrients and water, and of forests and the whole ecosystems for vital space. Considering how diverse economies assemble in places through negotiations helps understanding the more-than-human forces at work and the power-relations involving, for example, inclusions, exclusions, dominance and difference (González-Hidalgo and Zografos, 2020; Sarmiento, 2020).

4. Diverse Economies Blend Instrumental and Relational Values

Values are fundamentally important for the formation of diverse economies, affecting the experience of placeness and assemblages. They are ways in which people assign importance to human and non-human entities and their relations (Muraca, 2016; Pascual et al., 2017). Drawing on Moore (2015), values exist where there are relations to value, for instance, economies produce the places and the assemblages that enable relations and thus make the valuing process possible. Values reveal and shape people’s experiences and ontological conceptions about what is morally right and about what entities exist in the world (Muraca, 2016). They can also refer to how human and non-human entities form diverse economies (Barron and Hess, 2020). People do not necessarily rationalize their experiences nor do they fix values of non-human entities according to sorted preferences and utility-measures (Gibson-Graham and Dombroski, 2020b; Stålhammar and Pedersen, 2017). In general, entities do not possess fixed values, because values emerge from their relations (Muraca, 2016; Stålhammar and Thorén, 2019). Non-humans can influence even monetized utilitarian values by acting within assemblages. For example, a recurrent plague or a climatic event can make agricultural products more expensive by hampering the production processes. They can also increase the importance to people of more resistant, locally adapted species that support the adaptation of practices, independently of their market price (Morita, 2017). Values reflect how humans experience the diverse assemblages of more-than-human trajectories encountered in given places.

The environmental values literature on ES and NCP mainly uses discrete, sometimes overlapping, categories of values, such as intrinsic, instrumental and relational (Chan et al., 2018; Pascual et al., 2017; Rincón Ruiz et al., 2020). Intrinsic values refer to entities and relations that are important for their own sake, “independent of human needs, meanings, interests or preferences” (Muraca, 2016). They have no direct link to economies, because economies usually involve negotiations between human and non-human entities. Building on Himes and Muraca (2018), instrumental and relational values can be simultaneously present in instrumental relations (e.g. involving food ingredients, materials, agricultural inputs) and in non-instrumental relations (e.g. kinship, care, sacredness), which is a reason why the boundary between them can be blurry. Instrumental values characterize the importance of relations considered as means for specific ends. These are common relations in economies, in which case instrumental values can refer to more than

	
Panel 1 - Relational and instrumental values blend in economic practices: Chiquitano people from the San Juan de Lomerío indigenous community in Western Bolivia's Chiquitania narrate how they have collected wild honey for generations so it has become part of their cultural identity. Despite the increased offer of industrial medicines in local shops, wild honey is still a major ingredient in medicinal preparations together with wild plants to treat particularly respiratory problems, especially during the Covid pandemic.	Panel 2 – Diverse economies are assemblages of human and non-human entities: People from San Juan have traditionally collected wood materials from trees in selected places in their community forests that, from time to time, host bee hives. This has triggered negotiations between people and bees: some trees are left without cutting because they host bees that make valuable honey, or that are perceived as aggressive and dangerous, while others are cut partially or totally to collect the honey from “friendlier” bees. The abilities of bees to produce honey with specific characteristics and their behavior towards humans affect economies and influence people's senses of place where they usually collect wood materials.
	
Panel 3 - Assemblages and places are transformed by changing economic relations across scales: The Chiquitania region includes one of the most important tropical dry forest in South America, estimated in more than 20 million hectares distributed over Bolivia, Brazil and Paraguay (Devisscher et al., 2016). This forest is home of 27 registered species of stingless bees (Townsend et al., 2021). Their habitat is being threatened by massive deforestation and forest fires, amidst the fast expansion of the agricultural frontier mainly driven by large-scale industrial agriculture, cattle raising and timber extraction (Fundación Tierra, 2019). The construction of new roads and the migratory dynamics brought by agroindustries has attracted new actors and created new markets for timber and honey. Increased demand could create a push for higher volumes of extraction, transforming previously existent assemblages in chiquitano's communities.	Panel 4 – Diverse economies are constantly changing and subject to power struggles: The arrival of timber industries already in the 90s introduced new monetized market logics and new tools (e.g. chainsaws) that facilitated the work of cutting trees and gathering honey. While people from San Juan have their own management plan for their forests, there are increasing interests and pressures from timber, food and cattle industries, as well as demographic changes, which risk promoting deforestation as seen in the rest of the Chiquitania. Some people affirm that honey gathering is becoming more and more a secondary practice subordinated to an accelerating timber extraction. The negotiations between people and bees are becoming more unequal in this context of rapid transformations of their interrelated livelihoods.

Fig. 2. Diverse economies of humans and bees assembling in Bolivia's Chiquitania region. This example is based on preliminary results from 33 interviews in the community of San Juan de Lomerío in 2021. It is part of ongoing empirical research exploring economies, assemblages, places and values in the region. We will present the results in forthcoming publications. More information: (<https://www.bioculturaldiversity.de/>). Photos: Stefan Ortiz-Przychodzka).

Panel 1 - Relational and instrumental values blend in economic practices: Chiquitano people from the San Juan de Lomerío indigenous community in Western Bolivia's Chiquitania narrate how they have collected wild honey for generations so it has become part of their cultural identity. Despite the increased offer of industrial medicines in local shops, wild honey is still a major ingredient in medicinal preparations together with wild plants to treat particularly respiratory problems, especially during the Covid pandemic.

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Panel 4 – Diverse economies are constantly changing and subject to power struggles: The arrival of timber industries already in the 90s introduced new monetized market logics and new tools (e.g. chainsaws) that facilitated the work of cutting trees and gathering honey. While people from San Juan have their own management plan for their forests, there are increasing interests and pressures from timber, food and cattle industries, as well as demographic changes, which risk promoting deforestation as seen in the rest of the Chiquitania. Some people affirm that honey gathering is becoming more and more a secondary practice subordinated to an accelerating timber extraction. The negotiations between people and bees are becoming more unequal in this context of rapid transformations of their interrelated livelihoods.

utility-maximization (utilitarian values are just one particular type of instrumental value). For example, they can denote individual or collective habits and agreements; they can aim at triggering emotional and sensorial experiences, or at managing conflicts and power relations. Relational values describe the importance of relations considered as ends-in-themselves. These relations are more difficult to replace and to compensate, often reflecting senses of co-dependence and co-constitution among entities, or the recognition of mutual benefits (Jones and Tobin, 2018).

Yet, this perspective on values can also help reveal detrimental economies (Gibson-Graham and Dombroski, 2020a) and guide the understanding of commodification as the appropriation of the practices and abilities of different entities within assemblages (Barron and Hess, 2020; Moore, 2015). For example, people can value simplified, environmentally degraded landscapes at the expense of diversified and more sustainable ones (Hoelle et al., 2022). Plantations of commodities valued for their financial returns and connected to globalized markets often expand into biodiverse areas through intensive extractive practices that can produce, for instance, land grabbing, deforestation, soil and water depletion, thus rapidly transforming local landscapes and reconfiguring economies and livelihoods (Li, 2007; Tsing, 2005). Values can also refer to relations of conflict and negotiation (and be themselves negotiated), or to relations perceived as detrimental or negative, recently called “disvalues” (Lliso et al., 2022). Simplified assemblages, including commodified landscapes, can be valued either as means or as ends-in-themselves, meaning that they can involve relational (dis)values reflecting power-relations of dominance that can be difficult to replace.

While discrete categories of values seem useful and plausible in the sphere of social representations and narrations of human-nature relations, they seem less useful to understand how values emerge (Himes and Muraca, 2018; Raymond et al., 2018; Stålhammar and Thoren, 2019) from ongoing assembling processes and embodied experiences. The definition of diverse economies that we have discussed so far provides the opportunity to consider instrumental and relational values as a blending continuum or a gradient emerging from relations. Hence, even though we argue that economies mainly involve instrumental relations reflected in the negotiations of provisioning practices and abilities, such relations can blend different values, i.e. economic values are not necessarily always equivalent to instrumental ones, as suggested for example in Chan et al. (2018). Furthermore, values not only shape assemblages, but assemblages also shape values in a continuous flow within more-than-human relations. Values can be a “fruitful category of classification” in the sphere of social representations (Himes and Muraca, 2018, p. 1) to analyze how people categorize and address their relations with non-humans. Yet, in the sphere of assembling processes and senses of place, it is more useful to consider values as an open-ended outcome of ongoing more-than-human relations.

The relational understanding of values is a key step to de-center the analysis of economies from utility-maximization and to challenge the commodification of human-nature relations, and should be considered separately from relational values as a concept. Commodification is a process that establishes a hegemony of monetized utilitarianism in human-nature relations, favored by the exclusive association of economies to instrumental and monetized utilitarian values within expanding market-based relations. Assuming that only utilitarian values guide economies would entail that the included instrumental relations could be easily substituted by other means to achieve their specific ends. However, this is not necessarily the case for all instrumental relations. As stated by Muraca (2016, p. 29), “...employing an instrument as a means already acts upon the one who is using it (...) by using it we enter a complex relation with it and become another”. In commodified relations, non-human nature is represented as a set of passive resources without agency, and nature’s contribution to people relies mainly on utility-maximization. By acknowledging that instrumental relations can also involve relational values, we open novel analytical pathways for more-than-human economies, extending the notion of agency to non-

human entities within both commodified relations and non-substitutable relations and assemblages.

5. Prospects for Articulating Diverse Economies for Transformative Change

The conceptual integration of diverse economies, assemblages and values of nature, shapes a perspective of economies as processes emerging from more-than-human relations. In this paper, we argued that the conceptualization of diverse economies resulting from assembling processes extends the notion of agency to non-human entities. We considered the idea that diverse economies are not only the result of human agency: assemblages have the ability to act on economies, instead of “nature” merely being a passive resource for human’s utilitarian benefit. Additionally, we integrated the notion that diverse economies produce spatial-temporal configurations that humans experience as places involving blends of relational and instrumental values. Senses of place reflect the economic assemblages as multiple trajectories encountering in space and time, as well as the negotiations and co-constitutions of interrelated livelihoods.

Both the literature on environmental values and on diverse economies have raised the need to challenge commodification and monetized utilitarian approaches to environmental valuation and management for transformative change. This can be done by thinking of diverse economies as a result of more-than-human agency (Barron and Hess, 2020; Gibson-Graham and Dombroski, 2020b; Muradian and Gómez-Baggethun, 2021) and by integrating more pluralistic visions to understand human-nature relations (Pascual et al., 2021). Our relational perspective on diverse economies offers opportunities for further developments in this direction, by:

Providing a framework to rethink diverse economies as a matter of how humans and non-humans encounter each other instead of how a non-human nature exclusively works for humans (Barron and Hess, 2020; Healy et al., 2020). This is a key step in overcoming anthropocentric representations of economies in environmental valuation that prioritize human livelihoods over the rest of nature (Himes and Muraca, 2018). Research on diverse economies can bring more evidence and trigger discussions on mutual affections, more-than-human agencies, and the need to better articulate a morality of care considering ethical negotiations in economic practices (Gibson-Graham and Dombroski, 2020b; Muradian and Gómez-Baggethun, 2021). In particular, diverse economies can help transcending the attention put on unidirectional flows of contributions from a non-human nature to humans, still prevalent in ES and NCP, towards the contributions of assemblages to securing interrelated livelihoods. The 2022 IPBES Values Assessment could support this change at the interface of policy and practice by highlighting the possibility for a morality of care within a diverse set of values of nature (IPBES, 2022). However, the call for a shift away from a morality of utility towards one of care (Muradian and Gómez-Baggethun, 2021) should address the problems of the morality of utility-maximization and its risky focus on monetized measures of utility. This shift can gain much from reclaiming the role of usefulness, or use-value, and pluralizing utility beyond utility-maximization and exchange-value, using the words of Amartya Sen (1981). As argued, not all instrumental values are utilitarian, and they can coexist with relational values, such as care. Understanding how instrumental human-nature relations can involve blends of non-utilitarian, instrumental and relational values is a key step in limiting commodification and unveiling diverse economies in different contexts, including those in which a morality of utility-maximization prevails.

Articulating the processes of assembling in the negotiation and co-constitution of interrelated livelihoods. Diverse economies imply that the co-production of livelihoods, environments and ecosystems (Chambers et al., 2021; Pascual et al., 2021) entails associations and negotiations in which humans are a particularly powerful force, but not the only one. Drawing on Moore (2015) and Barron and Hess (2020), framing co-production as negotiations within assembling processes can trigger

questions in research, policy and practice on how the agency is distributed, who defines the terms and appropriates the results of the processes to secure the interrelated livelihoods. This can link to understandings of diverse economies as ethical actions (Gibson-Graham and Dombroski, 2020a), by reflecting on power-relations in the formation of assemblages, on the distribution and definition of wealth and wellbeing, and on the promotion of more responsible more-than-human encounters. The consideration of senses of place and values is key, because they underline people's experiences of the assembling processes and enable considerations of how different ontological perspectives (Blaser, 2009; Durand and Sundberg, 2019) and plural knowledges of human-nature relations also take part in the negotiations (de Sousa Santos, 2016; Escobar, 2016; Muraca, 2016).

Bringing natural and social sciences closer together in the process of supporting transformative change, by stressing that economic and ecological processes are co-produced (Pascual et al., 2021). Diverse economies are a key driver of change. Instead of considering economies and nature as antagonist, research can observe their dialectical entwinements in places, embodied practices and blends of values. In this line, diverse economies can drive transformative change as a dynamic outcome of the encounter of human and non-human abilities and power the processes of assembling, negotiating and shaping living spaces (Healy et al., 2020; Miller, 2020; Moore, 2015). From this perspective, processes such as landscape diversification and biodiversity conservation are not just properties of static arrangements and managements by a unique human agency (Djoudi et al., 2022). Instead, they are co-produced as lively assemblages in which nature as a whole has the capacity to "induce historical change (to produce ruptures), or to reproduce extant historical arrangements" (Moore, 2015, p. 47).

Finally, the association of assemblages, senses of place and relational values can inform future research in support of the idea that diverse economies and nature are never fully commodified (in terms of Prudham (2020)) because they continually bring each other into being (Gibson-Graham and Dombroski, 2020a). The analysis of fluctuating configurations of agencies within assemblages can enable further assessments of the risks of emerging oppressive relations, and the possibilities and potentials for emancipatory transformative change (de Sousa Santos, 2016; Moore, 2015; Turker and Murphy, 2021). This perspective of diverse economies supports the longstanding efforts that, drawing on relational ontologies in research and action, enable the conceptual and analytical reframing of economic values and practices within the web of life.

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Declaration of Competing Interest

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

Data availability

Data will be made available on request.

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Chapter 3. More-than-human synchronizations expose the fractures of the agrarian commodity frontier in the Bolivian Chiquitanía

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Figure 14: Native stingless bees (*Tetragonisca fiebrigi*) in their boxed hive located in a patio in San Juan

Author: Stefan Ortiz-Przychodzka, Nov. 2021.

More-than-human synchronizations expose the fractures of the agrarian commodity frontier in the Bolivian Chiquitanía²¹

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Abstract

Deforestation at the agrarian commodity frontier in Bolivia produces irreversible territorial fractures, by making Indigenous livelihoods increasingly subject to agrarian extractivism. However, looking at frontiers beyond their fixed representations – e.g., deforestation, biodiversity loss vs. diversified Indigenous livelihoods – can unveil spaces of more-than-human agencies emerging at the fractures of agrarian extractivism. We focus on the relations between people, bees, forests and plants, to show how they synchronize across forests, crops, and villages. Through these synchronizations, research can notice spaces of contestation amidst the social and ecological devastation. Such synchronizations hold potential to politicize everyday economic lives through more-than-human coordinations.

Keywords: diverse economies, peasant territories, agrarian extractivism, frictions, capitalist accumulation, situated knowledge

1. Introduction

Agrarian commodity frontiers are amongst the most rapidly transforming spaces worldwide, driven by processes of capital accumulation spreading over rural territories. Their historical meanings can be traced back to the “expanding front of colonial conquest and domination”, spatially separating “civilized zones”, in hand of colonial administrations, from the zones considered wild, unruly and threatening (Serje de la Ossa, 2011). Agrarian commodity frontiers expand by appropriating materials and energy co-produced by humans and other species (Batubara, 2021). As a result, territories, made of interconnected human and non-human lives and ongoing relations that build the necessary conditions for their existence in a specific space (Haesbaert & Mason-Deese, 2020), are dissected into cheap resources and commodities (Kröger, 2021; Moore, 2023).

Frontiers do not expand in a vacuum. Instead, they produce frictions when frontier-dynamics meet the existing life-trajectories that constitute rural and peasant territories (Tsing et al. 2024; Seshia Galvin 2018). From a Latin-American perspective informed by Indigenous worldviews, territories are made of

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everyday life practices, symbolic dimensions, and “processes of organization and resistance” (Haesbaert & Mason-Deese, 2020, pp. 260–265). Rather than merely a discrete spatial category and fixed boundaries, vertical control, and subordination, territories are spaces in which life is made possible through the relationships that build “lived spaces” (Haesbaert & Mason-Deese, 2020, p. 262). In this article, we examine the manifestations of territorial frictions in the temporalities of Indigenous economic lives, focusing on honey-economies in one of South America’s most active frontier, the Chiquitanía in Bolivia.

Many studies have shown how today’s agrarian commodity frontiers (hereinafter “frontiers”) are driven by forms of agrarian extractivism (Eloísa Berman-Arévalo & Ojeda, 2020; Llanque & Mamani, 2024), shaped by amalgamations of political and economic actors with different power but a common interest in the massive and quick extraction of resources mainly for export (Svampa, 2022). Agents of agrarian extractivism include national states and economic elites, cross-border land rentiers, global financial investors, and a multitude of workers and settlers seeking to earn a living on the edge of frontiers (Borras & Franco, 2024; le Polain de Waroux, 2019; Meyfroidt et al., 2024; Pratzner et al., 2024). Their combined actions produce irreversible territorial fractures when peasant populations living in areas of expansion see their livelihoods violently transformed (Veltmeyer & Ezquerro-Cañete, 2023).

Deforestation is a common and highly visible manifestation of frontier dynamics and agrarian extractivism (Meyfroidt et al., 2024). Through remote sensing and satellite imagery, many studies have delivered alarming images and assessments of the magnitude of the devastation, and have provided a useful tool for global campaigns for awareness raising and political action against the drivers of deforestation (Segarra et al., 2024) (see Figure 1). However, remote sensing is rarely accompanied by situated narrations and the perceptions of those who have directly lived and suffered the ravages of frontiers’ extractivism (de la Vega-Leinert, 2020; Segarra et al., 2024). By failing to do so, remote sensing risks overlooking people’s everyday experiences with frontier dynamics, including their struggles and forms of resistance that often rely on more-than-human entanglements. With situated perspectives, attention to frontiers can reveal a more fluid and kaleidoscopic image, resisting fixed representations (Robbins, 2001).

The expansive force of frontiers drives relentless reconfigurations of life-trajectories in time and space (Li 2014; Tsing 2021) that an alliance between remote sensing and situated knowledge can capture better. However, it would be too simplistic to assume that all life forms, human and non-human, just wait passively to be used for capital accumulation. Far from being inert, life forms are reactive and expressive, and their historical trajectories cannot be reduced to a total submission to globalized capital and markets (Moore 2015; Tsing et al. 2024). Instead, interacting life-forms display networked agencies that are not totally under capital’s control, despite the many violences through which frontiers operate (Serje de la Ossa 2017; Tsing 2021). Examples of this in South America are Afro-Colombian women subverting of “the exploitative logic of agrarian capitalism” (Eloísa Berman-Arévalo & Ojeda, 2020, p.

1596) through collective rice harvesting, and everyday water provision and food preparation (Berman-Arévalo, 2023). Similarly, Indigenous people reproduce vital territorial bonds by sharing and negotiating land uses with non-human beings, including material and immaterial connections with plants, such as corn, and spiritual beings (Ioris, 2022; Mingorría, 2021b). Finally, bees participate in- and live from the reproduction of diversified agricultural landscapes, mainly through pollination, allowing many life forms to exist despite the expansion of intensive monocrops (Aldasoro Maya et al., 2023; Cely-Santos, 2021; Chévez et al., 2023).

Thus, frontiers can appear as a bewildering mix of spatio-temporal trajectories. We call the meeting of such trajectories “synchronizations”, to stress the temporal dimensions of the heterogeneous associations and encounters that make frontiers. This interpretation draws on the notion of “assemblages”, as temporary entanglements of heterogeneous entities associating and affecting each other, forming networked identities subject to change, and producing open-ended results (Turker & Murphy, 2021; Woods et al., 2021). They include not only the agents of agrarian extractivism, but also the disparate life-forms whose encounters produce frictions (Tsing et al. 2024).

In this study, we aim to understand how people living at the frontiers experience synchronizations in their everyday economic lives. We focus on honey-economies, an important topic during our fieldwork’s conversations, connected with frontier dynamics and the pressures of extractivism affecting the relations between humans, bees, crops, and forests. For our study, we consider that economic life goes well beyond the spheres of commodity production and monetarized markets (Miller, 2020; Quijano, 2012). Such so-called diverse economies are constantly unfolding from more-than-human relationships, through which the provisioning practices and abilities that support human and non-human interrelated livelihoods are in constant negotiation and co-constitution (Gibson-Graham & Dombroski, 2020a; Ortiz-Przychodzka et al., 2023). We explore what narrations of economic life involving honey-economies tell about frontier-dynamics and the persistence of diverse economies in two Indigenous communities in the Bolivian Chiquitanía. With this approach, we understand economic territorial relations as a human experience influenced by more-than-human life-trajectories, and we situate them in the motley mix (Jasser et al., 2022; Rivera Cusicanqui, 2018) of agrarian commodity frontiers.

2. The Chiquitanía, an agrarian commodity frontier

Bolivia is among the countries with the highest deforestation rates globally (Czaplicki Cabezas, 2024; Vos et al., 2020). Soybean plantations and pastures for cattle raising are rapidly replacing tropical rainforests, dry forests, shrubland and savannas in the Eastern lowlands (Llanque & Mamani, 2024; Oxfam,

2024). This is especially the case of the Chiquitanía, home to a large tropical dry forest and key ecological transition area between the Amazon rainforest to the North, the Pantanal wetlands to the East, and the Chaco dry lands in the South (Maillard et al., 2024; Vides-Almonacid et al., 2007). Still, its deforestation has received little attention compared to the destruction of its neighboring relatives.

The main Indigenous population in the Chiquitanía are the Chiquitano people, a name probably established by Spanish colonizers around the 16th Century and consolidated in the Jesuit missions in the 17th Century, imposing the most used language to simplify territorial management (APCOB, 2016; Arrien, 2008). Until today, besides the Chiquitano, the region is still inhabited by communities of lowland origin, such as the Guaraní, the Guarayo, and the Ayoreo (Vides-Almonacid et al., 2007). Currently, half of the estimated 20.5 million hectares of the Chiquitanía is owned by the State²², 25% is privately owned, 13% is Indigenous territory²³, and 10% are small landholders, including Indigenous communities with collective land titles (Fundación Tierra, 2021a).

Historically, the Chiquitanía has acted as a commodity frontier in various ways: as an area of extraction of cheap materials, such as timber and minerals (Vides-Almonacid et al., 2007), cheap labor (Arrien & Viana Chuvé, 2007) and cheap land (McKay, 2018a). Its landscapes have been transformed by expressions of colonial powers in enclaves, such as the Jesuit reductions, and the *haciendas* that used local workforce in the form of slavery and highly exploitative work for plantations and cattle raising²⁴ (Arrien & Viana Chuvé, 2007; Balza Alargón, 2001). Current dynamics of frontier expansion started in the 80s and 90s with export-oriented sugarcane, soybean, sorghum and sunflower (McKay, 2018a). They included transport-infrastructure projects (USAID, 1979) to accelerate the integration of the Chiquitanía into globalized markets, with connections to soybean agroindustries in Brazil, Paraguay, and Argentina (Song et al., 2021). Recent studies have revealed networks of land control by regional agroindustrial actors using land leasing and contract farming in the Chiquitanía as alternatives to direct land acquisition, including transfers of transgenic seeds, agro-chemical fertilizers and heavy machinery (le Polain de Waroux, 2019; Pratzner et al., 2024). Through these historical dynamics, the Chiquitanía and its Indigenous population have encountered agrarian extractivism, in the modern versions of *haciendas* (Jasser et al., 2022) articulated to the needs of global capital accumulation.

²² Different illegal land occupations exist in public lands, including settlers from other regions, and Mennonite communities (Fundación Tierra, 2021).

²³ *Territorios Indígenas Originarios Campesinos* (TIOCS) are collective land titles granted to indigenous communities showing a common ancestral economic and cultural organization (Fundación Tierra, 2021).

²⁴ The patronage system, a form of slavery, officially ended in 1939. It was replaced by other forms of forced submission of workers, i.e. indebtedness, in large *haciendas*. The agrarian reform of 1953 redistributed land, but its implementation was slow and indebtedness did not completely disappear (Arrien & Viana Chuvé, 2007).

Several studies have shown how the expanding frontier in the Chiquitanía has multiple dimensions that create conditions for unpunished deforestation²⁵ and land grabbing (Colque et al., 2022; Llanque & Mamani, 2024; Oxfam, 2024; TIDN, 2020). This is made possible by an economic and political context in which the Bolivian government considers agricultural commodities as a key resource to finance policies of social change²⁶ (Colque et al., 2022; Svampa, 2015; Vos et al., 2020). This agenda has deepened the confrontations in the lowlands, especially in Indigenous territories expressing environmental concerns (Llanque & Mamani, 2024; Zambrana Lineo, 2020). As Jasser *et al* (2022) have demonstrated, despite the constitutional recognition to Indigenous territories, the government has also promoted a peasant and agribusiness occupation of the Chiquitanía, taking an internal colonial approach in the incorporation of land into its centralized national project.

The strategic governmental support to demands of powerful agribusiness corporations includes access to land, public credit, and laxity in the use of transgenic seeds regardless of the Constitutional and legal prohibition (Llanque & Mamani, 2024; McKay, 2018b), and the environmental and decolonial discourse of the Bolivian political Constitution (Andreucci et al., 2023; Czaplicki Cabezas, 2024; Oxfam, 2024). Such support is reflected in controversial law packages that enable land grabbing and deforestation at the expense of Indigenous territories and biodiversity (Colque et al., 2022)²⁷. In October 2024, the government authorized the use of transgenic soybean for the production of biofuel (Salinas, 2024), after negotiating with agroindustrial representatives at least since 2014 during the Evo Morales term (Fundación Tierra, 2024a). These entanglements have created expectations for the agribusiness expansion in the region, triggering one of the most rapid land rushes in Latin America (Colque et al., 2021; Czaplicki-Cabezas, 2023; Reis et al., 2023; Song et al., 2021). Complex networks of actors are involved in deforestation, including companies, Mennonite communities²⁸, and recent smallholder settlers coming mainly from the Andean region²⁹ and are generally supportive of the governmental party's politics, including agrarian extractivism. Because of the many territorial projects of agrarian extractivism, Chiquitanía has become a disputed land at the expense of its diversity (Llanque & Mamani, 2024; Maillard et al., 2024).

²⁵ Aside from deforestation, wildfires have also been rampaging the region. For an analysis of wildfires, see Jasser *et al* (2022), Cole *et al* (2023), and Colque *et al* (2022).

²⁶ This political and economic approach was already present in the government lead by Evo Morales, which deepened agrarian extractivism in Bolivia (McKay & Colque, 2021).

²⁷ For instance, several legal initiatives during 2013-2020 have been criticized for condoning or reducing fines for illegal deforestation, facilitating the use of transgenic seeds, and turning a blind eye to land grabbing (Colque et al., 2022).

²⁸ Mennonite communities arrived in Bolivia in the 1950s, and have grown in the lowlands especially in the last 15 years. They are central actors of deforestation as they expand large-scale soybean monocrops (Oxfam, 2024).

²⁹ Andean settlers also identify as Indigenous, of Aymara and Quechua origins, grouped by the term *interculturales*. People in the lowlands differentiate them from their own ethnicities using the term *interculturales* or sometimes *campesinos* (peasant, smallholder farmers).

3. Research approach

Our research focused on two contrasting communities at the agrarian frontier in the Chiquitanía. The community of 16 de Marzo-Cordillera (hereafter, ‘Cordillera’), founded in 1979, is located in the epicenter of the expansion of the agrarian frontier in the late 1980s, which today is considered consolidated (Colque et al., 2021; Haas, 2023). Its founders are Guaraní people who migrated in the 1970s from their lands of origin, i.e. the Chaco region in the South-West of Santa Cruz, looking for work opportunities initially in the sugarcane plantations. They benefited from land distribution and obtained 2400 hectares in the municipality of San Julián, North of Santa Cruz in the Chiquitano dry forest (Colque et al., 2021; Haas, 2019). Relatives moved-in gradually to form a community. At present, its 153 families, around 900 inhabitants (Colque et al., 2021), hold a collective title called ‘distrito indígena’, which gives them part in the annual public budget of San Julián. Their land, initially covered by native vegetation, has turned into a soybean, sorghum and sunflower plantation, with only a few self-provisioning crops, and almost no forest left. The agricultural commodity boom left few alternatives for Guaraní farmers who ended-up renting their land to neighboring farmers, mainly Mennonite and Andean settlers that possessed the expensive agricultural machinery and access to credit.

The second community is San Juan de Lomerío (hereafter, ‘San Juan’), in the municipality of San Miguel de Velasco in central Chiquitanía. Its Indigenous Chiquitano population holds a collective land of 37000 hectares at the outskirts of the agrarian frontier, surrounded mainly by dry forests and increasingly by cattle ranches owned by agricultural enterprises, Mennonite families and recent Andean settlers. Former workers of the *haciendas*, who suffered exploitative labor conditions, founded San Juan at the end of the 19th Century. Nowadays, this community is dedicated to small-scale agriculture and cattle raising, mainly for self-consumption, along with hunting, forestry and, increasingly, work in the surrounding agribusiness properties. San Juan collectively manages a forest covering 18000 hectares. Both communities show different degrees of dependence on external markets, much higher in Cordillera, reflected in the monetization of daily life.

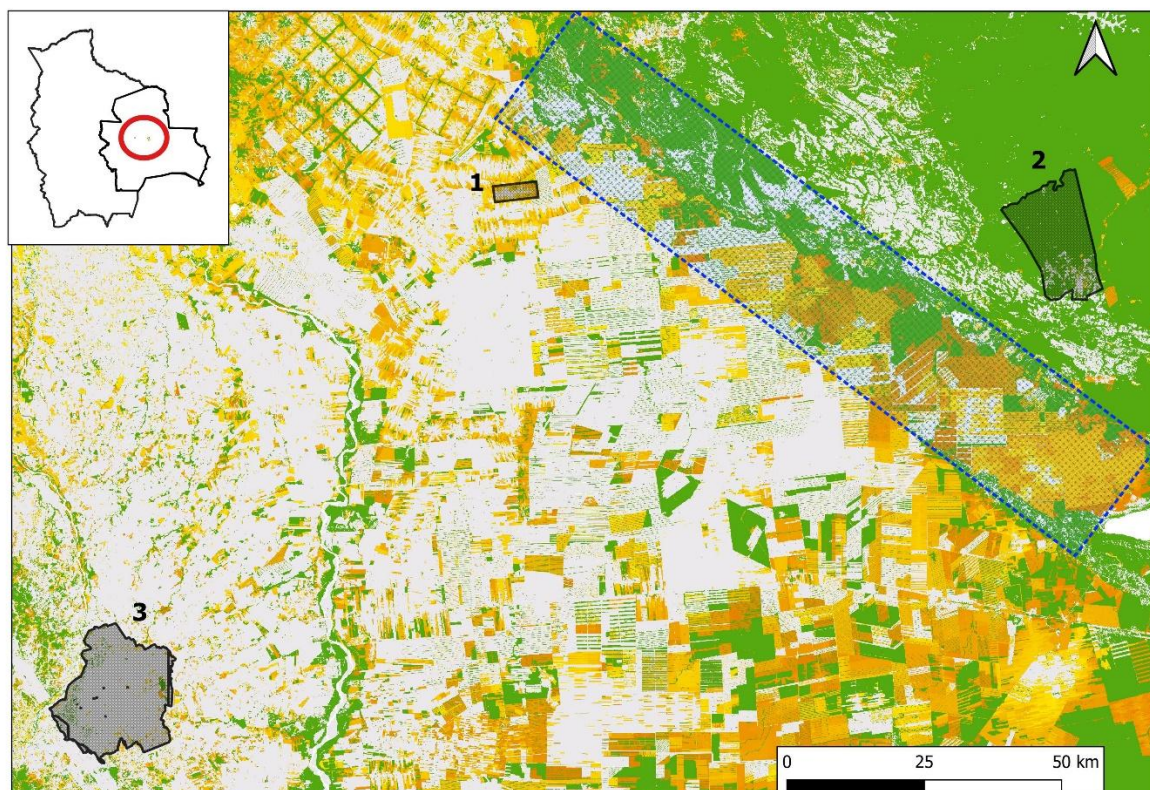


Figure 1: Location of (1) Cordillera 16 de marzo, (2) San Juan de Lomerío, Chiquitanía, (3) city of Santa Cruz de la Sierra, Department of Santa Cruz. The blue stripe indicates the hypothetical limits of the agrarian commodity frontier. Green: forest cover in 2000. Orange: deforestation between 2000 (lighter) and 2020 (darker). Light grey: non-forest covers, including agroindustrial plantations to the left of the blue stripe, and to the right, non-forest ecosystems such as grasslands and hilly landscapes with rocky soils slowing down frontier expansion. **Source:** The authors with data from Mapbiomas, GeoBolivia and the Amazon Network of Georeferenced Socio-Environmental Information (RAISG), October 2024.

For our research, authors one and three conducted semi-structured interviews between October and December 2021 in the city of Santa Cruz de la Sierra, capital of the state of Santa Cruz, and in the Chiquitanía. This period corresponds to the transition between the dry cold season, prone to massive wildfires and deforestation, and the warm rainy season, when the *comunarios/as*³⁰ (community members) start planting. After initial workshops with community leaders, we defined common interests, explained our objectives, the use of ethical protocols in each interview and data analysis, and identified possible contributions of our research to community-led initiatives.

We then applied a snowball sampling in two levels. On the regional level, we built an initial list of key institutions and Indigenous leaders to interview in the city of Santa Cruz de la Sierra and across the Chiquitanía, whose narrations refer to the whole region. We then asked each interviewee about other relevant actors to understand the social, economic and environmental characteristics and challenges in

³⁰ Here we use the terms to *comunario* for men and *comunaria* for women. The plural *comunarias/os* refers to both men and women.

the region. As a result, we completed 28 interviews (table 1), with interviewees including leaders of Indigenous organizations, NGO members working on biodiversity conservation and local knowledge, private organizations marketing handicrafts or promoting sustainable agriculture, journalists of three radio stations collaborating with Indigenous communities, and members of three research institutions.

On the community-level, with local Indigenous leaders, we built an initial list of the economic activities of their communities, and asked them which persons were known for being especially knowledgeable of those activities. We then asked the same question to each interviewee to move the snowball forward until we reached saturation, with 60 semi-structured interviews: 27 individuals from 25 households in Cordillera, and 33 individuals from 23 households in San Juan.

During the interviews, we left space for unstructured conversations to facilitate the documentation of interviewees' own narratives. We kept track of the topics that we did not want to overlook: (1) main activities undertaken by the person interviewed; (2) key economic activities in the region and in the communities; (3) social-environmental challenges, and (4) environmental conflicts and implications for people's daily life. We also engaged in unstructured conversations and participant observation during household and agricultural activities, community gatherings, and NGO-led workshops with Indigenous organizations.

Table 1: Number of interviews at the regional and community levels per type of actor.

Type of actor		Individuals	Women	Men
Regional level		28	12	16
	NGO and international cooperation	10	5	5
	Research	5	4	1
	Private organization	3	0	3
	Indigenous leader	6	2	4
	Local radio stations	4	1	3
Community level	San Juan de Lomerío	33	12	21
	Age < 20 years old	4	2	2
	20 – 40	11	4	7
	40 – 60	4	1	3
	> 60	14	5	9
	16 de marzo Cordillera	27	12	15
	Age < 20 years old	1	1	0
	20 – 40	8	2	6
	40 – 60	9	6	3
	> 60	9	3	6
	Total	88	36	52

We analyzed the interviews by assessing people's narratives of their everyday practices and relations with other human and non-human beings (Spiers & Lewis, 2016; Tacchetti et al., 2022). Here, "narrative" refers to communicative processes through which people connect different events, experiences and encounters, giving meaning to those relations that affect them daily (Koch et al., 2021). The focus

on narrative contrasts with the totalizing perspective of agrarian commodity frontiers, by adding people's situated perspectives, including their acknowledgement of agencies beyond the human. Our results at the community level focus on honey-economies, because they emerged as a common topic during our conversations. Honey-economies are entwined with forest, farming and household economies in the Bolivian lowlands. Wild bees are important pollinators of wildflowers and cultivated plants (Adler et al., 2023; Morón et al., 2023; Townsend et al., 2021), and their honey has been an important part of Indigenous people's daily life (Adler et al., 2023; Crane, 2001; Lastarria-Cornhiel et al., 2008; Radding, 2001).

Below, we present an account of interviewees' narratives, alternating between scales of enunciation (i.e. the scale from which people are directing their narratives, regional or local). In the following section 4, we describe the narrations of the fractures created by the expansion of the agrarian frontier. In section 5, we recount people's experiences of intimate synchronizations in honey-economies. In section 6, we discuss the potentials of synchronizations of diverse economies change frontier's trajectories.

4. The fractures of frontier-expansion

As the agrarian commodity frontier expands through deforestation, fractures appear in the relationships between people and forests, and in the interconnected lives of humans and non-humans that constitute their diverse economies. People experience these fractures as the result of a force that pushes all life trajectories in the Chiquitanía to synchronize with globalized capitalist markets. Many life-trajectories cede, resist or fail to synchronize. In any case, diversity vanishes and the monotony of large-scale monocrops takes its place, motivating feelings of loss and lack of alternatives for Indigenous people. In this section, we describe the manifestations of these fractures in people's narratives.

4.1. Markets and politics drive deforestation

The drivers of deforestation involve obscure networks acting with impunity at many scales. This makes difficult for people to establish casualty in their own narratives. In this context, narratives at the regional level revealed synchronizations between markets and politics giving form to agrarian extractivism in the region.

Global markets drive the pace of deforestation in the Chiquitanía. For instance, a forestry engineer explained that the prices of timber are too low these days, which is why those with sufficient capital prefer to invest in clearing the forest to introduce monocrops instead of buying timber. People differentiate between this large-scale deforestation and Indigenous people's uses of the forest, as stated by a Chiquitano leader:

Local Indigenous people do not deforest much; they extract timber selectively, and leave fallow land (...). Externalers are arriving to buy land, for soybean, thousands of hectares. They don't even employ people from here, and they leave no forest standing.

Governmental and agribusiness narratives tend to point at Indigenous people's responsibility to protect the forests, sometimes accusing them for deforestation and wildfires³¹. Nevertheless, deforestation in the department of Santa Cruz between 2010 and 2022 was driven by medium and large cattle ranches, large agricultural companies, Mennonite communities, and Andean settlers with medium-size properties. Smallholder farming (usually non-mechanized farms with less than 50 hectares), including Indigenous communities, account for 1% of deforestation in this period (R. Müller et al., 2024). Such narratives use ethnicity to generate divisions (McKay & Colque, 2021; Swift & Barriga Dávalos, 2024), and distract public opinion from the political commitment to extractivism.

In this context, people remark that the influence of globalized markets expands quickly and many Indigenous communities are struggling to keep the slower rhythms of extraction that characterize their forest management with practices of selective logging. With deforestation and the resulting disruption of ecological connectivity regionally, many NGO and Indigenous community-members agree that rain is getting scarcer, agriculture is getting harder, and the more-than-human livelihoods depending on biodiversity are collapsing. Logging accelerates and large-scale monocrops proliferate. In consequence, Indigenous people's economies become increasingly subject to globalized markets as their relationships with forests are fractured.

Some NGO members express resignation and concern regarding deforestation and the proliferation of large-scale monocrops. They feel that the "agroindustrial model" treats people's economies as obstacles for economic progress, and forests as 'idle land (...) that has to be privatized' (Interview, NGO member) and put to work to produce commodities. Many Indigenous people seem to fall into the promises of a transitory commodity boom subject to global price variations. As the promises fade, people turn to more timber extraction, to seasonal agricultural work, or they rent their land, or adapt it for cattle raising by planting improved pastures. In all cases, Indigenous livelihoods are forced to synchronize with the rhythms of agribusiness and global markets.

The synchronization of interests between markets and politics drive the rhythms of deforestation. One researcher affirmed that ecological degradation favors the expansion of large-scale monocrops by increasing the demand for improved drought-resistant seeds, which plays into the hands of the agribusiness lobby in favor of legalizing the imports of transgenic seeds. Some NGO members mentioned that

³¹ Moreover, many environmental discourses blame Andean smallholder settlers in the lowlands, exacerbating racist remarks while veiling the fact that many of them are being instrumentalized by the extractivist system (Swift & Barriga Dávalos, 2024).

the controversy over genetically modified seeds reflects national political dynamics with the Chiquitanía as a backdrop. Allegedly, the government is trying to appease the spirits of agribusinesses sympathetic to the political opposition, while it promotes territorial occupation with settlers akin to its political agenda; “a systematic plan for devaluing forests to stimulate territorial occupation, because it is better to have people who vote for your agenda instead of forests” (interview, NGO member). This reflects the territorialized dynamics of frontier expansion, through which globalized markets and politics synchronize to produce new territorial relations: they have different but temporarily complementary objectives.

The territorial fractures resulting from deforestation in the Chiquitanía open new trajectories for agrarian extractivism operating through markets and politics. All together, they force territorial changes, fracturing people’s livelihoods.

4.2. Trajectories and fractures of deforestation and logging

The course of territorial changes in Cordillera and San Juan are visible in their historical trajectories of deforestation and timber extraction since the 1970s. In both cases, fractures have emerged progressively in people’s livelihoods. Yet, the trajectories through which the economies of both communities have been forced to synchronize with the expansive forces of the agrarian commodity frontier differ.

The origins of deforestation in Cordillera follow two paths: the Guaraní’s quest for a favorable land and the instrumentalization of their quest by agricultural capital owners in search for cheap resources (Haas, 2023). According to people’s historical accounts, soon after the foundation of the community, timber traders arrived with machinery, sometimes extracting more wood than agreed. Other economic actors came progressively, mainly neighboring settlers aware of Guaraní people’s economic needs, and planted the idea that there was no alternative to industrial mono cropping. They offered leasing contracts including the provision of agrochemical inputs and heavy machinery to clear the remaining forest and plant soybean, sunflower, sorghum and maize. Until today, *comunarios/as* put their land, workforce, and seeds in exchange for an annual income that is insufficient to support an entire family, thus people have to find alternative jobs (Haas, 2023).

We have cleared a lot of forest; we did not even leave a windbreak. Droughts and frosts are now affecting more, and we have to go find [wild] animals more far away. People can barely get what they need, so they rent their land because they are afraid of failing (Community leader).

Most men spend weeks working mainly in cattle *haciendas*, agroindustrial complexes, road construction. or in urban seasonal jobs looking for additional income. Women try selling food, beverages, handicrafts and traditional clothing in city fairs, but transportation costs usually make this strategy non-profitable.

Even though some *comunarios/as* did not intend to remove the entire forest from their plots, they did not see any alternative. They lacked the capital to compete in agrarian commodities' markets. In words of a *comunario*: 'as if there was stagnant water in a well, as if there was no way out, that's how we feel'. Now, as one of the founders of Cordillera affirms, although reforestation is the only hope for the future of the community, no one is able to bear the costs.

In San Juan, before timber became profitable, the community was hardly accessible, as one of the first loggers explained. He arrived to the community in the 1980s, hired by a German entrepreneur to start timber extraction. Different wood companies followed, set roads, and compromised to build a health post and a dam, but never delivered. Thereafter, successive deals to extract timber often resulted in companies deceiving the community by extracting more than agreed, refusing to pay fairly, or making secret deals with local authorities against common interest. After the creation of the national authority in charge of controlling forests and land in 2009, the *comunarios/as* decided to organize to sell wood legally, and fight illegal logging. Some of the problems remain, including pressures from loggers and alleged corruption of officials and companies, and yet, *juaneños* (i.e. inhabitants of San Juan) have managed to preserve their own forest management.

People in San Juan value their forest management plan, but regret that it has not prevented the deterioration of forest-biodiversity. Besides illegal logging, some *comunarios/as* blame people's illusory sense of perpetual forest abundance amidst increasing economic needs. Still, many *juaneños* disapprove the changes brought by the rush for timber:

There is no longer that love that we used to have for the forest (...). Our forest is our heritage, but in some years, there will be no wood. In other places, there is already none. (*comunario*, San Juan)

If you introduce a machine, the forest doesn't grow anymore (...) many settlers come here to clear a piece of land with machines, day and night (...), they don't even ask for permission or leave something for the people. (*comunario*, San Juan)

According to a *comunario* with close knowledge of the forest management plan, only five timber species persist, compared to ten in the 90s. This is still significant, given the scarcity surrounding San Juan, as he explained. Others argue that, unlike Mennonite and Andean settlers, people in San Juan do not use heavy machinery, only chainsaws. They select timber to allow forest regeneration. In agricultural fields, they use axes and *machetes* to clear the plots and to maintain some forest patches; they rotate between plots every four years to allow for soil renewal.

Over the years, deforestation and the logging business have changed the economies of both San Juan and Cordillera. Gradually, small stores offer products that people are willing to pay for. This creates new dietary habits, and needs for utilities and services such as internet, electricity and water, and construction materials. As a community elder in San Juan illustrated, 'we used to sleep in hammocks, but

the [logging] companies brought beds'. He thinks that many things improved, such as the access to public services, but also people became less interested in agriculture because they feel it became harder. However, there are fewer alternatives for making a living and people rely more on money to buy what they need. According to a researcher in Santa Cruz, people still consume some traditional foods and medicines, but wild plants are harder to find as the forest is cut down and the land is privatized. Women bear a heavier weight to ensure daily food provision for their families as home gardens and local seeds are being lost in consequence of extended droughts and water depletion that people attribute to deforestation. Economic diversity and self-sufficiency are weakening as commodified economies strengthen. The temporal synchronizations that constitute the frontier are heterogeneous. The stories of both communities show a picture of frontier-expansion in the Chiquitanía with multiple layers and temporalities involving the encounter of globalized markets and politics, and the trajectories of each community made of different but simultaneous events. While deforestation and uncontrolled logging are two manifestations of the fractures left by frontier expansion, our conversations opened up to other manifestations.

5. Honey-economies are synchronized through intimate encounters

In this section, we focus on quotidian stories that unfold in both communities, and that involve synchronizations of honey economies. By following the thread of honey and bees, we heard about encounters unfolding in different places such as forests patches, agricultural plots, and daily life in the villages. Stories of human-bees encounters express disputes, collaborations, and mutual affections through which diverse economies emerge from the fractures of the agrarian commodity frontier (Chao 2022; Tsing, Mathews, and Bubandt 2019).

5.1. Collecting wild honey amid forest economies

Trees are unique magnets for bees and for people; they are places where their trajectories meet. Many encounters between people and bees happen in forests, where people can notice bees' various interactions influencing their production of honey. In our conversations, *comunarios/as* described the intimate relationship between bees and trees to explain why there are always more in the forests than elsewhere: 'bees are of trees' (*comunaria*, San Juan). People notice how bees 'look for trees where they feel more comfortable', like those with hollow trunks that are abundant in forests (*comunario*, San Juan). Trees are a common reference for people to locate beehives and predict the quality of the honey: 'there is a darker honey by the river bank, from the *Paratodo* [*Handroanthus abayoy*] flowers...' (*comunario*,

Cordillera); “...the other day they collected from the *Curupaú* [*Anadenanthera colubrina*]” (*comunario*, San Juan). Such intimate people-bees-trees relations closely follow the dry forests’ seasonality.

The patterns of rain and flowering are key in the synchronization of wild honey economies (Roubik et al., 2005). Although not all people agree on the exact seasons, in San Juan people observe bees ‘working hard’ in the spring (dry season) to take advantage of the flowering, until when the rains slowly start to fall around the end of August. With the increasing humidity towards December, they start producing and storing honey, so that the peak production arrives by February-March, right before the start of the dry season. However, some people observe that long and more intense droughts that they relate to deforestation are affecting bees and reducing the amount of honey they can produce. Therefore, in both communities, people worry about the abundance of honey, which depends on the future of their forests.

Comunarios/as often experience forests as a unique source of general abundance in their communities. Quotidian encounters with this abundance can generate a sense of collective ownership and responsibility, and satisfaction for having the possibility of self-sufficiency in sources for timber, food, fiber, and medicine, including wild honey. In the words of a community leader, ‘the forest is like our supermarket’; a statement we also heard in other conversations. Forest-related economies entail instrumental relationships supporting territorial bonds.

Wild bees and their honey are part of people’s experience of abundance. Stories of encounters with bees constantly spread in the community and are part of everyday life. In San Juan, most interviewees recall collecting large amounts of wild honey at some point of their lives. This abundance is just a memory in the case of Cordillera: ‘when we first arrived here there was a lot of honey. We used to collect a lot, 10 liters, 20 liters’ (community pioneer, Cordillera). Nowadays, wild honey is less of a primary reason to enter the forest, and more of a practice alongside other forest-related economies.

Honey collection reveals synchronizations of habitual forest uses and unpredictable encounters in which humans and bees each have agency. Loggers and hunters know best about the locations of *picos* (beehives) in the forests. During their workdays, encountering wild bees by chance might give an opportunity to collect wild honey: ‘you don’t search for honey, you find it’ (*comuniario*, San Juan). Sometimes, loggers casually hear the bees, or find beehives accidentally after they have cut down a tree. Finding the *picos* involves tracing the buzzing, noticing the changes in its intensity while identifying the trees where hives are more likely located.

When you’re brushing [clearing around the tree before cutting it down] you hear the swarming sound ‘zzzz’; if it is inside the trunk it makes a stronger rumbling (...). The *picos* can be seen high up (...) but usually one bends down because if you look up you can hurt yourself with the *machete* (...); they’re easier to find down. Then you identify it, and on another date, in a better time, you come back [to collect]. (*comunario*, San Juan)

At times, unexpected events unfold after encounters with wild bees. In one conversation, a *comunario* told us how, because of fighting with some bees, he almost created an uncontrollable fire, but in the end managed to extinguish it:

... I had knocked one tree down (...). When I approached to clean it up with the chainsaw, the bee swarm came at me on a rampage (...) cutting and biting my hair. They can make you bald, like scissors (...). I grabbed a stick, put gasoline and lit it on fire [to burn the beehive], and the burnt oil splashed on the ground (...) it was 2pm, the heat was strong (...) the fire wanted to spread (...). It was all dry; dry leaves burn faster than paper (...). Others came to help; we circled the fire with the little water we had. (*comunario*, San Juan)

Encountering wild bees triggers a variety of reactions. Loggers and hunters normally do not carry with them the materials to collect the honey, therefore they have to remember the location and come back better prepared later. 'I found a *pico*' is a common expression to invite others, especially family members, to help with collecting and to share the honey, although not everyone is eager to participate. Bees' different territorial behaviors are sometimes frightening, and sometimes charismatic:

Occasionally, people avoid cutting a tree because they see it hosts a *pico*, or because they fear the bees. The 'extranjerías' [*Apis mellifera*; a non-native feral species in the area] are the most feared, as well as the 'cortapelo' [i.e. 'hair-cutting', (*Scaptotrigona cf. depilis*)]. While the 'señoritas' [i.e. 'little ladies', *Tetragonisca fiebrigi*] do not bite. [When frightened] people prefer to leave the tree alone. (*comuniario*, San Juan)

The reactions can include both confrontations and a sense of familiarity: 'bees, as tiny as they are, but they make themselves respected. They are better organized than human beings'. Common descriptions of bees include adjectives like "tame", "rough", "angry", and "bad", which reflect the character of the encounters. Additionally, people are familiar with the bees' usual reactions to human presence: 'they [*Apis mellifera* bees] must be angry now (...) because they have honey, it has not been collected yet, they will defend it' (*comunario*, Cordillera). Their ability to defend themselves often succeeds in stopping the collection. For instance, during an interview in which we were helping a *comunaria* to collect honey, we had to stop collecting and leave because of the bees' intense biting in defense of their hive:

They're bad. The ones already outside [of the hive] are the ones that will make us cry (...). They're biting me (...) we should leave it for later (...). Look! they're many, they are already in my eyes (...). I told you, they bite (...); they are still in my head thundering (...). Let's go, it's late, we have to get home...I already wanted to taste the honey... (*comunaria*, San Juan).

Not everyone interacts with the bees in the same way, and their practices of collecting wild honey depend on the behavior they expect from bees. Most people keep secrecy about the strategies they use when approaching bees. Some conversations in San Juan involved rumors about people silently asking the bees for permission, others who prefer collecting at night, those who know how to point the axe in

a way that repels the bees, or someone who collects honey without wearing any clothes and does not get bitten. Such different practices and gestures play into the tone of the encounters and denote forms of intimacy.

Often, the different steps leading to a successful honey collection are filled with memories and life-stories that add to the intimacy of the moment:

When you cut a tree, you can feel your heart bursting out of your chest (...) your lips get dry, you're drenched in sweat, and the bees come to you (...) they want to get into your ear (...). I think sometimes, why did I come to the forest to suffer? I remember my uncle's death; he invited me to form a community, and if I were leaving, I wouldn't be honouring him (...) he died for something he wanted, to have a piece of land to be able to work and live on. (*comunario* who first arrived as an Andean settler, San Juan).

Such intimacies shape honey-economies and show that the meanings and the ways through which the encounters take place are as important as collecting honey itself. Besides, these meaningful relations are not exclusive of forest-economies, as honey-economies also expand through other spaces.

5.2. Harvesting honey amid farming economies

Honey collection also happens in the spaces now dominated by farming in the agricultural plots assigned to each family within the collective land of San Juan and in Cordillera. There, it resembles a sort of product harvesting, as people express ownership over the beehives reflected in the expression 'I have a *pico*'. In San Juan, some trees are left standing temporarily in the *chacos* (agricultural plots) and cattle ranches as part of the plot owners' own management reasons, including having shade, keeping timber reserves and windbreakers, protecting water sources, or harvesting honey where they find *picos*. Thus, the encounters with bees are less accidental than in forests. Some people like to take the time to walk around and locate the hives, marking them to wait for a good time to harvest. They look especially for those hives containing their favorite honey. People feel more control over the bees inside their farming plots, however, their agency is sometimes challenged by other beings during honey harvesting in the *chacos*.

Land clearing and honey harvesting can trigger unpredictable events, and their outcomes depend on multiple animals' reactions and interactions. To survive, bees have to find new places to rebuild their *picos* in windbreaks, pieces of wood, cut trunks, or in other trees. This renews the possibilities of new encounters and the reproduction of honey collection. Besides, humans are not the only ones interested in honey: once they cut the tree, they have to harvest quickly before other animals do. Usually ants are the first to appear, followed by *meleros* (*Eira barbara*).

He went once to harvest, but he has a vice: he needed to smoke [smoking tobacco]. He looked for his pipe but it wasn't there. He left the *pico* uncovered and went home to bring the pipe. He came back and there was no more honey, the *melero* had taken it all (*comunario*, San Juan).

By attracting multiple species, honey-economies generate new encounters, synchronizing different life-forms that people can notice. For example, in Cordillera, bees have to adapt to trees' scarcity in the radically transformed landscapes of large-scale monocrops. There, people described how bees (especially *Apis mellifera*) synchronize with soybean and sunflower plantations, visiting their flowers according to crop cycles.

In September, in spring [dry season], we harvest honey from pure trees. After that, when the soybean flowering ends, in March, we harvest again the soybean honey. Then we harvest in August the sunflower honey (*comunario*, Cordillera).

The temporalities of the planting season and plant flowering mark the synchronization of bees and crops, resulting in specific honey characteristics. For example, some people affirm that the sunflower honey tastes better. However, the intensive use of agrochemical inputs disturbs bees' relationship with these flowers and affects the quality of the honey.

They know the dangers, they smell it (...) when there are pesticides (...) it affects them (...). They detect all that (...) and they don't come to the plants until the effect passed after three days, they come back. But some still get in contact and die... (*comunario*, Cordillera).

Frontier dynamics, with expanding large-scale monocrops, change the food resources available to bees (Benavides-Frias et al., in preparation) by interrupting their relation to trees, due to deforestation, and forcing them to pollinate the monocultures loaded with pesticides. 'My poor bees, with time they will be all gone. They are displaced from their homes [referring to forests], where will they go?' (*comunaria*, Cordillera). Yet, as we describe below, not even in monocrop-dominated landscapes does bees' agency disappear completely.

People notice that bees change their usual trajectories due to the monotony of these farming landscapes. Similar to how the agrarian commodity frontier pushes people to find jobs far away from their communities, bees need to fly longer distances in search for food and water. Encounters become more frequent where people do not expect them, such as in pastures and settlement areas. This is especially true in Cordillera, where large monocrops surround the villages. There, people react to bees depending on their perceived charisma or hostility. 'People are scared of bees; they've been bitten (...). Those bees used to go the houses and bite people.' (*Comunario*, Cordillera). In contrast, some species like the *señoritas* are considered tame and, therefore, they are welcomed as domestic companions. Some people see opportunities to help the bees and benefit from them, integrating them to household economies: 'the poor bees, they have to work arduously to bring food (...) we have to let a place grow [for them], some forest,

see? And there you can put little boxes [to harvest honey], everything is possible' (*comunario*, Cordillera). Bees can reassemble their hives in different places, such as light poles, wood pieces and boxes, or house roofs. Thanks to these abilities, they synchronize with the village's daily life, and new economies of beekeeping emerge.

5.3. Beekeeping in village and household economies

Beekeeping arises from the especially deep fractures left by the almost total deforestation in Cordillera. It involves the capture and breeding of wild bees in human-made artifacts located mainly in patios, in home gardens, or in windbreaks and forest patches. Beekeeping synchronizes the life-trajectories of bees and humans, through the abilities to adapt to territorial changes, the opportunities of using honey as a complement for household economies especially led by women, a sense of care and empathy for displaced bees, and the economic struggles of landless *comunarios/as*.

Displaced wild bees entangle with humans by colonizing host hive-boxes, firewood, or scraps from carpentry work. Our conversations in Cordillera describe the processes of 'catching' wild bees, mainly from remaining trees, entailing not just domestication but also negotiation:

They have become accustomed, they adapt, and they know this is their home (...). If we move the boxes somewhere else, they are still going to come here looking for them. They get mad, scatter and leave. So, where you catch them, that's where you have to put the box (*comunario*, Cordillera).

Not all bees adapt. People perceive a loss of diversity. Generally, mainly the *extranjeras* and a few *señoritas* occupy the host artifacts.

There used to be a lot of bees and honey (...). Now, they [people] have to make it, to raise the honey ['*criar miel*']. There are not so many bees now; they have to be in boxes. There are not so many plants or trees together, 'forests', as you call them. Far away, there must be some. Bees can fly and find flowers five km around, my grandpa told me (*comunaria*, Cordillera).

Boxes are becoming the only home option for bees, according to woman beekeepers in Cordillera. Ironically, beekeepers regularly cut down trees hosting hives to catch the bees, knowing that those trees will be cut anyway soon and the bees could be left homeless. However, the relationship of bees with trees is irreplaceable and 'bees feel safer living in trees' (*Comunaria*, Cordillera). In the boxes, they are more dependent of human care, as people feed and help them fighting against plagues:

...in the trees, they protect themselves with the propolis against insects or disease (...). In the boxes, we put oil so that *sepe* ants (*Atta spp.*) and frogs do not climb up (...). *Turiros* [termites] destroy the boxes fast. Also moths. So we paint the boxes and burn *tajibo* (*Handroanthus chrysanthus*), *cedrón* (*Cymbopogon citratus*), *manzanilla* (*Matricaria chamomilla*) (...). In the box,

we also have to open to ventilate and refrigerate. If it's too hot, they leave (...). (*Comunaria*, Cordillera).

Hive-boxes represent new life conditions that beekeepers create for increasingly dependent bees, motivated by a cultural identification with beekeeping and the usefulness of honey. Some women suggest that bees need to make less effort in the boxes because 'in the trees they have to make their own wax, whereas in the boxes we buy them laminated wax, so it's easier for them' (*comunario*, Cordillera); '[bees] become lazy and die if you don't feed them, like farm chickens. The forest ones are stronger' (*comunaria*, Cordillera). Nevertheless, there is still the impression that bees are organized and hard-workers: 'I tell them, you will be brave, you are going to make honey (...). They are working all the time (...). They also make money for us...' (*comunaria*, Cordillera). Honey is a key element triggering a human sense of care towards bees' work, and stimulating synchronizations from which new honey-economies form out of deforestation.

Beekeeping synchronizes bees' displacement, women's need for monetary income to sustain their families, and many beekeepers' quests for land. However, even where almost no forest is left, the economies of honey depend on the bees-trees-plants relationship, which needs enough space to flourish. Therefore, the relationship to the land is fundamental. In Cordillera, the quest for land is more pressing due to the spatial saturation: 'we have thought a lot of honey [as income opportunity], but it won't work here due to the lack of space' (leader of landless *comunarios/as*, Cordillera). For women's beekeeper organization, the 'honey business' requires owning land, trees and timber, so that carpenters can build the boxes with wood from their own forests, beekeepers can place the boxes and catch the bees, and bees can benefit from the flowering trees and plants. Some women trust that beekeeping can provide them an independent income, especially as its medicinal properties become increasingly valued in the markets. Hence, honey-economies take part in land conflicts, by becoming a reason for women and their families to lead demands for land access or to look for new land elsewhere. 'If they don't have trees, what are they going to eat? (...) Bees need land. And we don't want only 20 little boxes, one hectare is not enough' (*comunaria*, Cordillera). In Cordillera, beekeeping emerges from the increased land-scarcity in the Chiquitanía due to the territorial occupation by large-monocrop agriculture.

By assembling landless *comunarios/as* led by women, with carpenters, honey, trees, plants, wild bees and remaining patches of forests and trees, beekeeping economies hold potential to mend some broken territorial bounds, amidst the many fractures produced by the forces of frontier expansion. Synchronizations of bees' and humans' trajectories provide opportunities to patch up the agrarian commodity frontier by creating new entanglements out of the ruins of deforestation and agrarian extractivism.

6. Synchronizations of diverse economies can patch territorial relations in agrarian commodity frontiers

Our research depicted Chiquitanía's agrarian commodity frontier as an expansive force inseparable from the trajectories of capitalism's globalized markets and politics in Bolivia. Yet, we also highlight the frontier as a kaleidoscopic reality (Jasser et al., 2022; Rivera Cusicanqui, 2018) made of multiple synchronizations, rather than a single, consistent entity expanding steadily. In the following, we will discuss how synchronizations challenge frontiers' fixed representations to expose their fractures, and stirring the bewildering spatio-temporal mix from which diverse economies can persist and emerge. Diverse economies trigger unexpected trajectories, which can produce singular counter-movements (McMichael, 2023; Moore, 2023) and unruly trajectories (Tsing 2021) out of more-than-human synchronizations within increasing territorial struggles that react to the violence of agrarian extractivism.

6.1. Unveiling synchronizations to expose frontiers' fractures

In the Chiquitanía, as illustrated with the stories of San Juan and Cordillera, fractures form when diverse livelihoods are pushed to fit the logics of agrarian extractivism, as people struggle to find paths for a better life. The diverse historical trajectories of Indigenous territories coincide in stories of deforestation and uncontrolled timber extraction. Narrations of loss and lack of alternatives recall Anna Tsing's stories of despair and destruction that grow out of capitalism's proliferation, accumulation and the resulting "conditions of terror in which agency is sometimes formed" (Tsing 2005, 26). In our research results, two synchronized fractures occur at the Chiquitanía's frontier: the ruptures in livelihoods and territorial relations, and the fissures in the territorial project of agrarian extractivism.

In the first fracture, life forms constituting diverse territorial relations are forced to work for agrarian extractivism, becoming resources for capital accumulation through the appropriation of human and non-human work, nature and energy (Moore, 2023; Seshia Galvin, 2018). In Cordillera, land leasing has been more than a financial strategy of capital owners to access cheap land: it is the foundation of an exploitative system of both human and non-human work, resulting in almost total deforestation, soil depletion, biodiversity annihilation, and economic and cultural collapse. In San Juan, illegal and uncontrolled logging is turning forests into cheap timber resources finding their way through markets, thwarting the economies that have unfolded for generations under the forest canopy. Both cases reflect regional dynamics of accumulation, where the dominant agents of frontier expansion profit from the territorial diversity produced by more-than-human entanglements that they do not control (Tsing 2021).

Forced synchronizations are attempts to discipline unruly more-than-human coordinations. This applies to human practices such as agriculture, with the privatization of land-use, forests, seeds, and financial

means, at the expense of customary, collective uses and livelihoods. It also applies to non-human beings, such as wild bees, with their displacement from common forests to individual plots and boxed-hives belonging in households. The more life forms are disciplined, the more their unruly behaviors can be prevented and aligned with the needs of extractivism measured in profitability, productivity, and marketable qualities (Spiers & Lewis, 2016).

Honey-economies unfold in connection with the reconfigurations of logging and farming linked to deforestation and commodification, illustrating how forced synchronizations allow for accumulation. In our research, honey results from the confluent trajectories of many life-forms in the Chiquitanía, including bees, flowering plant species, human and non-human honey gatherers, loggers, hunters, farmers, and landless *comunarios/as*. Forced synchronizations occur when these life forms are trapped in the dynamics of frontier expansion, as illustrated by people's narrations of encountering bees through forests, farming plots, and household spaces. In each of these trajectories, bees end-up forced to work for agrarian extractivism (Cely-Santos, 2021; Kosek, 2019), especially by pollinating tree and other plant species (Adler et al., 2023; Morón et al., 2023; Townsend et al., 2021) including the pesticide-loaded monocultures. However, as forced synchronizations expand, some life forms follow unexpected trajectories.

In the second fracture, life forms that resist or elude disciplining expose the fissures of agrarian extractivism, becoming potential expressions of unruly synchronizations. People's narrations indicate multiple synchronizations occurring when honey-economies intersect with other economies, such as hunting, logging, and farming. Honey economies traverse many territorial spaces, combining trajectories of bees, humans, wild animals, trees, plants, and honey, and creating intimate experiences through which humans can notice other life-forms, and reciprocal effects. These synchronizations are still within agrarian extractivism's sphere of influence, but not under its total control. Intimate encounters happen at their own rhythms, different from extractivism's freneticism, allowing people's senses of place, situatedness, and spatial ownership to develop in relation with other beings. This radically contrasts with the sense of dispossession left in the communities by expansive plantations, deforestation, and uncontrolled logging. Such synchronizations provide opportunities to subtly change the terms of frontier making, by disturbing the trajectories of despair and lack of alternatives towards ones of renewed collective agency and multispecies alliances.

6.2. Patching territorial relations through diverse economies

Unveiling synchronizations and fractures can help research and sociopolitical action challenging dominant and converging narratives of economic progress controlled by globalized markets and politics, and highlight the reactiveness and expressiveness of territorial interrelated life forms and diverse econ-

omies. To look beyond fixed frontier representations (Ioris, 2023) we propose thinking with synchronizations as a way of assembling stories that constitute a kaleidoscopic image. For instance, while deforestation is a central feature of frontier expansion, assuming that frontier dynamics are reducible to observations of changing land-covers can be misleading. The frontier also operates inside forest canopies, as in the case of honey-collecting in San Juan. Similarly, the idea that frontiers are consolidated in areas considered already deforested veils the fractures, and the unfolding trajectories that also can occur on established plantations or pastures, as in the case of Cordillera.

This aligns with Segarra *et al.*'s (2024, p. 22) call to use critical remote sensing tools to support situated narratives for environmental justice, instead of merely “gazing at the environmental devastation.” Focusing on the situated experiences of diverse economies is another way of representing diverse territorial relationships, usually silenced and distorted by dominant narratives (Tsing et al. 2024; Gibson-Graham and Dombroski 2020). Showing alternative synchronizations helps reveal that frontiers are not set in stone and, therefore, that their trajectories can change.

The compelling evidence of the social-environmental devastation in Eastern Bolivia (Czaplicki Cabezas, 2024; R. Müller et al., 2024; Oxfam, 2024; Quintanilla et al., 2023; Vos et al., 2020) underlines the urgent need to counteract the cycles of territorial colonization and appropriation and find alternative economic models (Czaplicki, 2024). In the Chiquitanía, political struggles are heating up in response to the contradictions of a political and economic system that has renewed agrarian extractivism (Colque et al., 2021; McKay & Colque, 2021). The increasing concerns over the environmental degradation brought by extractive agricultural practices and deforestation in Cordillera and San Juan reflect the regional political awakening as the consequences of frontier-expansion spread (Cambará, 2024; Ruilowa, 2024). Research on diverse economies and their unruly synchronizations can help to identify alternative models that can link existing territorial relations and strengthen their bonds.

Diverse economies, like honey-economies, indicate the existence of motley arrangements and overlapping spatio-temporal layers (Jasser et al., 2022; Phillips, 2020), persisting within the homogenizing project of extractivist frontiers and its territorial fractures (Eloisa Berman-Arévalo 2023; Rivera Cusicanqui 2018; Tsing et al. 2024). They also show how humans are not alone in shaping agrarian frontiers (Seshia Galvin, 2018). Diverse economies can create new life conditions, enacting diverse webs of relations and territorial bonds, intentional or unintentionally, depending on which synchronizations they enable and constrain.

In order to understand how new territorial bonds can come into being, research needs to observe who, or what, can facilitate synchronizations. Diverse economies, and processes of frontier-making, can be seen as practices of plugging and unplugging territorial relations, and their politics rely on who has the agency to enact such practices (de la Bellacasa, 2011). For example, in Cordillera, women in alliance with the most adaptive bees are assembling beekeeping, household economies, niche markets, land

access struggles, and calls to reforestation and agricultural diversification. These initiatives are not free of contradictions, or “enchantments” by the promises of markets and politics (Llanque & Mamani, 2024, p. 2). However, they show signs of politicization (Ay, 2024; Ulloa, 2021), which could enable alternative paths in a devastated territory. Diverse economies make frontiers uncertain spaces (Ioris, 2023), and indicate possible patches from which alternatives to agrarian extractivism can emerge.

In Latin America, several scholars have drawn attention to the possibilities of researching and mobilizing alternative models based on the opportunities to foster non-extractivist relations (Gudynas, 2023) in dialogue with Indigenous people’s experiences of territorial autonomy with economic, social and environmental self-determination (McKay, 2020; Tilzey, 2021; Ulloa, 2017; Veltmeyer & Ezquerro-Cañete, 2023). Indigenous people’s governance processes are not exempt from contradictions, and risks of extractivist re-appropriation (Rolando & Sarmiento Barletti, 2024), but they contain the seeds for building alternative models. For example, Ulloa (2021, 2023) has highlighted how Indigenous women in Latin America have led collective actions in demand for a political acknowledgment of their territorial rights, conceived from the interconnected relations that shape and define multiple ways of human and non-human living. Our research resonates with the calls to find “common frames of collective action”, by valuing the situated synchronizations of diverse economies beyond the dominant sphere of states and globalized markets (Svampa, 2015, p. 69).

The cases described in this paper suggest that extractivism at the agrarian commodity frontiers is not the end of the story. Its fractures in a context of devastation unveil its “weak links” (Moore, 2022, p. 128), which can become opportunities for territorial alternatives based on already existing and reactive diverse economies.

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Chapter 4. Can non-utilitarian economies help to remake meaningful territorial relations at the heart of agrarian extractivism in Bolivia?

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Figure 15: On the way to collect honey in a chaco in San Juan de Lomerío

Author: Stefan Ortiz-Przychodzka, Nov. 2021.

Can non-utilitarian economies help to remake meaningful territorial relations at the heart of agrarian extractivism in Bolivia?

Stefan Ortiz-Przychodzka, Isabel Díaz-Reviriego, Jan Hanspach

Abstract

Agrarian extractivism fuels the expansion of commodity frontiers, forcing diverse territorial relations into the dynamics of globalized markets. Typically, extractivism requires the commodification of relations and entities previously considered out of the reach of the dominant actors of agribusiness. With commodification, resource-extraction can be speeded and widened, generating only temporary prosperity while leaving a trail of destruction and overexploitation behind. However, several authors question the idea that all territorial relations can be fully commodified, and that frontiers expand linearly. Analyzing the value-dimension of economic relations can unveil narrative spaces of contestation and value-incommensurability, with relations that resist being narrowly defined in market-terms, and practices reflecting a plurality of values. In this study, we assess the narratives about economic practices and territorial reconfigurations, to assess to what extent they show the impacts and limitations of commodification at the agrarian frontier in the Chiquitanía, in Bolivia. Our study shows that utilitarian values underlie commodification, and produce concrete territorial reconfigurations favoring extractivist economies. Yet, we found that several non-extractivist practices emerge, guided by non-utilitarian values, which can help to remake meaningful territorial relations. We discuss about the importance of exposing the limits of commodification to unveil and acknowledge the capacities of non-utilitarian Indigenous economies to build non-extractivist paths.

1. Introduction

Different forms of extractivism have historically shaped the rural economies of Latin America. Mining, logging, rubber tapping, and commodity plantations have been common ways in which human beings appropriate resources from the environment. Typical extractivism is characterized by a high volume, a rapidity of extraction, and an orientation towards exports or the transfer of resources out of their places of origin, generating only a temporal prosperity (if any), and leaving a trail of destruction and overexploitation behind (Gudynas, 2020).

Agriculture, often in combination with forestry, can be extractivist, for example, when it involves the expansion of agrarian frontiers through the exploitation of new territories that were previously considered out of the reach of the capital owners and agents of extractivism (Svampa, 2022; Veltmeyer & Ezquerro-Cañete, 2023). Many scholars use the term “agrarian” to denote the large territorial relations

that agriculture entails, beyond the productive or extractive processes, including cultural, economic, political and social-ecological relations (Borras et al., 2024; McMichael, 2023). With frontier expansion, such territorial relations are forced into the dynamics of global markets to serve the interests of powerful agribusiness and governments (Volpato et al., 2022). Commodification means the assimilation, often through extractivist practices, of diverse relations and entities (e.g. land, forests, or livelihoods) into goods and services produced for sale, making them valuable in market's monetary terms and contributing to the frontier expansion (Smessaert et al., 2020; Volpato et al., 2022). Thus, agrarian extractivism fuels the expansion of agrarian commodity frontiers (hereafter, "frontiers") through commodification. In this study, we assess the manifestations of commodification at the agrarian frontier of the Chiquitanía region in Bolivia, one of the most rapidly expanding frontiers in Latin America.

In Bolivia, agrarian extractivism has been a project of the State's attempts to centralize the control and administration of rural spaces inhabited by Indigenous people and shaped by historical dynamics of human and non-human interconnectedness (McKay, 2018b; Serje de la Ossa, 2017; Svampa, 2022). In Bolivia's lowlands, a large part of its Indigenous territories have suffered the ravages triggered by the governmental bet on deepening extractivism, often in alliance with agribusinesses (Colque et al., 2021, 2022; Oxfam, 2024). This, despite the promises of emancipatory social and ecological transformations of the initially Indigenous-backed government that holds power since its democratic election in 2006 (McKay & Colque, 2021).

There is an increasing interest in exposing the deepening of agrarian extractivism and frontier expansion in the Bolivian lowlands (de la Vega-Leinert, 2017; Gudynas, 2020; Jasser et al., 2022; McKay, 2018b; Rodríguez et al., 2023). A focus on extractivisms' narrative dimensions can contribute to understand the underlying value-dimensions of commodification processes affecting more-than-human relations. Particularly, paying attention to narratives, and the material practices they entail, can provide a more nuanced picture of how territories come into being beyond the dominant dynamics (Oliveira & Hecht, 2016) and unveil multiple agencies (Castañón Ballivián, 2024; Levy et al., 2024; Stiernström & Arora-Jonsson, 2022). Indigenous territories are "lived spaces", shaped by material and immaterial practices with symbolic dimensions that reflect meaningful more-than-human relations (Eichler & Bacca, 2021; Haesbaert & Mason-Deese, 2020, p. 262). Therefore, frontiers expand over spaces full of meaning, using commodification as a way to instrumentalize territorial relations in favor of the political and economic agendas of extractivism (Gudynas, 2020; Svampa, 2022). Yet, several authors question the idea that all relations can be fully commodified and that frontiers can be linearly consolidated (Gibson-Graham & Dombroski, 2020b; Jasser et al., 2022; Moore, 2015a; Seshia Galvin, 2018; A. Tsing, 2015). Analyzing the value-dimension can unveil narrative spaces of contestation and value-incommensurability (Lowrey, 2008), with relations that resist being narrowly defined in market-terms, and practices reflecting a plurality of values (Ioris, 2022; Jasser et al., 2022; Rivera Cusicanqui, 2018).

Utilitarian values are functional to commodification because they assign importance to relations that are means to maximize profit through market mechanisms. We understand commodification as a process of value subsumption and exclusion, which aims at measuring all relations according to an utilitarian scale assigned through commensurable market-prices (Gudynas, 2020; Smessaert et al., 2020). Drawing on the environmental values literature, utilitarian values are associated to the maximum profit that self-interested individuals try to obtain from the consumption of goods and services³² (Ortiz-Przychodzka et al., 2023; Washington & Maloney, 2020). Thus, utilitarian values imply that rational human beings decide on how they relate to others, including non-humans, according to their expectations of maximizing their individual utility in monetary terms (Gibson-Graham et al., 2016).

Not all instrumental values, which consider the importance of relations as means to an end (Himes et al., 2023), are utilitarian. For instance, collecting wild honey has a cultural and an economic importance to Indigenous people in the Chiquitanía, as it provides food, medicine, daily life stories, and occasional income (Adler et al., 2023; Fundación Tierra, 2022; Haas, 2019; Ortiz-Przychodzka et al., 2023; Zuna et al., 2023). Commodification discounts non-utilitarian values (Gudynas, 2020), which include a plurality of instrumental ones, as well as relational values reflecting the importance of social and ecological relations as ends in themselves, which makes them hard to replace (Himes et al., 2023).

In this study, we analyze the narrative dimensions of frontier expansion in the Chiquitanía's agrarian commodity frontier, with a focus on people's daily experiences of commodification. We aim at assessing to what extent multiple values guide economic practices and support meaningful more-than-human relations, contrasting with the homogeneity of commodified relations. Sections 2 and 3 provide contextual information about extractivism and frontier expansion in Bolivia and the Chiquitanía. Section 4 describes the methods. Section 5 depicts how utilitarian narratives support commodification as a success story and a key economic feature of extractivism. Section 6 provides a different picture of commodification and extractivism, experienced by interviewees as territorial reconfigurations destroying meaningful relations through deforestation, water depletion and crop diversity loss. Section 7 unveils different perspectives of frontier economies with the cases of handicrafts and honey, including not-fully commodified elements that could rebuild meaningful relations based on non-utilitarian values. Finally, section 8 provides elements for discussion about the limits of commodification and the possibilities of non-extractivist economies.

³² Utilitarianism is a philosophical school, in which "utility" can refer to happiness, pleasant experiences, or multiple types of preferences not necessarily measurable in monetary terms as defined in neoclassical economics (Levine et al., 2015; Varner, 2008). However, understanding utilitarian values in terms of monetary, market-based utility maximization is useful to analyze processes of commodification.

2. The persistence of an extractivist economy in Bolivia

Bolivia's social, political and economic transformations in the last two decades involved a historical recognition of territorial demands and plural values of Indigenous People and rural communities. Many of these were incorporated in Bolivia's political Constitution of 2009, founded on principles of ethical pluralism, including Aymara's notion of *suma qamaña* or *vivir bien* (living well), and Guaraní's *teko kavi* or *vida armoniosa* (harmonious life). Such principles are linked in the Constitution to a diversity of values that should lead transformations towards a pluralist society, with economies based on practices of complementarity, reciprocity, solidarity, redistribution, equity, justice, and sustainability (Estado Plurinacional de Bolivia, 2009). Since taking office in 2006, government representatives have highlighted the decolonial and anti-capitalist foundations of such principles supposedly guiding the territorial transformations and rural development policies (Eichler, 2019; Ministerio de Relaciones Exteriores, 2020; Morales, 2009).

Despite its disruptive foundations, the Constitution does not break radically from the globally dominant language of rural development and sustainability policies. Broadly, it envisions a strong role of the State in guiding the economy towards harmonizing the needs for social equity and justice with rural industrialization, led by national actors, prioritizing the domestic production and added value for a successful participation in globalized markets while maintaining national food sovereignty. For this, the Constitution mentions the need to support small and medium-sized producers, the promotion of agroecological practices and soil conservation, but it leaves the door open for a regulated market of transgenic seeds – a long-term demand from large agribusiness. All the above, while searching to overcome “the dependence on raw material exports” and achieve a “productive economy in the framework of sustainable development, and in harmony with nature” (Estado Plurinacional de Bolivia, 2009, p. 82). Critical political and academic voices have pointed at the contradictions between these Constitutional principles and legal achievements, and the actual rural development policies that have deepened extractivism, economic inequalities and environmental degradation in Bolivia (McKay & Colque, 2021; Wanderley et al., 2019).

In spite of the political changes since 2006, Bolivia has maintained an economic orientation towards the short-term gains of exporting raw-materials from natural resource extraction in sectors such as mining and agriculture (Svampa, 2022; Veltmeyer & Ezquerro-Cañete, 2023). Bolivia's extractivist agrarian economy is highly dependent on the variability of global markets, and relies on productive models that cause environmental degradation, generate few jobs, and fail to promote inter-sectorial synergies and innovations (Eichler, 2019; Gudynas, 2020; Wanderley et al., 2019). Therefore, its success stories depend on the recurrence of bonanza effects when global commodity prices are favorable. This happened until 2013, when extractivism seemingly allowed for public investment in poverty reduction and decreasing inequalities. Nevertheless, some scholars argue that social gains were unsustainable in the

long term. Particularly, due to the reliance on extractivism, Bolivia has seen high deforestation rates, biodiversity loss, soil and water pollution, and increasing agrarian conflicts especially in the lowlands (Colque et al., 2022; McKay, 2020; Wanderley et al., 2019). As we will see next, the Bolivian lowlands have been a key setting for agrarian extractivism and social-environmental conflicts (Colque et al., 2022; McKay, 2018b).

3. Frontier dynamics in the Chiquitanía

Most of the deforestation in the last fifteen years in Bolivia has occurred in the lowlands (Czaplicki Cabezas, 2024; Vos et al., 2020). The department of Santa Cruz accounts for more than 76% of this deforestation between 2010 and 2022, affecting 2,3 million hectares in this period (R. Müller et al., 2024). As a result, the large tropical dry forest of the Chiquitanía region in Santa Cruz is quickly losing its capacity to connect the Northern Amazonian rainforest, the Eastern wetlands of the Pantanal, and the Southern dry savannas of the Chaco (Maillard et al., 2024; Vides-Almonacid et al., 2007). The majority of the cleared land is turned into cattle ranches and soybean monocultures, reflecting the dynamics of an agrarian commodity frontier (R. Müller et al., 2024).

Frontier dynamics are not new in the Chiquitanía. Already in the 15th Century, its Chiquitano, Guaraní, Guarayo, and Ayoreo inhabitants suffered the violence of fortune-seekers and colonizers (APCOB, 2016; Arrien, 2008). Although the Jesuit missions in the 16th Century provided some degree of protection, they transformed the sociocultural structures, for example by concentrating the previously scattered population into squared-shaped villages economically planned according to the needs of the missions (Arrien & Viana Chuvé, 2007; Jasser et al., 2022). Later, slavery and highly exploitative working conditions³³ allowed the establishment of *hacienda* systems, relying on sugarcane plantations, cattle ranching, and regional economies of timber, rubber, and mineral extraction (Arrien & Viana Chuvé, 2007; Balza Alargón, 2001; Vides-Almonacid et al., 2007). The management of land, soils, forests, and people as colonial resources has been a central feature of the Chiquitanía's frontier.

Currently, commodity exports drive the expansion of the agrarian frontier, following the trends of global markets mainly of the soybean and meat industries (McKay, 2018a). While meat exports are particularly motivated by China's demand, soybean is heavily linked to regional actors in Brazil, Paraguay, Argentina, and more recently Colombia and Peru (R. Müller et al., 2024). Regional and national investors profit from cheap land and cheap labor in the Chiquitanía. They use the land through lease contracts, avoiding the hassles of land-markets, and they employ Indigenous workers with underpaid and seasonal

³³ Slavery was abolished in 1939 and land was widely redistributed in 1953, but forms of patronage and forced working conditions persisted, and remnants exist today (Arrien & Viana Chuvé, 2007; Majluf Rossel, 2019).

arrangements including the provision of agro-chemical fertilizers and transgenic seeds (Jasser et al., 2022; McKay, 2018a).

Such frontier dynamics are favored by governmental policies and their economic agenda (McKay & Colque, 2021), in which commodity exports are considered a key financial asset to allegedly fund programs for social transformation and poverty reduction (Colque et al., 2022; Llanque & Mamani, 2024; Oxfam, 2024). In this sense, the government sees the expansion of the agrarian frontier as a necessary step to boost exports, even if this favors powerful agribusinesses (Andreucci et al., 2023; Czaplicki Cabezas, 2024; Oxfam, 2024). For instance, the “Agenda Patriótica” initially aimed at increasing agricultural land by almost 10 million hectares by 2025. Although this was later discarded due to the practical difficulties of such aim (Colque et al., 2022), researchers estimated in 2021 that the area of frontier expansion covered 10,6 million hectares in the department of Santa Cruz only (Fundación Tierra, 2021b). Additionally, legal initiatives have enabled land grabbing and deforestation, affecting public land and Indigenous territories³⁴, for example by condoning illegal timber extraction (Colque et al., 2022) or promoting the use of transgenic seeds in large-scale monocrops (Fundación Tierra, 2024a; Salinas, 2024).

In Indigenous communities, collective rules are attempts to prevent fire and timber extraction from getting out of control. However, as the Chiquitanía’s frontier advances, massive deforestation and wildfires are revealed as key strategies of extractivist actors³⁵ using them for land clearing to establish soybean monocrops or pastures (Jasser et al., 2022; Rodríguez et al., 2023). In consequence, land-use change and the establishment of new settlements trigger social-environmental conflicts with Indigenous communities that hold territorial rights recognized by the political Constitution (Jasser et al., 2022; Llanque & Mamani, 2024; Zambrana Lineo, 2020). Indigenous territories suffer the pressure from extractivism, as their economies need to adapt and respond to the large-scale fragmentation and homogenization of Chiquitanía’s landscapes. People-forest ties, including hunting and uses of wild species to collect timber, plants, fibers, fruits, and honey, as well as practices of rotational agriculture and silvopastoralism, are weakening in face of deforestation and land-privatization.

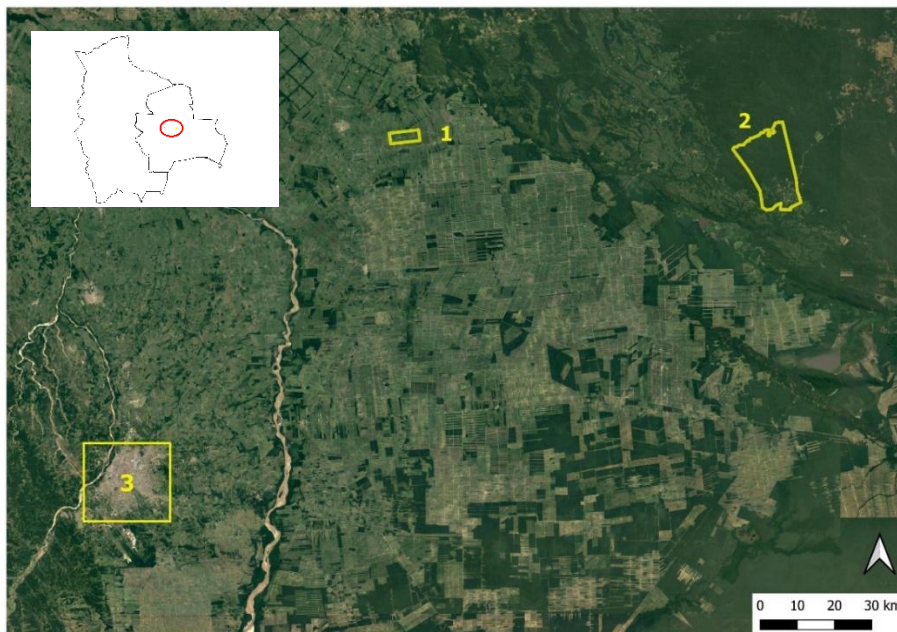
³⁴ Half of the 20.5 million hectares of the Bolivian Chiquitanía are owned by the State. 25% are private lands, 13% are autonomous Indigenous territories, and 10% are smallholders also including Indigenous communities with collectively land-ownership (Fundación Tierra, 2021a).

³⁵ Aymara and Quechua families of Andean origin, called *interculturales* due to their mixed ethnicity, have built new settlements in the lowlands. They are commonly blamed for deforestation, land-grabbing and land-trafficking, although often *interculturales* are merely used by more powerful actors interested in land investments (Colque et al., 2021; Swift & Barriga Dávalos, 2024). In particular, Mennonite families are key actors of deforestation and soybean expansion, together with transnational agribusinesses (Oxfam, 2024).

4. Methods

For this study, the first author collected data in Santa Cruz de la Sierra, capital of the department of Santa Cruz, and in the Chiquitanía region from October to December 2021. This period marks the end of the dry season, when small-scale slash and burn techniques give way to planting in Indigenous territories, as the first rains start falling. It is also when people start assessing the ravages of wildfires and deforestation, both facilitated by the dry conditions. In this context, we consulted Indigenous community leaders who informed us about the need to understand the impacts of frontier expansion in their territories. We agreed on ethical protocols for data collection and analysis, and signed an informed consent and research agreement.

The first author conducted semi-structured interviews 88 people, including 28 regional Indigenous leaders, members of environmental NGOs and research institutes, private organizations working with non-timber forest products, local journalists, and 60 members of two Indigenous communities (hereafter, *comunarios*). A snowball sampling helped identifying key people leading projects to assess and address social-environmental problems in the Chiquitanía, and community members known to be knowledgeable in agricultural and forestry activities at the local level. The interviews covered people's experiences and descriptions of daily economic practices and the more-than-human relations that they consider more important to support Indigenous people's livelihoods. They also inquired about how the territorial reconfigurations caused by frontier-expansion affect human-nature relations and livelihoods. Non-structured conversations and participant observation during community gatherings, NGO workshops, and daily household and agricultural activities allowed expanding field observations.



Map 1. Location of (1) 16 de marzo-Cordillera, (2) San Juan de Lomerío, and (3) the city of Santa Cruz de la Sierra, in the Department of Santa Cruz.

The interviewed *comunarios* are members of two Indigenous communities. In the first community, Cordillera-16 de Marzo (“Cordillera”), 27 individuals from 25 households were interviewed. This Guaraní community was founded in 1979, by families coming from the South-West of Santa Cruz in search for work opportunities in *haciendas* and land distributed by the governmental land-reform (Colque et al., 2021; Haas, 2023). Nowadays, its 153 families (around 900 inhabitants) own 2400 hectares, dedicated mostly to soybean and some subsistence farming. Most native forests were replaced by soybean, sorghum and sunflower monocrops. The high production costs due to high input prices depending on global markets, the lowering soil fertility and scarcer rainfall, oblige *comunarios* to rent their land to wealthier neighbors having access to machinery, agrochemical inputs, and transgenic seeds (Fundación Tierra, 2023; Haas, 2023).

In the second community, San Juan de Lomerío (hereafter, “San Juan”), 33 individuals from 23 households were interviewed. Its Chiquitano community holds 37000 hectares covered by 18000 hectares of a collectively managed dry forest, which surrounds the agricultural plots and small cattle ranches. The frontier is quickly advancing in neighboring areas with recent settlements and private soybean and cattle *haciendas*. San Juan was founded in 1835 by Chiquitano families, escaping enslavement from the *haciendas* and the violence of rubber extraction (Fundación Tierra, 2022). Nowadays, its *comunarios* practice small-scale diversified agriculture and cattle raising, mainly for self-provisioning, as well as hunting, forestry, and some seasonal work in neighboring agribusinesses.

All interviews were recorded when authorized. We coded the transcriptions and the field-notes, first deductively to identify key economic practices, commodification processes, non-market-based practices, social-environmental conflicts, the importance and meanings of human-nature relations. Second, we coded inductively to analyze emergent topics within the deductive categories. We assessed people’s narratives of the regional transformations, and their experiences and connections of multiple events and encounters, including human and non-human beings, that affect their daily activities in the communities (Koch et al., 2021; Spiers & Lewis, 2016; Tacchetti et al., 2022). With this, we aimed at identifying common topics and situated experiences in which people’s values involved in daily more-than-human relations emerged. Our interviews and data analysis depicted those territorial relations that our interviewees considered meaningful and deeply affected by frontier expansion.

5. Utilitarian narratives of economic success underpin commodification

Agricultural commodities have been an economic pillar of Santa Cruz, especially since the 1990s, when the department became the setting for a rapid expansion mainly of soybean monocrops (McKay, 2018b) following the regional trend in Brazil, Argentina, Paraguay and Uruguay (Gudynas, 2020). It provided

an utilitarian business model for Santa Cruz' economic elites, a foundation of their entrepreneur identity with narratives of economic competitiveness and successful integration to global markets (Castañón Ballivián, 2015). This model was initially challenged by the political agenda of the left-wing government, reflected in the "Agenda Patriótica 2025", which allegedly put small-scale and community farmers at the center of its strategy of agrarian frontier expansion (Ministerio de Planificación del Desarrollo, 2015). However, soybean agribusinesses managed to adapt their narrative to keep their political influence, by arguing that soybean exports are fundamental for national economic growth, food sovereignty, and agricultural progress including small-scale farmers (Castañón Ballivián, 2015; McKay, 2018b).

Despite its discursive influence, the expansion of soybean agribusiness has promoted the economic exclusion of small-scale farmers by concentrating most productive land and agricultural financial credit, providing limited job opportunities, and promoting soil degradation, water depletion and deforestation (Castañón Ballivián, 2015; Colque et al., 2021; Czaplicki Cabezas, 2024; McKay, 2018a; Oxfam, 2024). Small-scale farmers are mainly included in the commodity business as subordinated, badly paid workers and land rentiers (Castañón Ballivián, 2015), favoring the commodification of their workforce and of their relation to land. Their subordination is facilitated by the negligence, and often the complicity of the State, which facilitates the allocations of financial resources to large agribusinesses (Czaplicki Cabezas, 2024) hindering a more autonomous and sustainable smallholder farming (Machicado Gallo, 2022; McKay & Colque, 2021).

Frontier expansion has come with the establishment of a dualistic narrative led by agribusiness sectors based on a utilitarian value-scale. According to our interviews with NGO members, on one side, such dualism portrays a type of producers that can adopt market's utilitarian values and entrepreneurial strategies to become proper economic agents or entrepreneurs, mainly using the soybean agribusiness as a model of success. On another side, it portrays those populations that follow non-utilitarian and non-market values as being bound to subordination, for example by becoming workers in agribusiness enterprises. In other words, with the advance of agrarian extractivism, people have two choices: they can become full capitalists, accumulating enough capital to establish a successful enterprise based on utility maximization, or they become capital themselves, or capital producers, by selling their workforce and their cheap products to those with purchase power. Either way, relations based on non-utilitarian values must fit the logics of extractivism by being commodified or by becoming capital. These include Indigenous people's territorial relations, as well as more-than-human interactions that have historically shaped Chiquitanía's landscapes, forests, water sources, and crops.

Narratives of agrarian extractivism imply that most Indigenous people fall into the category of non-entrepreneurial and non-economic agents. These narratives rely on racialized descriptions of Indigenous people as *flojos* ("lazy"), because their economic decisions are based on non-utilitarian values. Their territories are considered unproductive and their forests "idle land (...) that has to be privatized" and put to work to produce commodities, according to an NGO member. In this line, the idea of lazy natives

creates the myth that Indigenous farmers are inefficient and unable to adapt to market dynamics (Li, 2023a; Serje de la Ossa, 2017). Thus, their capacities are measured according to a utilitarian value-scale in which soybean entrepreneurs are at the top. In this way, the experiences of Indigenous farmers are flattened through simplistic understandings of subsistence, overlooking their capacities to deal with market dynamics amidst adverse economic and ecological conditions. Frontier expansion and commodification need these narratives to try to subordinate the undervalued local populations, to justify land-use change and grabbing, and to confront them to mobilized migrant populations considered functional to the agribusinesses (Li, 2023a; Serje de la Ossa, 2017).

Some interviewees express resignation and concern regarding these narratives that treat Indigenous territories as obstacles for economic progress: ‘it is a systematic plan to take away the value of the forest and promote territorial occupation’ (NGO member). Simultaneously, communal forms of tenure, work and organization, guided by non-utilitarian values, such as collective land rights, and systems of *trueque* and *mingas* (barter trading, reciprocal and collective work) are giving way to individual land-use and *jornaleo* (individually-paid day labor). Communities are pushed to create or adhere to unions, entrepreneurial or federative structures that break with their own traditions of collective organization, and favor individual alliances through land leasing and purchase contracts. For some researchers and NGO members, these structures induce the commodification of people’s relation to land by privileging the quest for individual profit as the only road to success.

Utilitarian narratives have long supported initiatives for agriculture industrialization in the Chiquitanía. When the Green Revolution was the norm, in the 70s and 80s, NGOs supported productivist perspectives prioritizing utilitarian views of agriculture, only understanding later that they were facilitating commodification and agrarian extractivism, which were causing deforestation and territorial fragmentation, according to a NGO member. Currently, NGOs are searching for profitable alternatives for Indigenous communities that can at least coexist with, if not counteract agrarian extractivism. Most efforts rely on cash crops such as peanut, pineapple, plantain or fruits, as well as agroforestral and silvopastoral systems including timber and non-timber uses of forests (e.g. fibers, handicrafts and honey). According to our interviews, these strategies can offer options, for instance for women who are in charge of their families while men are away for seasonal work in neighboring plantations, but there is still no stable market-demand. Although such economies can help diversifying income, they can hardly counter extractivism. Instead, they risk replicating the enchantments of an ephemeral prosperity (Jaramillo et al., 1986; Llanque & Mamani, 2024), or a *bonanza* based on a few promising commodities, without breaking producers’ vulnerability towards price variations and the power of middlemen. *Bonanzas* feed on the expectations of a quick but temporal profit generated by sudden external investments that can considerably transform the lives of Indigenous territories. However, once the bonanza is gone, many people resume what they perceive as the safest options: *jornaleo*, land leasing, and timber extraction. Thus, extractivism reproduces itself through commodification.

Commodification veils alternative stories of diverse economies that do not follow a utilitarian value-scale, while it inflates the performance of large-scale monocrops. In the Chiquitanía, some researchers point at the flaws of the so-called “agroindustrial model”, which can only advance at the agrarian frontier with strong public policy support, and should therefore be ranked low in its own utilitarian scale (Czaplicki Cabezas, 2024; McKay, 2018b). Agrarian extractivism underrates the less extractive economies and non-utilitarian forms of relating to land and forests that persist in Indigenous territories despite the long history of colonialism and extractivism.

Stories of success based on utilitarian values contrast with the lived-experiences of people in affected territories. The materializations of agrarian extractivism based on utilitarian narratives disrupt meaningful relations that constitute Indigenous territories and economies. For instance, the homogeneity of large-scale monocrops seems to replace the diversity of more-than-human relations that are part of forests, and diversified agriculture. As we will see next, Indigenous people’s narratives of these territorial reconfigurations unveil how meaningful relations based on non-utilitarian values are being replaced by extractivist and utilitarian ones.

6. The weakening of meaningful relations by extractivist economies

Frontier dynamics supported by utilitarian narratives materialize in destructive territorial reconfigurations that pose an existential threat for Indigenous communities. Such reconfigurations disrupt meaningful relations and the related non-utilitarian values that connect long-established material and immaterial practices involving forests, water, and agrobiodiversity. By describing these frontier dynamics, people’s narratives show that utilitarian and non-utilitarian values collide as extractivism transforms territories.

6.1. Deforestation

Forests are a vital resource for communities in the Chiquitanía, especially in the form of timber, fibers, food and medicine (e.g. wild honey, meat and fruits). Two frequent statements reflect the meaningfulness of such instrumental relations: forests are considered an inextricable part of the *casa grande* (big home) – i.e. the interconnected Indigenous territoriality in the Bolivian lowlands – and they are considered Indigenous people’s “supermarket” – i.e. an extensive source of essential resources allowing for some degree of autonomy from markets. According to a Chiquitano leader, despite the advance of

agrarian extractivism, “such worldview is not fractured in our social base, we will not lose it”. Nevertheless, many people consider that deforestation is already affecting this meaningful relationship in several ways.

As large-scale monocrops expand, forests shrink and are privatized. Deforestation in private and settler areas neighboring Indigenous communities drives wild animals away, and makes key plant species scarce, hindering vital forest uses. For instance, as people find less honey and fewer medicinal plants, they perceive a loss of abilities to treat common diseases and they feel more dependent on public health posts, which offer limited treatments in the communities, or hospitals that are far away. Some affirm that excess of ultra-processed sugars have become a problem since people no longer use wild honey as a sweetener. Honey also used to help preventing and treating skin wounds, stomachaches, and eye cataracts.

We used to drink remedies from the countryside; people did not fall sick so much (...). To go to the hospital now you need lots of money. If you don't have it, you are not cured and you die, that's it. (*comunario*, San Juan).

Furthermore, hunting for wild meat is diminishing because it is getting harder to find key species such as *tatús* (*Dasypus* sp.), *corechis* (*Tolypeutes matacus*), *urinas* (*Mazama gouazoubira*), and *petas* (*Podocnemis* sp.). Some wild animals, displaced from their forests, end up ravaging people's crops in Indigenous territories in search for food.

‘...*taitetús* (*Dicotyles tajacu*) and *troperos* (*Tayassu pecari*), are very harmful. They attack during the maize season, because of deforestation in other places where they used to live (...) where it's only soybean now, so they look for refuge where there is more vegetation’ (*comunario*, San Juan).

Ironically, a few species also find refuge in the large windbreaks between monocultures in the large agroindustrial complexes. Some people used to hunt there, but companies are gradually forbidding it.

Indigenous people's uses of their forests seem to be changing from a slow and collectively managed to a quicker, more intensive and individualistic extraction, according to community interviews. Selective timber extraction, amid collective management plans, still prevails in most Chiquitano territories. It allows some degree of forest regeneration, because the use of heavy machinery is forbidden, and the preservation of forest patches in agricultural areas with a rotation of plots to facilitate soil renewal. However, the dynamics of globalized timber markets, the persistence of illegal logging especially by non-community members, and the growing economic needs of Indigenous communities are pushing for uncontrolled extraction inside their territories: “Sometimes I think, we can't devastate our forests, we need them (...) but others come and ravage everything” (*comunario*, Cordillera). This follows an extractivist and utilitarian agrarian model focused on short-term gains and rapid land clearing for monocrop agriculture:

People are realizing too late the importance of forests (...). We wanted to be like the entrepreneurs [referring to soybean producers], and that screwed us. We will never be like them, and now they are taking advantage of us. Are we going to keep destroying our land? It won't produce anymore. The land of our Mennonite neighbors did not produce anymore, but they had money to go somewhere else (*Comunario*, Cordillera).

The dynamics of deforestation generate an extreme disruption and pose an existential threat for communities in the Chiquitanía because their territorial relations are not easily replaced.

Less forest means less rain, more drought. Those who have money, if their land does not produce anymore, they go away. But Indigenous people were born here. Where will they go? To have water and life, there must be forest (Chiquitano leader).

Indigenous people's instrumental relations to their forests and land is vitally important for their livelihoods and thus fundamentally meaningful. In contrast, in the utilitarian model of agrarian extractivism relations are primarily instrumental to capital accumulation, and can be replaced by relocating elsewhere.

6.2. Water depletion

In a predominantly dry landscape, with a dry season lasting more than seven months a year, stories of water scarcity are common in the region. However, droughts have become longer and more frequent, and the usual rain patterns are increasingly unpredictable. People blame population growth, climate change, and the deforestation and soil depletion caused by the expansion of large-scale monocrops and cattle ranches.

The soil will not bear fruit. It will not rain on time. Before, October was the planting season, now it's a matter of luck. There have even been years with more than eight months without a drop of water (...) even rivers dry up, and only a few wells remain. If our population continues to grow, together with cattle herds, there will be too much demand for water. (*Comunario*, San Juan).

This *cañada* [water canal] comes from far away. We cannot use it, it is too polluted, can you smell it? (...) it comes from the *menonos* [Mennonite communities] and joins the San Julián river (...) The *menonos* and other companies built this drainage [to redirect water towards monocultures]; it's like a sewer now (...) but, before, we used to cross it in a canoe. (*Comunario*, Cordillera).

Meaningful practices connected to water sources are rapidly disappearing. For instance, in San Juan, 'women used to wash their laundry in the creek, which was filled during the rains. It doesn't fill anymore. That was beautiful to see, all the women there, just being with the water' (*comunaria*, San Juan). They also used to collect mud from the riverbanks to build clay pots for preparing the *chicha* (maize-

based fermented drink). Now fewer people go to San Juan's rivers, or to its main *atajado* (dam) for fishing or taking a bath, because they are almost completely dry.

It was beautiful before, all full of creeks. Kids used to jump inside, all the water turned around and carried them away with force. It depends on God that it rains; only he knows. Now it doesn't rain because of what we did to the church [see below] (...) He is punishing us. (*comunario*, San Juan).

People perceive that non-human species are being affected by water depletion. For instance, bees suffer not only from deforestation but also from the lack of water sources. People find them more often in their *patios* in search for water, while hanging the washed laundry, or drinking from people's sweat during agricultural or household activities, as well as in community ponds.

Non-material relations to water are also changing. In the Chiquitano ontologies, the *jichis* are spirits that guard the domains of water and forests, including the different species that inhabit them. They are interlocutors for a balanced use of the environment, and they appear to people in different human, non-human and hybrid forms that can be friendly, malevolent or ambiguous (Arrien & Viana Chuvé, 2007). Stories of water depletion are commonly marked by conflicts with the *jichis*.

In San Juan, a young girl explained that a *jichi* found refuge in the church's tower, after people dried up a *curichi* (wetland) to establish agricultural plots. In 2019, the church was demolished after a controversial decision by the authorities that kept people speculating about the true reasons. Many people mention strong winds that collapsed the tower but, according to the young girl, people tore down the whole church to chase the *jichi* away, fearing his anger for the *curichi*'s depletion. In Cordillera, people have also encountered the *jichi*, usually called *iya* or *duende* by the Guaraní. According to a *comunario*, people used to take water from a *curichi* until a *jichi* prevented them from doing so because they were draining too much to irrigate the soybean monocrops. They chased him away by throwing garlic into the water and cutting down the trees; as a result the *curichi* dried up. 'People were scared (...). Once you chase the *jichi*, it never returns.' (*Comunario*, Cordillera). Some stories reveal deep conflicts and tragedies:

I have seen it...a big hairy man with a big hat (...). Many people have seen the *jichi* and gone crazy (...) some hung themselves (...). But it's been a while since we've heard such stories. He's gone, he has been chased away.' (*comunario*, Cordillera).

Many *comunarios* agree that losing the material and immaterial connections with water plays in people's general estrangement from nature and reflect deep territorial fractures. These fractures are visible in the stories of encounters with *jichis* and other forest beings, which used to be told as part of the cultural foundations of the communities. The disruption of such stories reflects the loss of meaningful relations, in particular, water sources, together with forests, risk becoming merely short-term resources for individual profit at the expense of existing collective agreements for an inter-generational heritage.

6.3. Crop diversity loss

The sense of general estrangement from nature is also present in people's perceptions of a decrease in food, medicine and crop diversity in agricultural plots and home gardens. The harshness of living conditions that people associate with deforestation, increasing droughts, and water scarcity, discourages community members from cultivating home gardens and producing food, medicine (e.g. harvesting honey) or fibers (e.g. cotton) for their own use.

As a result, earning an income becomes a priority to buy daily food and medicine in markets, and younger generations are losing interest in farming. Typically, men find precarious, seasonal contracts in neighboring *haciendas*, or sell timber and meat. Women sell homemade food to seasonal workers and other products to occasional travelers. For example, they commercialize honey and handicrafts, such as hammocks and handbags that used to be made of cotton grown in their own plots, but now are made of synthetic threads bought in markets. 'Most women still know how to knit, but now the only ones that make hammocks are the elders. They used to make them with their own cotton, but they don't grow it anymore. (*comunaria*, San Juan)'. Knitting is a traditional practice in the Chiquitanía, taught across generations. It is also a source of some income independence for women.

I have my own cotton there [in her home garden]. I knit because my knees hurt. I have to stay sitting. Therefore, I knit. I can sell, but the most important is to stay busy, otherwise I would only think about my pain. I've taught to younger women so they can knit, and earn their own money too (*comunaria*, San Juan).

As with forests, crop diversity is considered a source of autonomy and collective identity. By increasingly relying on commercial seeds, people deepen their dependency from markets. Some affirm that such seeds "often do not germinate"; they are more vulnerable to droughts and frosts, and to pests and diseases that are ravaging the monocrops in unprecedented ways, pushing people to buy expensive pesticides (*comuniario*, San Juan).

Before, maize, rice and yucca where not separated, they were one same plant. The maize plant also produced rice on top, and below it was yucca. People got all they needed from it. But, because they became lazy, the plant broke apart and now we have to plant everything separately. People do not select the seeds anymore; they buy [commercial seeds], because they just want money. Those seeds grow poorly; plants grow too low and are easily reached by foxes and *pejis* [*Euphractus sexcinctus*] (*comunario*, San Juan).

This contrasts with local plant species that show more resistance: 'my tobacco plant survived, because I talked to it, I asked her to resist and stay with me. I burn tobacco to chase away bad energies' (*comunaria*, San Juan). With the loss of local seeds, meaningful relations also seem to disappear.

Dependence on markets due to the loss of medicinal and food plants affects social bonds. Traditional meals provide a sense of collective identity: ‘as Guaraní, maize is our staple product. We had it always, all year.’; ‘it all comes from maize’ (*comunaria*, Cordillera). Talking about old recipes with varieties of beans, yucca, and maize, brings nostalgic memories and reveals concerns about current eating habits: ‘people make fun of our old foods, but they were healthier (...) I learnt to prepare them because I grew up eating them, I learnt to value that.’ (*comunaria*, Cordillera). Using agro-chemicals intensively and eating industrial food seem like a disruption of cultural traditions for some *comunarios*, and a reason for increasing health problems such as diabetes and hypertension.

People’s reflections about the transformations in their communities show the profound changes in the relations that used to guide the way they manage forests, water, and land. The narratives suggest a sense of loss of livelihood diversity, and a hindering of the abilities to provide food and medicine. However, as meaningful relations seem to vanish, narratives also reveal the persistence of non-utilitarian values that shape diverse economies amidst the territorial reconfigurations.

7. Remaking meaningful relations towards non-extractivist economies

Although people experience agrarian extractivism as a loss of meaningful relations, our interviews show that not all relations are fully commodified. Some people emphasize that Indigenous people, and not only large-agribusinesses, are active economic agents. Instead of markets-based utilitarian values, meaningful territorial relations seem to rule their economies:

The Chiquitano people have other perspectives than producing for the market (...). If we can sell, we sell, but not in [big] quantity. Only if we have enough (...). We coexist with nature (...) *Cambas* [a denomination for lowland people] are not lazy, as they say. [We know that] forests also contribute; our vision is still alive but entrepreneurs do not see it. (Indigenous leader).

Indigenous people without territory are nothing (...). It is their home, where they can move freely – they have a nomadic past, without frontiers. They need large spaces to live. It is not that they are lazy; it is a way of life. (Indigenous leader).

These narratives do not deny the connection between Indigenous economies and markets, but they mark fundamental differences and non-subjugation to extractivist logics. Diverse connections can link Indigenous territories to markets, and some put forward non-extractivist arrangements in which the establishment of meaningful relations can resist commodification. As we will describe next, the cases of handicrafts and honey show that other agrarian models are possible, based on non-utilitarian values.

7.1. The case of handicrafts

Handicrafts made of fibers collected in the forests and savannas are generally used for household use, but have increasingly become a source for complementary income especially for women who sell them. During a conversation with a small-scale urban entrepreneur working with Indigenous artisans to innovate the designs of handicrafts made with plant fibers, he highlighted how a close dialogue can produce careful relations:

We respect the timings of artisan women, because at the same time they are cooking, cleaning, and taking care of children. They weave in their free time (...). With the lianas we collected nearby, we saw that if we take too many, they don't grow back (...) we learned with them [women artisans] about the fruits, the seeds (...) if an ecosystem breaks, there is no way back (...).

With such relations, markets become processes of encounter and mutual affection. In the case of handicrafts, urban buyers can learn about rural livelihoods and the life cycles of plants, and adjust their expectations accordingly. Moreover, Indigenous artisans can try to translate their quotidian economic practices into market values, without submitting their own:

We establish a beautiful dialogue (...). Commercialization is the hardest part; negotiating the price. Artisans do not consider the time it takes them [to get and transform the fibers], and buyers do not value it. (...) We try to get to know the artisan, to establish a relationship (...) so that the product tells a story (...). Then we have to work with the client, so that they do not ask for impossible quantities (...). It is uncomfortable to put pressure on someone who is used to a quieter lifestyle (urban entrepreneur).

Dialogue and encounter start with the immersion in the productive processes of artisans and ends at the final sell. Immersion passes through visits to the artisans to observe their work, or to invite them to give workshops in the city, to sensitize buyers about the creative process. Thus, entrepreneurs and artisans reflect together on the multiple realities involved in handicraft making: '...it is not the way they [buyers] want, producing fast, selling and paying (...). [Visiting the artisans] takes you to another dimension, far away from the rush'. (Urban entrepreneur). This dialogue blends multiple values in the commercialization process: artisans' deep bond to their land, the value they put on the usefulness of forests, the simultaneous instrumentality and mutuality of the buyer-producer partnership, and the instrumental values of commercialization.

You can buy an object, and you help them [the artisan women] keep doing what they like, that is part of their culture. So that they can, through handicraft, learn more about themselves while earning an income. We try to make these objects be more than objects. They contain stories reflecting their voices; they reflect a part of what they are (...) there lies the recognition of value.' (Administrator of an urban handicraft market).

Some handicraft markets, although small in scale, try to challenge extractivism by allowing for encounters between people from different realities and with different values. Beyond handicrafts, some see possibilities of building non-commodified relations within markets with other local products such as honey, Chiquitano almonds (*Dipteryx alata*), local food varieties (e.g. *maiz blando*, *Zea mays*), wild fruits, spices, oils, medicinal plants, and fibers, such as cotton (*Gossypium spp.*), cacao (*Theobroma cacao*), pesoé (*Pterodon emarginatus*) or cusi (*Attalea speciosa*). Such markets can challenge extractivism and commodification by considering and making a plurality of values more visible, without subordinating them to utilitarian ones.

7.2. The case of honey

In the Chiquitanía, Indigenous people currently collect honey in forests and in scattered trees in their agricultural plots, mainly from native stingless bees, or harvesting mainly from *señorita* (native stingless bee, *Tetragonisca fiebrigi*), and *extranjera* (European honey bee, *Apis mellifera*) in boxed-hives installed in some plots, home gardens or household's patios. Honey is either used at home, as medicine, as a sweetener or exchanged with neighbors. However, some market opportunities are arising and, with them, risks and opportunities of honey commercialization appear.

Indigenous leaders and NGOs are particularly interested in promoting honey collection and production as a way to value forest resources and native bees. According to our conversations, honey has a sociocultural and ecological value because the practices of collection and beekeeping can strengthen community bonds and raise awareness on the importance of collective resources (e.g. water sources, forests, and wild flowers) and pollination services. It also has a potential monetary value, because there is a growing market demand for Chiquitanía's honey in Bolivia's cities, especially after the Covid pandemic in 2020.

Many plants are forest resources that have no value. When honey is produced [from their flowers], they acquire value. Without it, no one cares. Only when they see that bees visit them, they value them (NGO member).

We can't just protect the forest, we need economic alternatives. Honey is giving good results, for example, the *señorita* has a good production, and its honey is more expensive. They use native flowers, from the region, to produce their honey (Indigenous leader).

The possibility to develop economies of honey lies in its overlapping instrumental and relational values, including ecological, social and monetary ones. People and bees are bound together through forests. According to an NGO member, only collective agreements can result in a successful management of native bees and their honey, while individual initiatives risk promoting overexploitation. If everyone extracts wild honey without a common regulation, the pressure on bees and on the trees hosting their

hives can be too strong for them to adapt. This is especially true considering that people usually extract the honey by cutting down the whole tree where the hive is located. Thus, a high market demand could have a strong social and ecological impact. The only way to avoid risks is to keep a balanced relation between market opportunities and a strong community regulation of collection and commercialization. Moreover, only by stressing Indigenous people and bees' interdependence with forests, water sources, and flower diversity, it is possible to promote a collective management.

Our conversations with Indigenous leaders reflect the tensions between markets' demands leading to extractivism and overexploitation, and the life-rhythms of bees and forests. However, they further emphasize the need for not putting all the responsibility on Indigenous people's collective decisions and values, but also on unsustainable consumption, especially originated in the high demand from urban consumers disconnected from the realities of rural territories. Merely producing for the markets can quickly lead to commodification, which is why some see in honey an opportunity to organize and re-think the values of territorial relations without denying the possible benefits of selling honey.

More than producing [for the markets], what is interesting is the opportunity to strengthen Indigenous territories through women's [beekeepers] organization and their capacities to transform products [e.g. producing soaps, shampoo, and medicine from honey]. There is an increased consciousness of the needs for healthier consumption, and this can favor Indigenous women (Leader of a Chiquitano women organization).

In words of an NGO member, synthesizing his conversations with Indigenous leaders interested in bee-keeping and honey marketing:

With [wild] honey, there are no opportunities for extractivism and commodification. Its production is unpredictable and unstable. An alternative would be to domesticate one or two bee-species [in boxed-hives]. In general, it is a matter of Indigenous people creating their own cooperative model; learning to be a community again. Native honey could adapt to any agricultural activity that is not destructive, or to a forestry that is well managed (...). It should also be a product for community's own consumption, and not only for markets (NGO member).

Hive management in boxes is a tempting strategy to reduce the pressure on forests and wild bees. However, in our conversations, out of the more than 27 stingless bees species in the Chiquitanía (Morón et al., 2023; Townsend et al., 2021), only the *señorita* seemed to adapt well to domesticated habitats. Therefore, people turned to *Apis mellifera* for its adaptive capacity and higher volume production, despite the fact that its honey is considered to be of lower quality, and thus cheaper.

Profitability is a decisive factor with honey. (...) If people do not see some money quickly, they lose motivation. Boxed-hives are easier and cheaper to manage [than wild honey collection], and people can have them without neglecting their crops, or their cattle (leader of a private organization).

However, an NGO member affirms that the focus on only a few species can hinder the efforts to make bees' diversity more visible and to promote the protection of their habitats. Honey markets lie on a fragile balance between commodification and collective management of human-forest relations. Such balance depends on the interplays between the multiple values of honey, and the strong pressures of markets that overlook territorial relations and rhythms to impose utilitarian logics.

7.3. The risks of commodification

Commodification can hamper initiatives such as handicrafts and honey economies, and subsume them to extractivism in many ways, according to our interviews. First, bigger businesses can take on the commercialization, thanks to their advantage in the value chains (e.g. better access to information, capital, credit, and connections with markets). This is usually the case, according to an NGO member, when the volumes and quantities demanded become too high, oriented towards long-distance markets, or when the products' transformation surpasses the technical capacities of the communities and small businesses. Second, the commercialization of non-timber forest products can fall into the enchantments of a *bonanza* based on selling promising products without considering the plurality of values and or disregarding meaningful relations between humans and other beings.

In both cases, values are translated into utilitarian terms and turned into profits appropriated by powerful actors. Such appropriation benefits from exploitative conditions, for example, when Indigenous or smallholder farmers end up working underpaid for powerful agribusinesses (Moore, 2023). Recalling Tsing's "salvage accumulation" (A. Tsing, 2015, p. 62), agrarian extractivism can end up taking advantage of the multiple value relations existing outside of its direct control by commodifying them and allowing its dominant actors to accumulate the profits generated.

Bonanza's promises of prosperity can attract all actors in the value chain, especially in contexts where extractivism has left few economic alternatives behind.

Handicrafts, carpentry, weaving, clay artwork, honey are successful (...). The new government has brought many new projects. People are also excited about the industrialization of cassava flour, sugarcane and its derivatives. If it happens, then let it all come because there is enough territory and land. (Chiquitano Indigenous leader).

Rivalry and competition exist. At the end of the day, money rules (...). If they [community artisans] perceive they can sell cheaper and more, they will do it (...) because they have many needs. (urban entrepreneur).

Moreover, initiatives can be hindered by the territorial reconfigurations of extractivist economies, including deforestation, water depletion, and land privatization:

Because nowadays all the land has owners, [artisans] cannot go anywhere in search of plants. They have to ask for permission to property owners, and sometimes pay them to pass (...). Because of deforestation there is not much material left [e.g. plant fibers] (...). There are many tensions between the artisans and their neighbors [large landowners] (urban entrepreneur).

Our conversations suggest that diverse economies can only persist in contexts of extractivism by not giving up their value-plurality and the careful encounters between markets and territories.

The hope is that, instead of [Indigenous people] merely adopting entrepreneurial or market logics, they create their own. That they dwell in their own place, integrating some elements of markets. In the corporative game, they are doomed to lose. Indigenous people are not [corporate] entrepreneurs (...). However, they have territories, resources, and networks that allow them to connect and build bridges (NGO member).

According to conversations with Indigenous leaders and *comunarios*, reactivating economic territorial bonds and making them visible could help to avoid the temptations of short-term profit mainstreamed by the agribusiness model. However, they stress that increasing economic precarity and territorial fragmentation make people turn towards any immediate income opportunities, even short-term. Many *comunarios* notice the impacts of large-scale monocrops on soil deterioration and water depletion, but they cannot find alternatives. Some markets provide possible ways out of the submissive relations offered by agribusinesses, but the dependence on a few commodities such as soybean remains unchallenged. Initiatives like handicrafts and honey are not likely to substitute commodities, but they unveil possible transitions pathways out of the rule of extractivism. This translates into ‘moving between worlds’, in words of a Chiquitano Indigenous leader, overcoming the myths and prejudices that deny the capacities of Indigenous people to create their own economic models without losing their territorial bonds.

8. The limits of commodification and the possibility of non-extractivist economies

Frontier expansion in the Chiquitanía is fueled by the commodification of territorial relations, including forests, lands, and livelihoods that are not-completely ruled by capitalist market-relations. Commodification entails the mainstreaming of utilitarian narratives (figure 1), especially by large agribusinesses promoting an extractivist agriculture that precarizes small-scale farmers while concentrating most productive capital and lands (Castañón Ballivián, 2024; McKay, 2018b). Utilitarian narratives spread the myth of inefficient, lazy Indigenous farmers, while overstating the success of large agribusinesses (Li, 2023a). Our results show that agrarian extractivism leaves a deep trail of destruction in the more-than-

human lives of San Juan and Cordillera. Moreover, commodification conceals the capacities of non-utilitarian Indigenous economies to build non-extractivist paths (table 1).

8.1. Non-utilitarian values unveil territorial relations that are not-fully commodified

People's narratives of how commodification shapes their daily lives unveil relations that are not fully-commodified. Our interviews unfolded stories about the disruption of meaningful relations with forests, water and crops, involving combinations of non-utilitarian values (instrumental and relational) (table 1). People's account of territorial reconfigurations are not mere descriptions of the destruction of long-established relations, they are statements about the entities and relations that matter to them beyond utilitarian framings.

Table 1. Non-utilitarian values unveiled in narratives of territorial reconfigurations.

Territorial reconfigurations	Non-utilitarian values (not fully commodified)	
	Instrumental	Relational
Weakening of meaningful relations		
Deforestation	Forests provide key resources for present and future community life.	Indigenous people's vital and irreplaceable connection to forests is in danger.
Water depletion	Water sources are used daily for agriculture, household life, and recreation.	The loss of immaterial connections to water (e.g. conflicts with <i>jichis</i>) affects the cultural foundations and produces a sense of estrangement from nature.
Crop diversity loss	Crops provide food, medicine, and income autonomy.	There is a sense of loss of cultural identity and memory linked to decreasing food diversity.
Remaking of meaningful relations		
Handicrafts	Can provide income opportunities, especially to women.	Creative and commercial processes can promote collective bonds, careful encounters, and mutual relationships. Such processes can sensitize on more-than-human life cycles.
Honey	Can reactivate the instrumental value of collective forest management.	Honey reflects people and forests interdependence, and the importance of social bonds created through forest management.

Our research shows that commodification takes place in both communities, but not everyone perceives it as beneficial. Commodification produces a conflictive space, in which people adopt or work for an extractivist agribusiness model, out of an apparent lack of alternatives, while observing and sometimes decrying the destruction it leaves behind. Most interviewees value multiple types of relations besides

extractivist ones, and lament the loss of those that they deem meaningful and irreplaceable. Such conflictive space does not appear in our interviews as an ideological one, resulting from a collective politization against commodification or extractivism. Instead, it is a space where colliding values, utilitarian and non-utilitarian, can produce tensions with open-ended results.

The existence of such a conflictive space suggests that commodification has limits. Agrarian extractivism needs to accumulate cheap resources to expand, for which it appropriates the produce of forests, soils, and human and non-human work (Moore, 2015a). Yet, such produce is not a commodity in itself (McMichael, 2023), but rather the result of multiple more-than-human relations that are not ruled by utilitarian values. Thus, drawing on Tsing’s notion of “salvage accumulation” (2015)³⁶, appropriation requires that such unruly relations become valuable in the utilitarian terms that guide economic agents and markets profiting from extractivism (figure 1). By means of translation, “diverse forms of work and nature are made commensurate for capital” (A. Tsing, 2015, p. 49). Nevertheless, not all relations can be translated into utilitarian values (commodified), because they resist it, or because they are incommensurable (Lowrey, 2008). Therefore, commodification is both a condition of existence of extractivism and its own limitation, due to the tensions produced by value-incommensurability.

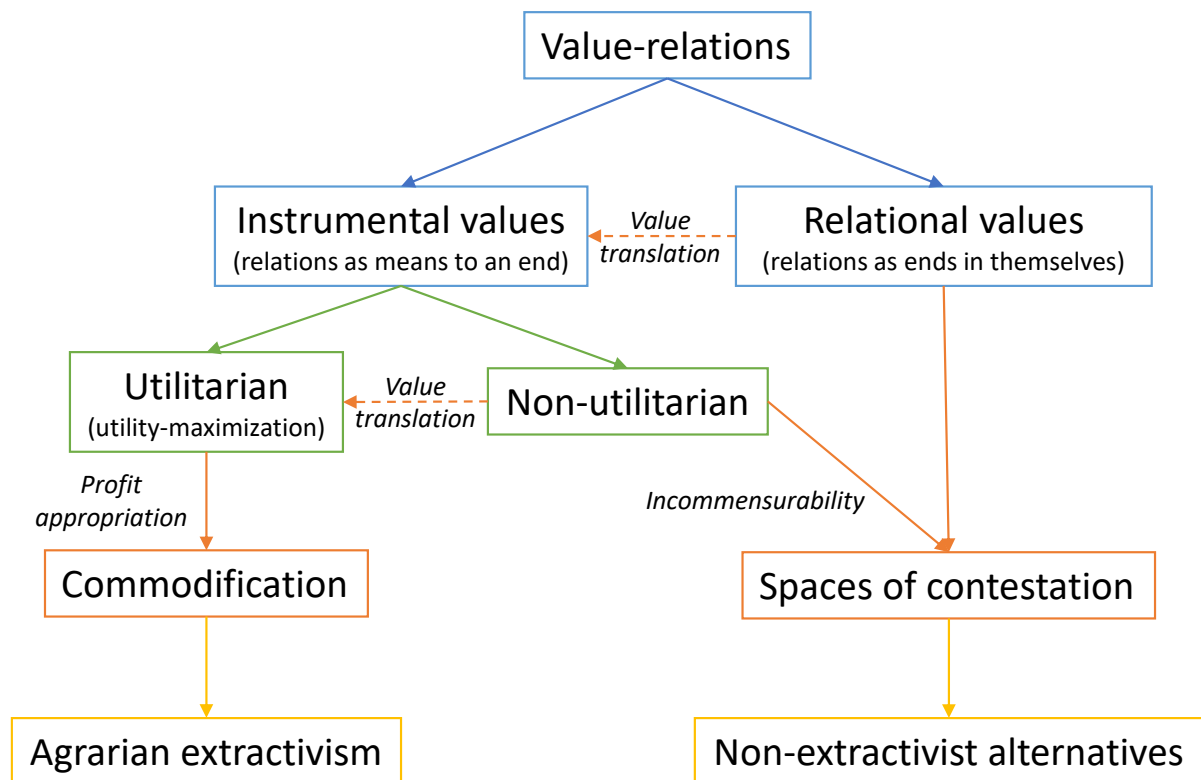


Figure 1: Multiple values involved in territorial reconfigurations leading to agrarian extractivism and to potential, non-extractivist alternatives.

³⁶ “Salvage accumulation” is a process of translation of non-capitalist values into capitalist assets to be appropriated and accumulated without controlling the conditions of production of commodities (A. Tsing, 2015, p. 271).

8.2. Highlighting incommensurability to support non-extractivist economies

In our study, non-utilitarian values and commodification relate to each other dialectically. Non-utilitarian values appear both in narratives about the weakening and the remaking of meaningful relations due to commodification (table 1). In such narratives, neither extractivism, through commodification, nor non-extractivist initiatives, through non-utilitarian values, seem to overcome the other.

In our research, the meaningful relations constituting handicrafts and honey economies, based on non-utilitarian values, are in tension with commodification and at risk of being commodified. Commodity markets need accessible “reservoirs of unexploited nature and independently, rich creative human culture” (Lowrey, 2008, p. 70). Such reservoirs, ruled by “alternate orders of value” (or non-utilitarian values), are “amenable to the market yet remain partially outside of it” (2008, p. 73). Following Lowrey’s ideas, the tensions exposed by people’s narratives in our research reflect the incommensurability of utilitarian and non-utilitarian values, illustrated by the concurrent forces working for commodification while “simultaneously undermining it” (Lowrey, 2008, p. 73). Unveiling such value interplays is key to challenge a monist utilitarian narrative.

The ostensible dominance of extractivism in Bolivia’s agrarian commodity frontier creates devastating territorial reconfigurations, especially with rampant deforestation. However, our research shows that such dominance is nuanced. While the utilitarian narratives of large agribusinesses underrate “alternate orders of value” (Lowrey, 2008, p. 73; Svampa, 2015), our interviews show actual enactments of non-extractivist economies that place meaningful relations at the center in Indigenous territories.

Indigenous economies are not completely outside the logics of commodity markets and extractivism, but neither are they completely inside. Our research suggests that a mediation between economic logics is needed, one that prevents extractivism from destroying meaningful relations in Indigenous territories, while opening pathways for fair market negotiations and more equilibrated power-relations. Bolivia’s political constitution provides a key supporting framework, for it acknowledges Indigenous economic pluralism³⁷ (Eichler, 2022). Research on Indigenous people’s economies at agrarian commodity frontiers can support mediation efforts, such as the cases of handicraft economies in our study. In particular, they can unveil value-pluralism and expose the destructive effects that utilitarian narratives underpinning agrarian extractivism have on meaningful territorial relations.

³⁷ Supported by international legal frameworks adopted by the Bolivian National Congress: the UN Declaration on the Rights of Indigenous Peoples (including collective territorial rights, self-determination and sovereignty) adopted in 2007, and the International Labor Organization’s convention 196 ratified in 1991 (Eichler, 2019).

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Chapter 5. Honey economies weave meaningful territorial relations in Bolivia's Chiquitanía

Under review at *People and Nature* (submitted in May 2025).



Figure 16: Aftermath of honey collection in a *chaco* in San Juan de Lomerío

Author: Stefan Ortiz-Przychodzka, Nov. 2021.

Honey economies weave meaningful instrumental relations in Bolivia's Chiquitanía

Stefan Ortiz-Przychodzka, Jan Hanspach

Abstract

The expansion of agrarian commodity frontiers relies on the commodification of more-than-human relations, which translates the diversity of underlying values into utilitarian values based on market logics. In consequence, agrarian commodity frontiers generate territorial transformations by expanding commodity monocrops, and causing deforestation, landscape fragmentation, and the homogenization of local livelihoods. Despite commodification, diverse economic practices and values entailing more-than-human agencies can persist and influence territorial transformations. In this study, we analyze Indigenous people's experience more-than-human relations to unveil how diverse economies emerge in on of the most expansive frontiers in South America, Bolivia's Chiquitanía. For this, we used qualitative interviews and participatory mapping, focusing on human-bees relations within honey economies. We found that people's experiences involve meaningful instrumental relations and more-than-human agencies, through which honey economies can act on territorial transformations. We discuss the importance of further research assessing how blends of non-utilitarian values produce meaningful instrumental relations. Understanding the politics of diverse economies can unveil possibilities for more-than-human communities that resist the destructive advance of agrarian commodity frontiers.

1. Introduction

The expansion of agrarian commodity frontiers entails rapid territorial transformations that reflect the attempts of global capitalist markets to subordinate and homogenize diverse more-than-human relations involved in agriculture and forestry practices (Serje, 2024). Capitalist markets do not value what cannot be traded and measured in monetary terms, i.e. they need to translate all relations into commensurable values. Such translation involve commodification, or the constraining of relations and practices with multiple values to monetarized market-values that involve logics of utility maximization (Svampa, 2022; Veltmeyer & Ezquerro-Cañete, 2023). As a result, agrarian commodity frontiers (hereafter, "frontiers") produce fractured landscapes and land-use change through deforestation and the spreading of large-scale monocrops that slash biodiversity (le Polain de Waroux et al., 2018; McKay, 2017). In general, frontiers progress at the expense of the multiple values and practices that connect people to the environment and to their territories (Eichler & Bacca, 2021; Serje, 2024).

Although commodification is a powerful force of territorial transformations, many scholars have challenged the idea that it is a linear and unalterable process (Hahn et al., 2015; Moore, 2015b; Smessaert et al., 2020). Research on frontier-dynamics can grasp overlooked territorial transformations by unveiling the interplays between economic practices, multiple values, and more-than-human agencies where such transformations take place. At frontiers, more-than-human relations still shape place-based economic practices and values with open-ended results that can resist being fully commodified (Jasser et al., 2022; Scheidel et al., 2023). We use the term “more-than-human” to highlight that agency, or the ability to influence territorial relations, is neither exclusive to humans and markets, nor is human agency independent and inevitably superior over that of nonhuman beings. Instead, agencies result from networked interconnections, and can be therefore more-than-human (West et al., 2024). Assessing people’s experiences of more-than-human relations can shed light on the nuances of the territorial transformations beyond commodification, without denying the power of globalized capitalist markets.

In this study, we analyze people’s account of more-than-human relations to unveil how diverse economic practices and values (i.e. diverse economies) emerge in a context of rapid frontier expansion. We focus on the Chiquitanía in Bolivia, one of the most rapidly expanding frontiers in South America. There, soybean monocultures and cattle raising are replacing the biodiverse ecological corridors connecting the Amazon, the Pantanal and the Chaco regions (Czaplicki, 2024; Vides-Almonacid et al., 2007; Vos et al., 2020). Its Indigenous inhabitants, whose lives have been linked to Chiquitanía’s landscapes for generations, are adapting their livelihoods to the ongoing destruction of ecosystems and the increasing dominance of monocrops and cattle (de la Vega-Leinert, 2017; Jasser, 2025). In this context, our research focuses on honey economies and human-bees relations, which have historically been a meaningful part of Indigenous life. Still today, many Indigenous people use honey and encounter bees everyday in their communities, a relation that is difficult to match, and that unveils a persistent connection to forests (Adler et al., 2023; Morón et al., 2023; Townsend et al., 2021). We aim at understanding how honey economies take part in the territorial transformations in two Indigenous communities at the Chiquitanía’s frontier.

Below, we describe the relational approach and the concepts that guide our research (section 2) and our main methods (section 3). In section 4, we analyze people’s experiences of encountering bees, including the practices and values involved in such encounters. In section 5, we discuss the contributions of our results to understanding how diverse economies interact and shape territorial relations. We argue that recognizing manifestations of diverse economies can help to look beyond commodification and to acknowledge meaningful relations that are not replaceable in principle (Dwiartama et al., 2016), which can shape territories amidst frontier expansion.

2. A relational approach to diverse economies

Our research looks at the configurations of honey economies from a relational approach considering people's experiences of encountering bees in their daily life. By focusing on encounters, we imply that honey economies unfold from their constitutive relations. In other words, honey economies could not exist without the “embodied engagement and responsiveness” (West et al., 2020, p. 305) between human and nonhuman entities, especially bees, which reproduce moments of encounter, or “occasions of experience” (Muraca, 2016, p. 21). This approach is in line with the concept of diverse economies, which we define as people's experience of the networked abilities and capacities of human and non-human beings and things to influence their relations and to act on the material realities (i.e. their agencies) that sustain their interrelated livelihoods (Miller & Gibson-Graham, 2019; Ortiz-Przychodzka et al., 2023).

Assessing diverse economies can reveal how everyday practices and values enact territorial relations. In Latin America, scholars have drawn on relational perspectives, present in many Indigenous ontologies (Cassino et al., 2025; Gallegos-Riofrio et al., 2022; West et al., 2024), to form an understanding of territories as relational processes including everyday practices, meanings, encounters and “inseparable relationships” that make life possible (Haesbaert & Mason-Deese, 2020, p. 262). From this perspective, territories are not simply discrete spatial categories of control and classification; they are experiences of belonging and senses of place (Sandoval et al., 2017), and potential triggers of collective organization and mobilization for the defense of multiplicity in face of dispossession and exploitation. In our study, we adopt this perspective to stress that commodification is only one among many possible unfolding trajectories of frontier's territorial transformations.

Diverse economies materialize in entanglements of practices and values that shape and are shaped by meaningful instrumental relations. In general, economies act on territorial trajectories through their constitutive instrumental relations, which are useful from a human perspective because they mainly aim at satisfying human needs (e.g. material, immaterial, individual, collective). However, contrary to common understandings of economies, people do not *only* value usefulness in terms of the *maximum individual utility* that they can obtain and measure in monetary terms (utilitarian values) (Healy et al., 2020; Miller, 2020; Spash & Hache, 2022)³⁸. When they do, it has been associated to social-ecological over-exploitation and destruction at the heart of the ongoing global environmental crisis (Muradian & Gómez-Baggethun, 2021; Spash & Hache, 2022). Instead, several scholars have shown that diverse

³⁸ So-called Neoclassical Economics have sustained such assumption, reinforced by the logics of capitalist markets, resulting in the common association of economies to egoistic individuals guided by utility maximization (the monetization of individual's maximum satisfaction from consuming goods and services, a reductive version of the much wider utilitarian philosophy) (Riley, 2018; Spash & Hache, 2022). From this perspective, the economic value of a good is only realized at the moment of capitalist exchange (exchange-value), while its usefulness (use-value reflecting qualities and relations behind the production) is overlooked (Pirgmaier, 2021).

economies can involve multiple valuations of instrumental relations, where usefulness can be compatible with the experience of meaningful relations. For instance, in a Chiquitano community in the Bolivia's Eastern lowlands, Rodríguez et al. (2023) have shown that fire is a tool for clearing the cropland, but it is also more than a mere instrument. People engage in negotiations with fire to find good coexistence, making it a lively entity that influences decisions on territorial management. Depicting diverse economies can unveil the overlooked practices and values of instrumental relations that act on territorial transformations.

The recent literature on environmental values provides important concepts to understand how a plurality of values can constitute human-nature relations (Raymond et al., 2023). However, such literature tends to consider economic relations as merely driven by utilitarian values (Muradian & Gómez-Baggethun, 2021), thus overlooking the approaches brought by diverse economies scholars (Gibson-Graham & Dombroski, 2020a; Ortiz-Przychodzka et al., 2023). We argue that recent conceptualizations of relational values can help filling this gap to acknowledge how diverse economies build more-than-human entanglements beyond the utilitarian. Drawing on Raymond et al. (2023), intrinsic values indicate relations or entities considered important independently of human needs or preferences. According to Chapman and Deplazes-Zemp (2022), the structure of the intrinsic valuation could be represented as a valuer A assigning attributes to the entity B which is valued for its own sake ($A \rightarrow B$). In contrast, instrumental values describe relations or entities that are means to satisfy needs or achieve ends ($A \leftarrow B$) (e.g. utilitarian values are one type of instrumental value). We propose the notion of meaningful instrumental relations, to acknowledge those relations that are unique means to achieve ends, and therefore hard to replace ($A \nrightarrow B$). Relational values refer to meaningful relations considered as ends-in-themselves ($A \nleftarrow B$). The authors suggest that relational values combine elements of an instrumental valuing (A benefits from its relation with B for its meaningfulness), and an intrinsic valuing (A values its relation with B for its own sake; i.e. the relation is an end-in-itself). In this study, we use these distinctions and suggest additional elements to understand diverse economies in light of our results. Additionally, we consider that people can assign both instrumental and relational values *to instrumental relations*, as in the example of fire above, which is key to analyze how more-than-human agencies can provide meaningfulness to diverse economies.

Two additional considerations on values are central for our study. First, we do not define values as objective properties of entities (Muraca, 2016). Instead, we understand values as people's expression of the importance of the relations that they engage in or that they observe; i.e. values are a human experience. Second, we consider the distinction between values to be epistemological (Stålhammar & Thorén, 2019) (oriented towards the interpretation of how people value relations), instead of normative (how relations should be valued). Value categorizations help us analyze the ways in which people give importance to the more-than-human relations they engage in. Yet, we are aware that value categories

are abstract representations, and that values might not be clearly distinct at the immediacy of experiences and encounters (Muraca, 2016; Raymond et al., 2018; Vizuite et al., 2025). While we use an epistemological distinction of values (discrete categories that can interact), we also look for insights on how they blend at people's experiences of encounter.

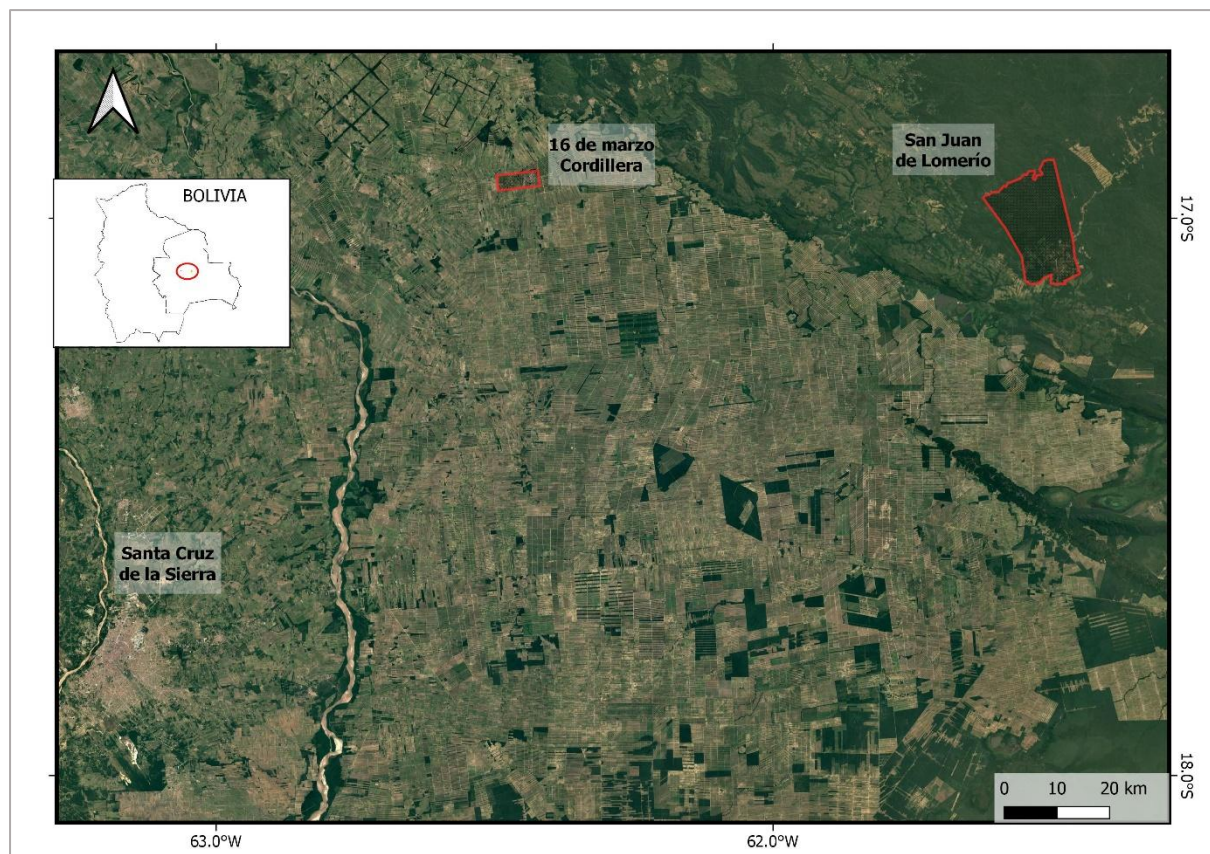
3. Research area and methods

Our research took place in the Chiquitanía, in Bolivia's Eastern lowlands, where biodiverse tropical dry forests, shrublands and savannas have been home of Indigenous people for generations, such as the Chiquitano, Guaraní, Guarayo and Ayoreo (Arrien, 2008; Vides-Almonacid et al., 2007). Since the 16th Century, colonial, political and economic agents have transformed this vast territory to serve their interests of resource appropriation, and religious and cultural conversion. Deep structural changes were done by the Jesuit missions in the 17th Century, who concentrated the dispersed Indigenous populations into settlements, many of which persist today (Arrien & Viana Chuvé, 2007; Jasser et al., 2022). Later, slavery was widely established in rubber extraction, plantation systems and cattle ranches (*haciendas*). It was replaced by submissive work in the second half of the 20th Century, present in commodity agricultural systems including soybean, sorghum, sugarcane, and oil palm (Arrien & Viana Chuvé, 2007; Balza Alargón, 2001; McKay, 2018a). Today, Indigenous communities mostly rely on precarious seasonal work, and small-scale agriculture and forestry. Many hold collective land rights in around 25% of the land in the Chiquitanía, while large and medium private landholders own another 25%, and the rest is public land that is legally prioritized for agrarian reform although highly subject to land grabbing (Colque et al., 2022; Fundación Tierra, 2021a).

Located in the Department of Santa Cruz, where 2,3 million hectares were deforested between 2010 and 2022 (R. Müller et al., 2024), the Chiquitanía has suffered the typical manifestations of frontier expansion: deforestation, wildfires, biodiversity loss, land grabbing, and increasing social-ecological conflicts (Cole et al., 2023; Jasser, 2025; Maillard et al., 2024). The territorial transformations are visible in landscape fragmentation and homogenization with the spread of pastures and soybean monocrops. These transformations force Indigenous people to adapt their livelihoods, for instance by adopting the monocrop model or raising cattle when possible, looking for seasonal work in neighboring plantations, or migrating to the towns and cities (Colque et al., 2022; Jasser, 2025). In such context, the quotidian uses of forests, wild plants and animal species are disappearing, along with diverse food and medicinal practices.

For our research, we worked in two contrasting Indigenous communities (Map 1). First, 16 de marzo Cordillera (or "Cordillera") was founded in 1979 by Guaraní families who migrated to the area to work in sugarcane plantations at the core of frontier expansion (Colque et al., 2021; Haas, 2023). Thanks to

land reforms, they were granted 2400 hectares (Haas, 2019), in which they applied the dominant agricultural model in the region: soybean, sorghum, and sunflower monocrops, leaving almost no forest standing. As the soil fertility decreased, most of Cordillera's 153 families ended-up renting their land to wealthier Mennonite and Andean settlers who could pay for machinery and agrochemical inputs (Colque et al., 2021; Haas, 2019). The second community, San Juan de Lomerío ("San Juan"), was founded at the end of the 19th Century by Chiquitano families looking for alternatives to the harsh work in the *haciendas*. It is located in a hilly area of 37000 hectares at the heart of the Chiquitanía, where the frontier's monocrops have not reached yet. Its community mainly raises cattle, cultivates plots for their family's consumption, and relies on forests for collecting wild honey, medicinal plants, and hunting. They also extract timber from a collectively managed forest covering half of the territory, which has prevented rapid deforestation despite the increasing needs for monetary income, and the pressures from external illegal loggers.



Map 1. Location of the two communities in the Chiquitanía, department of Santa Cruz, Bolivia. **Source:** the authors with data provided by Fundación TIERRA.

Our work started in 2021, when we consulted the community leaders about the possible contributions of our research to their projects of territorial planning³⁹. We conducted semi-structured interviews from September to November 2022, after obtaining informed consent. We selected the interviewees through a snowball sampling, asking community leaders and each interviewee about the people considered most experienced in honey collection. When people were absent, we interviewed family members, or asked for alternative contacts. We interviewed in total 56 people, ensuring prior oral⁴⁰ informed consent.

Table 1. Number of interviews per community

		Individuals	Women	Men
16 de marzo Cordillera		21	10	11
Age	< 20 years old	0	0	0
	20 – 40	3	2	1
	40 – 60	8	2	6
	> 60	10	6	4
San Juan de Lomerío		35	18	17
Age	< 20 years old	4	2	2
	20 – 40	13	8	5
	40 – 60	6	3	3
	> 60	12	5	7
Total		56	28	28

Our interviews involved three elements: (1) questions about honey collection, such as the frequency, the locations, the reasons and benefits, the techniques, the emotions and affections involved, as well as bees' behavior and reactions. (2) People's descriptions of encounters with bees that they especially remember. When possible, a walk together to the places of encounter allowed triggering further descriptions and collecting GPS coordinates to build a map of such places (Di Masso et al., 2025). When walking was not possible, we located them in a satellite image. (3) We completed the mapping with key spatial referents that people mentioned (e.g. rivers, roads, paths), and we added information on land covers identified in two focus groups with Indigenous leaders of each community. The mapping and satellite images helped people to situate their descriptions and the encounters in the wider territorial context. All together, the interviews, the walks, and the mapping allowed us to inquire about the territorial relations of honey economies by bridging stories of encounter within specific places portrayed in people's experiences.

³⁹ Our project partner was Fundación TIERRA, a Bolivian NGO analyzing land conflicts, and supporting Indigenous people's land rights and territorial claims in cases of land grabbing in the lowlands.

⁴⁰ Many community members are unable to write.

4. Honey economies are rooted in territorial relations

People's experiences unveil interplays between the practices and values that constitute the meaningful instrumental relations of honey economies. Our interviews show that honey economies, including honey collection and human-bees encounters, entail combinations of meaningful instrumental relations, more-than-human agencies, and blending values (table 2). These combinations indicate a networked co-constitution of honey economies, allowing them to act on territorial relations while also being shaped by them.

4.1. Meaningful instrumental relations underpin honey economies

Honey economies currently provide people with an important source of medicine, food, and occasional income. *Meleo*, i.e. wild honey collection and the harvesting of honey from beekeeping in boxed-hives, has been part of the Guaraní and Chiquitano livelihoods for generations. Thus, *meleo* is both especially useful and meaningful, because it satisfies people's needs while bringing back memories and connecting places evoking family and community relations.

In Cordillera and in San Juan, honey economies can affect the ways in which people experience, shape and manage their territories. Honey use entails a blend of relational and instrumental values (table 2). Its usefulness ranges from quotidian habits to intermittent commercial opportunities. Frequently, people use honey to prevent or to treat common illnesses, as a sweetener for beverages, or as an energetic food. Occasionally, people give or exchange honey with neighbors that need it for medicine, or sell it in local markets and to regional merchants who act as intermediaries in distant value-chains. Honey's usefulness as a daily medicine seems particularly irreplaceable (table 2), which is why some interviewees worry that deforestation triggers shortages due to the loss of habitats for bees: "they will be gone, because there's no forest left. They live where there is forest. Here it was all forest, now it is all clear". Thus, honey's usefulness, through blending values, can sensitise over territorial, more-than-human interdependencies.

While *meleo* is driven by honey's usefulness, it is shaped by encounters with bees in overlapping economies. In San Juan, people mostly collect wild honey from forests or from the scattered trees in the *chacos* (cropland). Many interviewees explain that, more than directly looking for honey, they find it because of unexpected encounters with bees while collecting timber or farming. Native stingless bees dominate these encounters, such as the *señorita* (*Tetragonisca fiebrigi*), the *suro* (*Scaptotrigona polyisticta*), or the *cortapelo* (*Scaptotrigona cf. depilis*). Besides, the *extranjera* (*Apis mellifera*), the non-native honeybee gone feral, is widespread due to its capacity to adapt to the changing landscapes. People rarely ignore their encounters with bees, as they appreciate the opportunities to collect honey.

Honey economies produce territorial bonds by promoting a sense of collective belonging and senses of place (see maps below). When they decide to collect, usually, people usually invite friends or relatives to join the *meleo* and, in exchange, take a share.

Here, out of habit, people don't go alone, they always invite friends. If I tell a friend 'let's go hunting' or 'I've seen a *pico*', everything that is hunted or the honey that is collected is shared. If I located a *pico*, we take a chainsaw and an axe and we go for it. That's the custom...

When encountering bees, people identify the trees where the hive is nested by following the buzzing. Once located, they plan to come back later with the different tools to collect (e.g. chainsaws, axes, protective gear, fire and smoke). As people mentally map out the locations of the beehives in forests and *chacos*, they decide on managing forest patches or leaving individual trees standing if there are opportunities of collecting honey.

In Cordillera, *meleo* still reminds people of their Guaraní lands of origin, where many had their first experiences of collecting honey in the forests. However, because nowadays merely a few forest patches are left in the community, wild honey is scarce. Therefore, honey economies rely on beekeeping in boxed hives located in people's patios or close to the few forests in the *chacos*.

It's my favourite thing [*meleo*]. Now I don't do it anymore, there's hardly any *pico*, you have to go far to find one. But I like it, mostly for family consumption, nothing more. And for most Guaraní families it's their culture. (...) We share it all. That's the way of the Guaraní.

With beekeeping, human-bees encounters and honey harvesting are more predictable and less diverse than with wild honey collection. In Cordillera, the bees most commonly kept are the *extranjeras*, which adapted to the monocrop landscape and the box-hives, and the *señoritas*, which people perceive as a friendly presence in their homes and neighborhoods. Thus, honey is still highly used and valued, although only a few practice beekeeping, and the connection of *meleo* with forests is nearly lost.

Beekeeping in Cordillera also shows emerging links between markets and territorial relations. Honey can provide income through sales to community members and to external intermediaries, a practice fastly spreading in the Chiquitanía. In particular, women are leading efforts to build their own organization to sell honey-based products and increase their household income. Some are using beekeeping as a unique opportunity to stress the need to plant more trees and gardens benefiting bees, and to provide better access to land for those families that were left out of the land-distribution because they arrived later to the community, or due to political disputes with its leaders. Therefore, income generation through beekeeping can make part of meaningful instrumental relations.

Altogether, honey economies in Cordillera and in San Juan are rooted in diverse territorial relations at the margins of the regionally expanding monocrop economy. *Meleo*'s constitutive instrumental relations are meaningful because of the connections they promote, and not only due to the monetary income

they provide (Table 2). Next, we will see how it is not only humans who promote *meleo*'s diverse connections and meaningfulness.

Table 2: examples of meaningful instrumental relations, more-than-human agencies, and blending values (drawing on (Chapman & Deplazes-Zemp, 2022)) underpinning honey economies in San Juan and Cordillera.

Honey economies combine:	Description	Blending values	Examples
Meaningful instrumental relations	People are annoyed or scared by bees, but they put up with them because of their honey. The meaningfulness of honey mediates people-bees relations.	People $\leftarrow$ Bees and People $\rightleftharpoons$ Honey	“They come to sting us (...) it’s very tiring. Yesterday I saw them drinking from a glass with sugar in the kitchen (...). We had to go and leave them there, we couldn’t kill them because they were so many! It was like thundering very loud. (...) We drink the honey from that black bee with soft drinks for a refreshment, or we eat it on a whim.”; “I collected their honey the other day, but I almost ran away (...) we have to put up with it or else how are we going to get their honey!”
	Honey’s instrumental value is hard to replace.	People $\rightleftharpoons$ Honey	“We need the honey. Where are we going to get it if the little bees disappear? Buying honey is not the same as the natural honey taken from the little bees from here, right?”
	Besides collecting honey, the relation with bees is an end-in-itself.	People $\rightleftharpoons$ Bees	“There are <i>señoritas</i> in his grave (...) his children have poured cement, and they keep coming. (...) His daughter says that he loved <i>meleo</i> and maybe the bees got attached to him (...). He liked them too (...) Even the tough ones didn’t do anything to him, he would calmly take their honey and they would fly away and leave.”
	<i>Meleo</i> is a source of identity, proudness, and reputation. The meaningfulness of <i>meleo</i> makes the people-bees relation an end-in-itself.	People $\rightleftharpoons$ Bees and People $\rightleftharpoons$ People	“He liked to go collecting honey, he was not afraid of the <i>extranjeritas</i> , unlike others who are cowards. He used to collect naked! (...) we saw him (...). That was his art. He used to say ‘the little bees already know me, that’s why they don’t sting me’.”
	Bees’ have their own life, autonomous from people. However, besides benefiting humans, interviewees observe that <i>meleo</i> motivates bees to renew their hives, swarm and make new honey.	People $\rightarrow$ Bees and People $\rightleftharpoons$ Bees	“We don’t take care of them, they just live for themselves when nobody bothers them. They look for a place and they stay there. (...) If someone takes their honey, they go to another tree. (...) they make more honey. But if no one collects, they stay there, get old, and they don’t work as much. They are the same as us. When we don’t work, we’re not ourselves anymore, we become lazy.”

Bees' agencies	Bees' abilities can inspire how people see themselves and their social relations. People's relation to bees mediates people's social relations.	People→Bees and People↔Bees and People↔People	"If we could see that bees work so much. Because they fly to bring their pollen from the flowers, they fly far, it's like oneself. Like human beings go and look where to work to feed their families. The same thing with the little bees (...) If people were more aware of how hard the work is, how much effort bees make to build their little house, to have the honey there. (...) that would be good for the community...and if there were a market for that honey I think that people would also take care or try not to kill the bees or collect their honey carefully".
	Some people are scared, or respect bees. They adapt their work plans to avoid harming or being harmed by bees.	People→Bees	"Yesterday I cut down the tree and there was a <i>cortapelo</i> [hair clipper, <i>Scaptotrigona cf. depilis</i>] (...) they are annoying (...) but what am I going to do, I'm not taking their honey (...) when there are aggressive bees it's better to leave them (...) when you're working your <i>chaco</i> or it's time to light the fire [slash and burn], you have to wait (...) until the bees move on".
	Bees can defend their hive and prevent people from collecting honey.	People→Bees	"This black bee, they didn't let us take their honey, they came to fight for their honey (...) those are the ones that won't let us collect, they are bad."

4.2. More-than-human agencies shape honey economies

Encounters constitute the meaningful instrumental relations of honey economies, due to the experiences that affect people's daily lives. Encounters are moments in which values are shaped, because they provide people the opportunity to notice more-than-human agencies, for instance the capacity of bees and honey to affect them and be affected (Table 2). By following people's stories of encounter with bees and honey, our interviews revealed diverse experiences underpinning honey economies. *Meleo* is experienced differently depending on the combined character and charisma of people and bees, the characteristics of the honey, the tools and materials, and the places where it is performed.

In *meleo*, honey has its own agency. For some interviewees, mainly the honey counts, while bees seem valued primarily because they produce it. Besides being useful, honey has characteristics that affect people differently when they consume it. Several adjectives describe types of honey and their effects, such as sweet, sour, acidic, dense, soft, bitter, hot, fresh, clean, beautiful, and dry. For example, "hot" honey is considered better to treat common cold, but can cause stomach pain. Some experiences can be particularly intense; evidencing that honey is not a simple consumption good, it triggers affections.

When you take it out [the honey from the hive] you shouldn't drink it because it's hot, it's bad for you, it makes you feel like you're dying. You have to wait until it cools down (...). During half an hour, your body gets cold, you're left with no strenght, to faint...

The experience of *meleo* and honey's agency depend on bees' behavior. *Meleo* requires the knowledge, the courage and readiness to face the "aggressive" bees, and to endure the hard work of finding and collecting the honey.

The honey from the *oro* [*Cephalotrigona capitata*] is half-sweet, half-acid. It depends, if you don't like it and if you mistreat it, it makes you vomit. She [the bee] doesn't like to hear that her honey is ugly. I don't know how, but she knows. Better stay quiet when you eat it.

...if they sting you they can kill you! (...) they catch you wherever you go. They chase you like dogs; they look for you, they smell you. No matter how much you hide. It's better not to kill them.

While some prefer collecting honey only from friendlier bees, others thrive at encountering "aggressive" ones, partly because it usually results in confrontations and negotiations that give honey collectors their reputation among community members (see table 2).

Collecting honey requires knowing about the tools and techniques. Tools are not just neutral means: they seem to mediate the relation with bees and affect people's experiences. People notice that tools influence both the bees and collection of honey. For instance, axes make the process slower but kindlier with bees, and help to avoid dirtying the honey with sawdust. Chainsaws make it easier to cut the trees and access the hives, while seemingly stunning the bees with the noise and vibration, reducing their capacity to defend their hive. Smoke keeps bees away, allowing people to access their hive. Thus, the use of tools depends on bees' reactions to them. The use of tools and knowledge gives agency to humans, but also reflects the agency of bees.

There is one called Sicaé [*Oxytrigona* sp.], a bad one. It stings and it leaves blisters that burn. (...) I used to collect from it. Once, it blistered me and I had to jump to the water because it burned as fire. But its honey is so nice. To fight it, it's with fire, to kill it. Or collecting when it's really cold and wet and they can't fly...that's when you have advantage in the fight.

Some people consider encountering bees to be at least as meaningful as using their honey. The characteristics of encounters derive from the perceived charisma of bees. For example, the *señoritas* and the *suro* seem harmless, while the *extranjeras* and the *cortapelo* seem aggressive when they defend their hives. In both cases, encounters can be a meaningful experience that involves intimate relations (see maps below) in which collecting honey is not the only objective.

I keep looking at them (...) at their little door they have their guards, which take turns...nice to see. Only the *extranjera* won't let me look, it won't let me come close (...). I have been watching

(...) They carry pollen in their little bee legs (...) They work continuously (...) I go to my *chaco* in the evenings, and I sit there when the bees arrive looking for water (...) all kinds of bees.

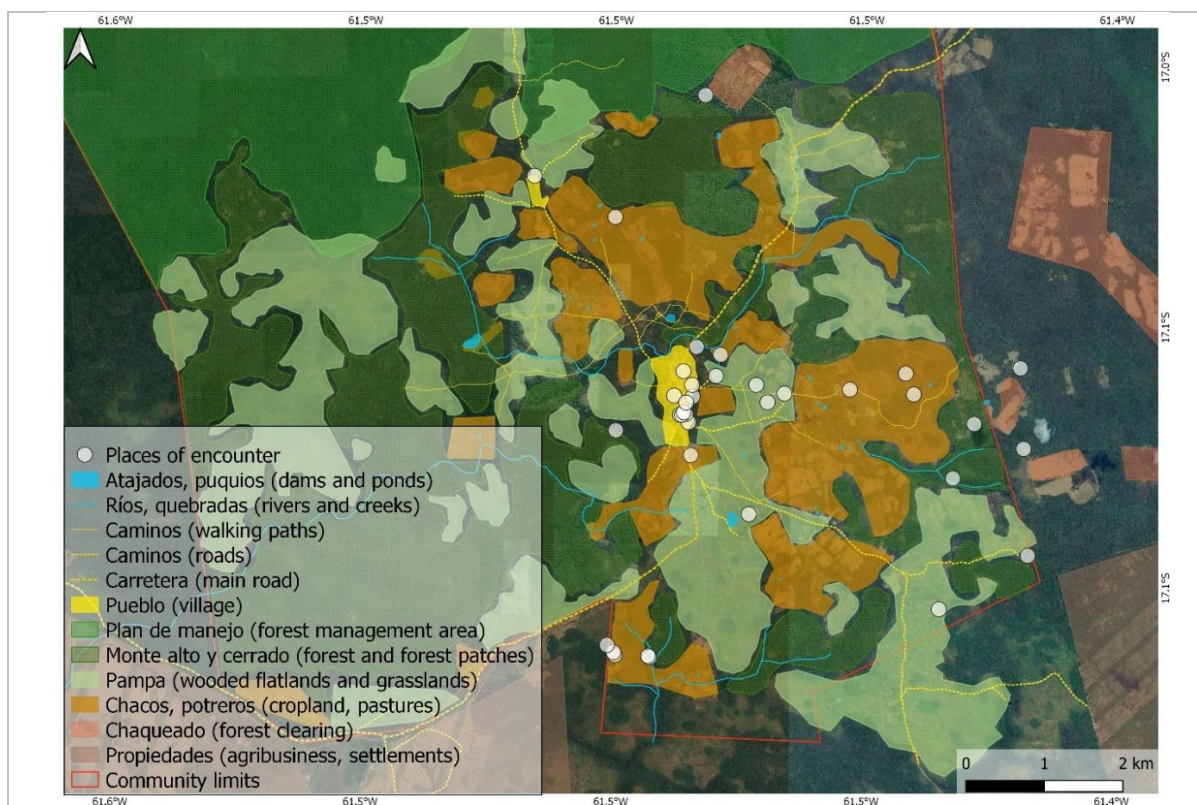
The *extranjera* is furious; it stings your whole body. But, when you're sick, it heals when the little bee stings you (...) My grandmother used to teach us that, when you're sick with a flu, or the throat, the cold that you get comes out when they sting you.

Bees' agency can influence values because noticing bees' behavior provides opportunities to value their abilities. Moreover, bees can inspire discussions about people's work, community-relations, and the future of their lands: "they talk about cooperativism (...) bees do the same; they all work for a common end. Same in our village, no one can work on their own, it's not right, we achieve nothing". Bees are frequently called "hard workers", "lazy", "aggressive", "intelligent", and "tame", reflecting how people experience their agencies.

As they notice bees' behavior and abilities, many interviewees reflect on bees' life-trajectories and their intersections with people's livelihoods and with wider territorial dynamics (maps below). For instance, people observe that the rainy season is getting shorter and, in general, there is less water available, which affects the capacity of bees to produce honey. Similarly, honey economies seems to trigger observations of changes in biodiversity dynamics, such as the reduction of flowering species that bees visit, or the risks of extinction of tree species and, with them, many other lives that, like bees, depend on forests.

They [bees] need the forest (...) but it's all being cleared and burnt (...) It's very sad, because there're few bees left. Like there are no wild animals anymore, the same will happen with the bees if they cut all the trees and everything disappears...it's sad, at least for those who like bees.

Altogether, encountering bees and collecting honey allows people to experience and act on the links between honey economies and wider territorial relations. Similarly, by acting on *meleo*, bees can influence how people experience territorial relations. This territorial rootedness explains why honey economies are hard to replace. Their usefulness cannot be reduced to utilitarian values; instead, meaningful instrumental relations supported by blending values and multiple agencies are fundamental constituents. They unveil connections between the intimacies of everyday encounters and the diversity of more-than-human livelihoods that take place in shared territorial spaces, such as forests, *chacos*, and villages (maps below).



Map 2: Human-bees encounters in San Juan de Lomerío. **Source:** authors, from mapping exercise

Plan de manejo (forest management area)

“In the forest, during the flowering it’s full of bees. When you’re working they attack you, they want to sting you. There are so many...”; “Sometimes I would like to keep cutting [logging], it bothers a lot (...) they don’t even let you eat [during break] or rest, you have to run away.”

Monte alto y cerrado (forest patches)

“My husband found the beehive while looking for wood for posts, to wire the *chaco* and fence the house (...) it’s good [honey] for the kids when they’re caughing. They had the flu, to cure it (...) Those little bees are calm, they’re not bad. (...) He rarely collects, because there are hardly any [bees] left. He doesn’t like *meleo*, if he does it it’s just for the remedy. (...) The little bees suffer, because we take their honey and they have to work again.”

Pampa (flatlands and grasslands)

“The last time I saw bees was when I went to get firewood. In that pampa, that’s where I saw the *extranjeritas* in a tree (...) I know they are bad, so I went somewhere else to look for firewood because, if I hit [with the axe] near them, they hear and come out and run after me.”

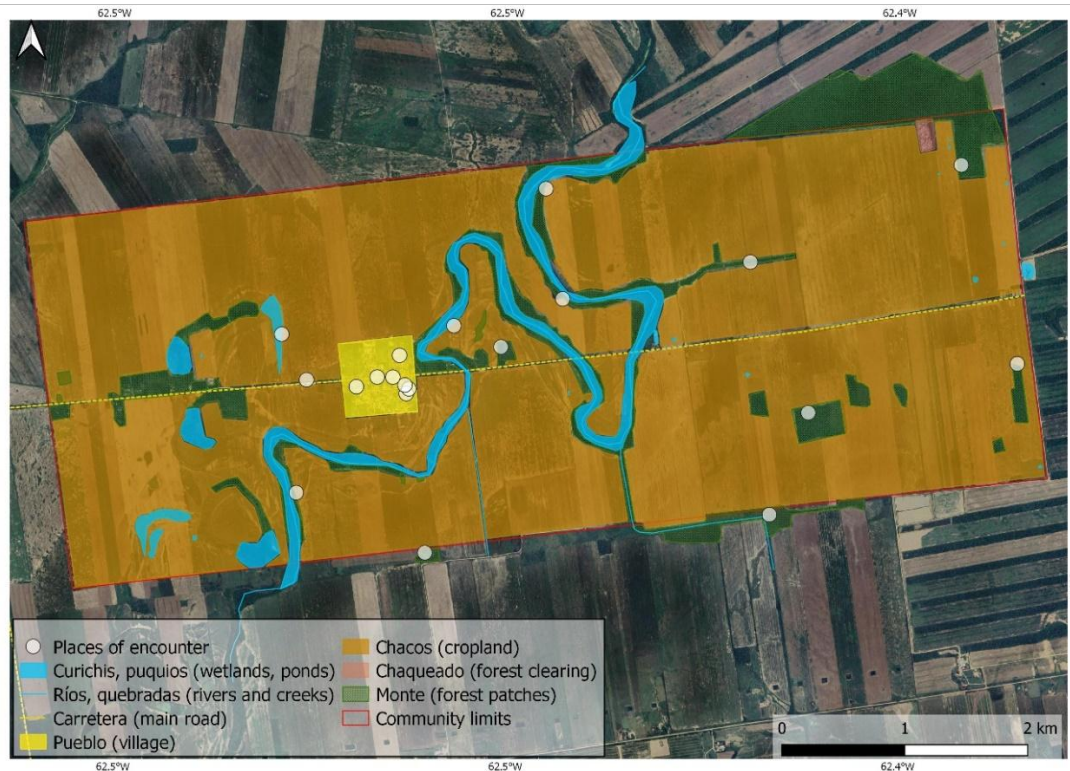
Chacos (cropland, pastures)

“I say that there must be bees there. They are sucking the corn flower. I have seen the *colmena*, the *señorita*, and the *suro*. I was harvesting the corn, in my *chaco*. (...) They didn’t come all at once but five by five, ‘hmm’ [buzzing] to the flower and went away, and I kept on harvesting”.

“They defend their honey. As if they were saying ‘don’t take my honey’, when you approach the hive. They come out and ‘hmm’, you hear a noise like that, they raise their wings as if saying ‘don’t take me away from here’ (...) some fly in the air and some are just there. (...) I didn’t feel like taking them out anymore because they’d jump on me (...). I tell the bees ‘I’m not going to take you, but maybe another person will come and take you’, and they calm down like that when you talk to them”.

Pueblo (village, patios)

“In the time of flowers they leave a certain aroma... and, well, they create...how can I put it...more ambi-ents. (...) At this time of year they don’t have much to feed on. They know how to get here to the house to look for water, they fill up and leave.”



Map 3: Human-bees encounters in 16 de marzo Cordillera. **Source:** authors, from mapping exercise

Monte (forest patches)

“Unbelievable thing: one day I left the box, and a month later it already had bees inside. It's a matter of patience...they take time, but they arrive. A few, not so many, about 20 bees, that's enough, and they start calling the others. ‘Let's go there’, they say, ‘here's a box’, and they get in. We don't do anything...”; “It's better collecting at night. During the day they go out, looking for flowers (...) they are busy (...). At night all of them arrive back, something to see!”

“They're out [bees], high up the tree, look, can you hear them? Look, they're eating flowers (...) it's all full of lianas, you have to clean it well [to collect the honey], look at the lianas, they're all over”.

Curichis, puquios (wetlands, ponds)

“Right now the bees are fine. But when they fumigate the sunflower, the soybean, they die. Here they're fine. There is a river, and there are flowers of *motacú*, *chonta*, *totalá* [palm trees]. And there is a *curichi* there, on this side there is none”.

Chaqueado (forest clearing)

“With a fire I burnt them [accidentally]. We were clearing. They must be underground. Then, we were ploughing and the honey was dripping all over”.

Chacos (cropland)

“When you're sowing sunflower, they [bees] benefit. Without it, maybe they would have nowhere to feed. (...) Not only sunflower, if we plant beans they come too.”; “There is this one [*monte*] next to the *chaco* (...) that has not been cleared by the machine. That must be why [bees come], because if the machine had cut it all down there would be nothing left. (...) maybe from the soybean flower they take some food”; “We're going to plant soybeans, harvest in the summer, and then we'll plant sunflowers. My son says ‘I'm going to bring boxes to the middle of the *chaco*, where they're going to work [the bees]. (...) when there are flowers, quickly they make their honey, see?”.

Pueblo (village, patios)

“I leave them water in my laundry room, they come, they take water to drink during the day, many little bees. Sometimes, when I'm brave enough, I give them water. Right now I'm not brave, so they don't have water (...) don't you see, the little bees...”; “There are *extranjerías* there in that hole [in a light pole]. People are getting stung every time, how can we get them out? A year ago, they wanted to get in here. They sting. I've been stung many times. My daughter is allergic, her arm swells up.”

5. Discussion

Our results reveal that honey economies are sustained by blending values that shape meaningful instrumental relations, and the everyday encounters that enable more-than-human agencies. Both aspects show how honey economies transcend the homogenizing forces of commodification, because they do not merely rely on market-based and utilitarian values. Instead, they enact multiple relations and agencies that provide territorial rootedness, as opposed to the rootless character of commodified relations. In this section, we discuss how the combination of meaningful instrumental relations and more-than-human agencies can link diverse economies to territorial relations beyond commodification in contexts of frontier expansion.

5.1. Usefulness: a trigger of meaningful instrumental relations

Usefulness has a central role in the constitution of honey economies. Indeed, everyday instrumental relations are guided by the overlapping use-values of honey, bees, and other economies, such as timber, crops, or households'. Nevertheless, not only is usefulness not reducible to utility-maximization, but the idea that some uses of honey are hard to replace entails that instrumental relations can be meaningful (Dwiartama et al., 2016). For instance, people's relations to honey and to bees, because of their honey, satisfy human needs; i.e. they are an end-for-something, but are also an end-in-themselves because they produce senses of place and collective belonging. Hence, such instrumental relations are meaningful, and rooted in territorial relations.

Our notion of meaningful instrumental values relies on the observation of blending and interacting values, which unveils different agencies (Ortiz-Przychodzka et al., 2023; Riechers et al., 2024; Vizute et al., 2025). In particular, relational values unveil the networked agencies that make specific relations non-substituable in principle. For instance, people's experiences of encountering bees show that: (1) because honey is considered a unique medicine, its instrumental value is hard to replace and has, therefore, a relational component underpinning honey's agency. (2) People's relation to bees is non-substituable, not only because they make such unique honey (instrumental values underpin bees' agency), but also because it implies disputes, fears, or negotiations that affect people and bees' life-trajectories (relational values underpin people-bees' agency). (3) The knowledges and the tools used to collect the honey or to repel aggressive bees reflect humans and bees' combined agencies, and act as mediators in human-bees relations. Therefore, explaining the importance of honey economies merely in terms of their usefulness to humans risks missing the more-than-human agencies at play.

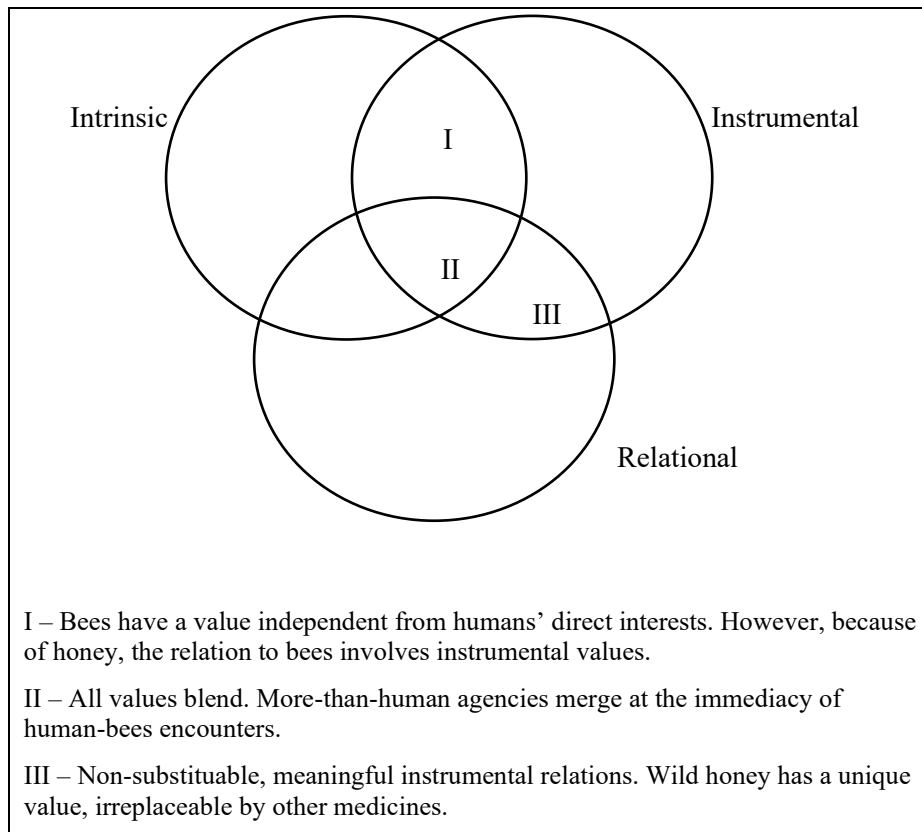


Figure 1: Interacting values that constitute meaningful instrumental relations represented by the overlaps I, II, and III.

The idea of blending values is related to the perspective that values do not precede the relations, but emerge from them (Muraca, 2016; Vizuete et al., 2025). In the immediacy of encounters, value-categories are not necessarily discernable or separate (they are blending, see Table 2). Encounters are full of meaning, or defining moments where disparate elements assemble in places (maps above) with open-ended outcomes (Woods et al., 2021), including emerging values. Value-categories become more discernible and interacting as discrete categories (Figure 1) when people's reflect and narrate fulfilled experiences (Raymond et al., 2018). Hence, looking merely for stabilized value-categories might lead to ignoring value-formation processes (Stålhammar & Thorén, 2019), providing partial views of how relations and values interact, e.g. associating economies merely to utilitarian or to instrumental values.

We argue that values form and blend in the immediacy of encounters, and emerge more distinctly during subsequent reflections and narrations about such encounters. Meaningful instrumental relations are constituted of blending values and not merely of instrumental and utilitarian ones, because they involve more-than-human agencies. The narrative association of instrumental relations to utilitarian values (commodification) is challenged by recalling the experiences of encounter in which values blend. This perspective allows us to link meaningfulness to instrumental relations, which we argue is a defining characteristic of diverse economies.

5.2. More-than-human agencies: a cornerstone of territorial transformations

By acting on honey economies, bees and other non-humans can participate in territorial transformations, for example by influencing senses of place and collective belonging through meaningful instrumental relations (Anguelovski & Martínez Alier, 2014; Boillat et al., 2013; Sandoval et al., 2017). Moreover, honey economies connect human and non-human life-trajectories. For example, in our study, bees pollinate crops and gardens, and adapt to deforestation by creating or moving to new habitats in forest patches, croplands or villages where they entangle with humans in different ways (maps 1 and 2). Noticing such interrelatedness helps to “better appreciate more-than-human worlds” (A. L. Tsing et al., 2024, p. 4) in which diverse economies are embedded (Gibson-Graham & Miller, 2015).

Territories are co-created relationally through multiple agencies (Cassino et al., 2025; Haesbaert & Mason-Deese, 2020; A. L. Tsing et al., 2024). Commodification attempts to discipline such agencies in agrarian frontiers (Carolan, 2005; Spiers & Lewis, 2016), by emphasizing utilitarian values and monetary gains and discounting biodiversity and diverse livelihoods (Volpato et al., 2022). In contrast, meaningful instrumental relations, such as honey economies, can enable diverse interrelated livelihoods producing territorial transformations.

Territories, as relational processes (Haesbaert & Mason-Deese, 2020), are constituted of power relations, coordinations, conflicts and negotiations over the terms of territorial transformations. The case of honey economies illustrates such processes when, for instance, people interpret their encounters with bees as forms of negotiation, dispute, or communication over the extraction of honey. Tools reflect power-relations, including the imposition of human’s interest through the use of chainsaws, negotiation and appeasement strategies through the use of smoke, and attempts of communication with bees who signal their disposition or refusal to give up their honey. Both humans and non-humans bring each other’s livelihoods into being (Gibson-Graham & Dombroski, 2020a) in dynamic combinations of agencies (Ortiz-Przychodzka et al., 2023; Spiers & Lewis, 2016). However, our research did not show how honey economies could become a form of more-than-human collective action to strengthen a networked agency to act on territorial transformations.

Meaningful instrumental relations can politicize economic lives (Smessaert & Feola, 2025) against the depoliticizing force of commodification, which reduces relations to monetary exchanges. While commodification gives more agency to markets and agribusinesses, meaningful instrumental relations allow people to experience the territorial interdependencies that are threatened by destructive economic models. Honey economies appear to coexist with expanding commodity monocrops and increasingly indiscriminate timber extraction. Yet, this does not mean that all relations are on the way to commodification, or that people do not experience and decry the negative impacts of frontier expansion. The discernibility of meaningful instrumental relations can drive reflections on the political character of diverse economies and their power-relations (Moore, 2015b; Scheidel et al., 2023), and the possibilities to shape more

responsible encounters and ethical actions supporting interrelated livelihoods (Gibson-Graham & Dombroski, 2020a). However, such possibilities are limited by the capacity of commodification processes to displace meaningful instrumental relations with commodified ones (Jobson et al., 2024), especially in contexts of increasing economic needs as in the case of frontiers.

Understanding how meaningful instrumental relations can strengthen collective agencies is a key direction for future research on diverse economies and territorial transformations at agrarian frontiers. In particular, assessing how meaningful instrumental relations interact with commodification processes can help to understand the tensions that emerge and lead to different territorial transformations. Moreover, analyzing how non-utilitarian values can promote more-than-human communities that act on territorial transformations (Astegiano et al., 2023; Scheidel et al., 2023; Smessaert & Feola, 2025) can allow to identify opportunities for countering the destructive advance of agrarian commodity frontiers. Research can support place-based initiatives critical of commodification processes, not only by documenting the destruction of territories and ecosystems, but also by unveiling the diversity of instrumental relations that resist being absorbed by unfair and detrimental economic models (Blaser, 2025; Himes et al., 2025; Svampa, 2022).

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Appendix

[Additional information on the materials and data involved in the elaboration and analysis of the chapters of this thesis were published with the Leuphana University of Lüneburg. Please contact the author for details.]

1. Author declaration

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Declaration

I hereby declare that I have not taken a doctoral examination or applied for admission to one.

I certify that the thesis “Economies of honey at the agrarian commodity frontier. How diverse economies emerge from the territorial fractures in the Bolivian Chiquitanía” has not been submitted to any other university for review in the present or any other version.

I declare that I have written the submitted dissertation “Economies of honey at the agrarian commodity frontier. How diverse economies emerge from the territorial fractures in the Bolivian Chiquitanía” independently and without any unauthorized help. I have not made use of any aids or writings other than those specified by me. I have labelled all passages taken literally or analogously from other writings.

I have been informed of the consequences under criminal law in accordance with Art. 156 of the German Criminal Code.

Lüneburg, May 9, 2025.

[signed on printed copy]

Stefan Ortiz-Przychodzka

2. Ethics review committee approval



Leuphana Universität Lüneburg · Ethikbeirat · 21335 Lüneburg

An
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- im Hause -

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29. Mai 2020

**Ihr Antrag an den Ethikbeirat der Leuphana Universität Lüneburg
EB-Antrag_202004-05-23-Hanspach_BioKultDiv: Biokulturelle Diversität in
Agrarlandschaften des globalen Südens**

Sehr geehrter Herr Dr. Hanspach,

Ihr oben genannter Antrag wurde am 06.04.2020 eingereicht und vom
Ethikbeirat im Umlaufverfahren beraten.

Mit dem abschließenden Votum beurteilt der Ethikbeirat die Studie als
„ethisch unbedenklich mit Auflagen“:

1. Das Einsammeln pflanzlicher und tierischer Proben geschieht unter der Beachtung der in Bolivien geltenden gesetzlichen Bestimmungen. Die Antragsteller tragen dafür Sorge, sich über die Bestimmungen zu informieren und sie einzuhalten.
2. In der Einverständniserklärung sollte darauf hingewiesen werden, dass Personen auch zu einem späteren Zeitpunkt das Recht haben, die Löschung personenbezogener Daten zu verlangen. Dies trifft bisher offenbar nur auf die Namensliste zu, falls die Interviews nach Abschluss anonym und damit nicht mehr einer Lösungsanfrage zugeordnet werden können.

Bitte stellen Sie die Einhaltung dieser Auflagen bei der Durchführung Ihrer Studie sicher und passen Sie die relevanten Dokumente an.



2

Wir wünschen Ihrer wissenschaftlichen Arbeit viel Erfolg!

Mit freundlichen Grüßen,

Prof. Dr. Dirk Lehr
Vorsitz

Der Bewertung liegen folgende Unterlagen zugrunde:

- EB-Antrag mit den folgenden Anlagen
 - Ablaufplan
 - Teilnehmerinformationen
 - Muster der Einverständniserklärung

3. Supplementary materials for Chapter 2

3.1. Narrative literature review: an overview of the process

Characteristics and objectives (Bryman, 2012): narrative reviews are wider in scope than systematic ones, and aim at a critical interpretation of the literature, and enrich the scientific discourse by deepening the understanding on a topic. The method is more uncertain and flexible, non-replicable, and wide-ranging. Therefore, a detailed description of the review steps does not seek to suggest replicability, but rather to be transparent about the way in which the review was approached.

My review aimed at building a theoretical and conceptual perspective to understand diverse economies from a relational and non-anthropocentric approach. I focused on scientific, theoretical, conceptual and empirical literature, addressing economic practices and values mainly in rural and farming contexts. I searched for literature in the fields of ecological economics, heterodox economics, biocultural diversity, critical human geography, environmental anthropology, livelihoods, and environmental values. I then coded in Maxqda 2022 ®, looking for intersections between economic practices and values, with notions of space/place, non-anthropocentric and non-dualistic worldviews, biodiversity, local knowledge, governance and environmental conflicts, sustainability, environmental justice, among others.

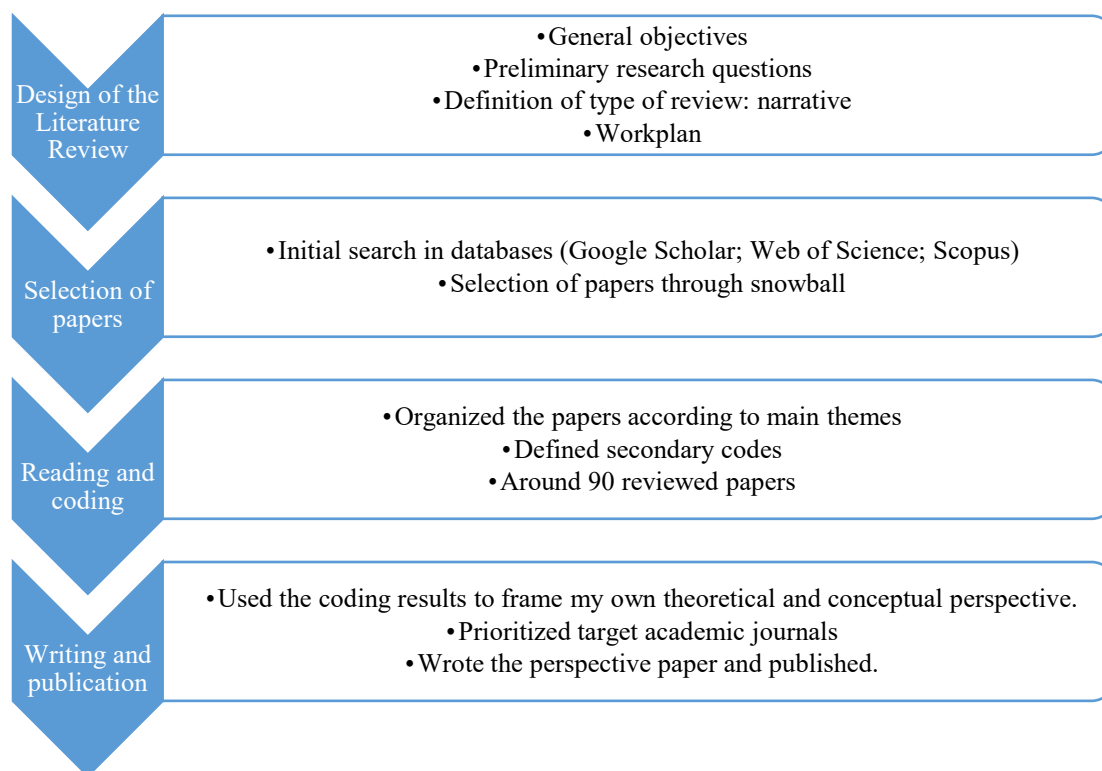


Figure A1: process of the narrative literature review

The initial questions that guided my review where:

- 1) How the reviewed literature addresses economic practices and values and link them to biocultural diversity⁴¹?
- 2) Which types of relations, values and conflicts are addressed in the literature?
- 3) How are economic practices and values related to senses of place or spatial dimensions?

Table A2: code system (Maxqda®) for the analysis of the reviewed literature

Code System	Memo
Economic_space	Information linking the economic dimensions and practices to space-production (place and landscape)
Economic_space > Economic_landscape	Information linking economic dimensions to landscape-making
Economic_space > Economic_place	Information linking economic dimensions to place-making
Economic_hybridity	Information on how in general economic worldviews and practices are plural and hybrid
Economic_agrobiodiversity	Information linking economic practices to the use and management of agrobiodiversity
Economic_Conflict_Difference	Information on the difference, diversity and multiplicity of economic practices, as well as their contradictions and governance issues.
Economic_Conflict_Difference > Economic_governance_conflicts	Information on the conflicts, negotiations, contradictions involved in economic practices
Economic_Conflict_Difference > Economic_Power	Information on governance, power relationships in economic practices.
Economic_Conflict_Difference > Economic_Top_down_homogenization	Information on processes of homogenization triggered by top-down dynamics (e.g. globalization, dispossession, policies, markets...)
Economic_Knowledge_Practices	Information on different economic practices and knowledges beyond (but including) the homo economicus rationality.
Economic_Knowledge_Practices > Economic_Scientific_paradigm	Information questioning or debating the mainstream paradigm in economic science
Economic_Knowledge_Practices > Economic_transdisciplinarity	Information on the links of economic aspects and transdisciplinarity
Economic_Values	Information on the multiple values involved in economic practices and dimensions
BCD_land_rights_uses	Information on land tenure and governance and its link to BCD and economic practices.
BCD_space	Information linking BCD and space-production
BCD_space > BCD_Place	Information linking BCD to place-making
BCD_space > BCD_Landscape	Information suggesting a link of BCD and landscape-making
BCD_Multispecies_interactions	Information highlighting multispecies interactions or relationships as part of BCD
BCD_Multispecies_interactions > BCD_Agrobiodiversity	Information on the links of BCD with agrobiodiversity
BCD_Values	Links between BCD and worldviews, values, ontologies
BCD_Knowledge_practices	Information on how the BCD approach can assess the issue of knowledge and practices

⁴¹ I later changed the perspective from biocultural diversity to more-than-human perspectives, because I found them less dualistic and fitting assemblage thinking

BCD_Knowledge_practices > BCD_Local_Knowledge	Information on the links and dynamics of local knowledge and BCD.
BCD_Knowledge_practices > BCD_Transdisciplinarity	Information suggesting that the BCD approach is useful for promoting transdisciplinary research/action
BCD_Hybridity	Information on how BCD manifestations are hibrid, ambiguous, contradictory, conflictive. It can include different kinds of hibridities: human-nature, modern-nonmodern, urban-rural, cultural, etc.
BCD_Biodiversity_conservation	Information linking BCD with dynamics of biodiversity conservation or restoraton
BCD_Conflict_Difference	Links between BCD and multiple conflicts and differences
BCD_Conflict_Difference > BCD_Power	Information linking BCD to political dimensions, power relations, inequalities...
BCD_Conflict_Difference > BCD_Local/global governance	Information linking BCD to processes of local and global governance
BCD_Conflict_Difference > BCD_Homogeneization	Information on dynamics of top-down transformation of BCD, including processes of homogenization (erosion of diversities).
BCD_Economic	Information linking BCD to economic worldviews and practices
BCD_Sustainability	Information linking BCD, sustainability features and wellbeing. Also information on transformations and change.
Blue highlight	In blue, key information and reflections for thinking the methodology in a BCD approach.
Yellow highlight	In yellow, key information and messages for analyzing BCD and economic practices beyond the coding for the 1st paper (lit. review).

*Note: BCD means Biocultural Diversity, which I later replaced in my conceptual perspective by more-than-by the notion of more-than-human relations.

3.2. List of reviewed literature

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4. Supplementary materials for Chapters 3 and 4

Initial guiding research questions: what are the main narratives unveiling diverse economies in the two communities?

1. How do people's narratives of economic practices reflect processes of commodification?
2. Which narrations reveal diverse economies (non-utilitarian values and practices)?
3. Which assembling processes do these narratives reveal?

4.1. Interview guide⁴² used for the regional levels (original in Spanish):

- Actors:
 - Are biocultural aspects currently being worked on directly in the lowlands/Chiquitania?
 - Which actors are working on it and why (can you share data on experiences/initiatives/actors)?
 - What differences exist in the understanding of biocultural and to what dimensions of rural life do they relate it?
 - How do they approach it in practice, and does this generate conflicts?
 - Is biocultural clearly delimited in the territories (i.e., specific places or species)?
 - On the link between biocultural aspects and economic initiatives:
 - Does the biocultural have any economic dimension, how is it expressed in the Chiquitanía?
 - How does the economic influence positively or negatively the biocultural? Is the economic a source of conflicts? Why?
 - Are there economic (e.g. markets, exchanges, crop/forest/landscape management) and cultural practices (e.g. cuisines, weavings, handicrafts, crafts and knowledge) that could be considered part of the biocultural diversity of the Chiquitanía? On the contrary, which ones could be affecting biocultural diversity?
 - What are the main economies of the region (from the local, traditional, diverse, to the most globalized)?
- + Can you share key contacts, methodologies, protocols, tools?

⁴² These guides were adapted along fieldwork (e.g. terms used, emerging questions, and emerging topics from unstructured conversations). In particular, I initially used the term “biocultural diversity” for my own reference to human-nature relations, but then changed towards the notion of “more-than-human” in my chapters, to align with assemblage thinking. The literature on “Biocultural diversity” tends to compartmentalize and build inventories of the links between biological and cultural diversity, while assemblage thinking focuses on unitary processes.

4.2. Interview guide used for the community levels (original in Spanish)

- Economic activities:

- What are the main economic activities of your community?
- How do those activities relate to nature?
- How does the economic influence positively or negatively the biocultural? Is the economic a source of conflicts? Why?
- Are there economic (e.g. markets, exchanges, crop/forest/landscape management) and cultural practices (e.g. cuisines, weavings, handicrafts, crafts and knowledge) that could be considered part of the biocultural diversity of your community? On the contrary, which ones could be affecting biocultural diversity?

- Actors:

- Who are especially knowledgeable in those main economic activities?
- What differences exist in the understanding of economic priorities, and biocultural relations in your community?
- Does this generate conflicts?

4.3. Coding structure

Table A3: coding structure (MaxQda®)for data analysis

Questions	Codes			
	Deductive	Inductive-deductive		Mainly inductive
1. How do people's narrations of economies reflect the context of commodification?	1.1. Commodifying relations	1.1.1.	Commodity economies	Experiences of expansion of agricultural frontier
		1.1.2.	Exploitation of resources, assets/capitals	
		1.1.3.	Appropriation of work (human and nonhuman)	Experiences of commodification
		1.1.4.	Monetization/marketization	
	1.2. Conflicts and negotiations	1.2.1.	Disputes	Economic hybridity
		1.2.2.	Negotiations	
		1.2.3.	Associations	
		1.2.4.	Environmentalisms	
		1.2.5.	Territorial rights	
		1.2.6.	Values differences	

2. Which narratives reveal diverse economies (values and practices)?	1.2. Diverse economic relations/practices	1.2.1. Individual (habitus)	Practices, tools, materials, non-human entities Non-commodified
		1.2.2. Collective (fields)	
		1.2.3. Institutional (“external”)	
		1.2.4. Imagined (expectations)	
		1.2.5. Resources (abilities, capacities/capitals)	
		1.2.6. Non-instrumental	
		1.2.7. Constraints	
	1.3. Relational values	1.3.1. Instrumental relations as ends-in-themselves	Non-utilitarian Blending values
		1.3.2. Non-instrumental relations as ends-in-themselves	
	1.4. Instrumental values	1.4.1. Relations/things as ends-for-something	
		1.4.2. Utility-max	
3. Which assembling processes do these narratives suggest?	1.5. Actants (abilities, affections)	1.5.1. Humans	
		1.5.2. Nonhuman animals	
		1.5.3. Plants	
		1.5.4. “Non-living”	
		1.5.5. Materials and tools	
	1.6. Places and senses of place	1.6.1. Specific encounters	
		1.6.2. Spatio-temporal framings	
		1.6.3. Senses, emotions	
	1.7. Assembling processes	1.7.1. Stable	
		1.7.2. Re-assembling	
		1.7.3. Disassembling	
		1.7.4. Past	
		1.7.5. Imagined	

5. Supplementary materials for Chapter 5

5.1. Objectives and guiding questions for fieldwork (work plan)

General objective: assessing people’s experiences (senses of place) of assemblages involving honey collection and their role in the negotiation and support of interrelated livelihoods (e.g. human-bees-forest/trees) in two indigenous communities of Chiquitania – San Juan de Lomerío and Cordillera.

General research questions:

- Which elements does honey collection assemble?
- How do these assemblages support interrelated livelihoods?
- How do people value these assemblages?
- How do human and non-human practices and abilities influence these assemblages?

- What are the main negotiations taking place in honey collection?

Methods

- ❖ Purposive sampling (snowball including initial informants identified in 2021's fieldwork)
- ❖ Semi-structured and conversational (unstructured), walking interviews

I will undertake interviews with a semi-structured form with the objective of guiding the conversations around five crosscutting topics to characterize assemblages: (1) actants/elements influencing assemblages; (2) mentions to interrelated livelihoods; (3) articulations of values; (4) expressions of practices and abilities; (5) negotiations involved. For each triggering question, I will allow the development of open conversations in order to enable expressions and narrations of people's experiences of the assemblages in honey collection and the encounter of bees. This unstructured part of the interview is necessary to provide a certain degree of freedom in the way people describe their encounters of bees and honey, the places in which those encounters happen – e.g. economic practices, and the senses and emotions involved.

Triggering questions:

- When was the last time you collected honey? Follow-up: Which bee species were they? Where was the beehive? How did you find it? Why did you decide to collect that honey? How did the bees react?
- Where do you encounter beehives more often? (Place, land use, bee species...). Follow-up: Why do you think you encounter beehives in those places more often? Why do you think bees place their beehives there? What do you think about beehives being there?
- How have these places changed in the last (5) years? How do you think they will change in the next (5) years? Follow-up: What do you think of those changes? How do you influence them? How do those changes affect or benefit beehives? How would you like those places to change?
- How do you take care of beehives? Follow-up: Why do you decide to take care of beehives? When do you decide to remove a beehive?
- Which are (the most) unusual places where you have seen beehives? Describe the places and encounters with bees. Follow-up: Why do you think bees settled there?
- How do you think bees can benefit from humans? How can humans, families, communities benefit from bees? Follow-up: When do bees and humans fight each other?
- Why do you usually collect honey? Follow-up: Where do you usually prefer to collect honey? What do you enjoy about collecting honey? What do you not enjoy? How do you like honey?
- What can people learn from bees? Follow-up: how do you think bees manage to build and maintain their populations? How can people in your community learn from bees?

- Do you think there will always be bees in your community? Why? Follow-up: How would you feel if they disappeared? How do you think others in your community feel about bees?
- Describe a specific/special encounter with bees that you particularly remember. Follow-up: Where did the encounter happen? What were you doing? What were the bees doing? How did you and the bees reacted?

❖ Participatory cartographies with walking transects, soundscapes and mapping

In order to facilitate diverse expressions of people's experiences of the assemblages, I will combine the interviews with participatory cartographies. Cartographies are representations of spatial-temporal relations, such as assemblages and places. They can take the form of oral stories, soundscapes and drawn maps. I can use hand-drawn maps either on blank sheets or on base-maps (prepared beforehand) depending on the adaptability of the method, the evolution of the interviews and the interviewee's preferences and abilities. The objective of the cartographies is to notice and unveil people's senses of place, with the understanding how places are moments of encounter and expressions of assemblages. The mapping process should support the interviews and allow situating the places where the encounters happen or happened and where the assemblages unfold, and supporting the expressions of how people experience such encounters.

- Cartographies during static or sitting interviews: including narrations and oral descriptions of encounters that can be mapped orally (story-maps describing the places where encounters happen), or drawn in a blank paper or on a base map.
- Cartographies during walking transects: when possible, depending on people's availability, the interviews can take place while walking to the specific places of encounter (e.g. where beehives can be encountered or where there was a previous encounter). Soundscapes: I can record people's reactions and expressions occurring at the specific moment of encounter with the beehives and the place (I already tested this in 2021). Moreover, I can also ask them to guide me through which sounds I can record that represent that place in order to build the soundscape.

5.2. Coding system

Table A4: Coding structure (MaxQda®) for data analysis

Code System	Memo
DEDUCTIVE CODES:	
Synchronizations/Encounters	Encountering human and non-human trajectories.
Synchronizations/Encounters > Negotiations	
Synchronizations/Encounters > Affections	
Synchronizations/Encounters > Agencies	
Synchronizations/Encounters > Trajectories	
Synchronizations/Encounters > Temporalities	

Practices	What people are doing (and how) when encountering bees and honey.
Practices > Utilitarian/Extractivist	
Practices > Care	
Practices > Materials	
Values	Importance of relations, meaningfulness.
Values > Relational	
Values > Intrinsic	
Values > Instrumental	
Spatial relations	Manifestations of spatialized experiences.
Spatial relations > Senses	
Spatial relations > Landscape changes	
Spatial relations > Situatedness	
Spatial relations > Referents	
INDUCTIVE CODES:	
Territories/places > Referents	
Neighborhoods	
Trees	
Hills (loma)	
Grassland (pampa)	
Rivers	
Cropland (chacos)	
Forests	
Forest patches in chacos	
Bodies of water	
Roads and trails	
Territories/places > Changes	
Drying water	
Full of honey	
Aging honey/empty (cold weather)	
Bees/hives moving	
Land-sharing	
Clearing f/agriculture	
Fallow	
Territories/places > Urban	
Side of road	
Light poles	
Households patios	
Cemetery	
Uses/instrumental relations	
Direct eating	
Beverages	
Medicine	
Encounters	
Practices	
Moving boxes between communities/family-relations	
Preparing the honey for consumption	
Capturing wild bees	
Giving water to bees	
Passing by	
Collecting water	
Walking in/towards chacos	
Collecting wild honey	
Washing laundry	
Logging	
Beekeeping in boxes and harvesting honey	

Agricultural work
Expelling bees
Clearing for agriculture
Collecting wood
Encounters > Tools, materials
Protective equipment
Axe
Boxes
Chainsaw
Encounters > Reactions, emotions, affections
Getting sick due to honey
Worried about bees
Talking to/as the bees
Disrupting/provoking
Noticing/Observing
Killing/burning
Running away
Avoiding provocation
Surprise/Amazement
Bee sting/bite/burning
Fear
Bees' passivity, calmness
Empathy for bees

5.3. Example of cartography (participatory mapping)

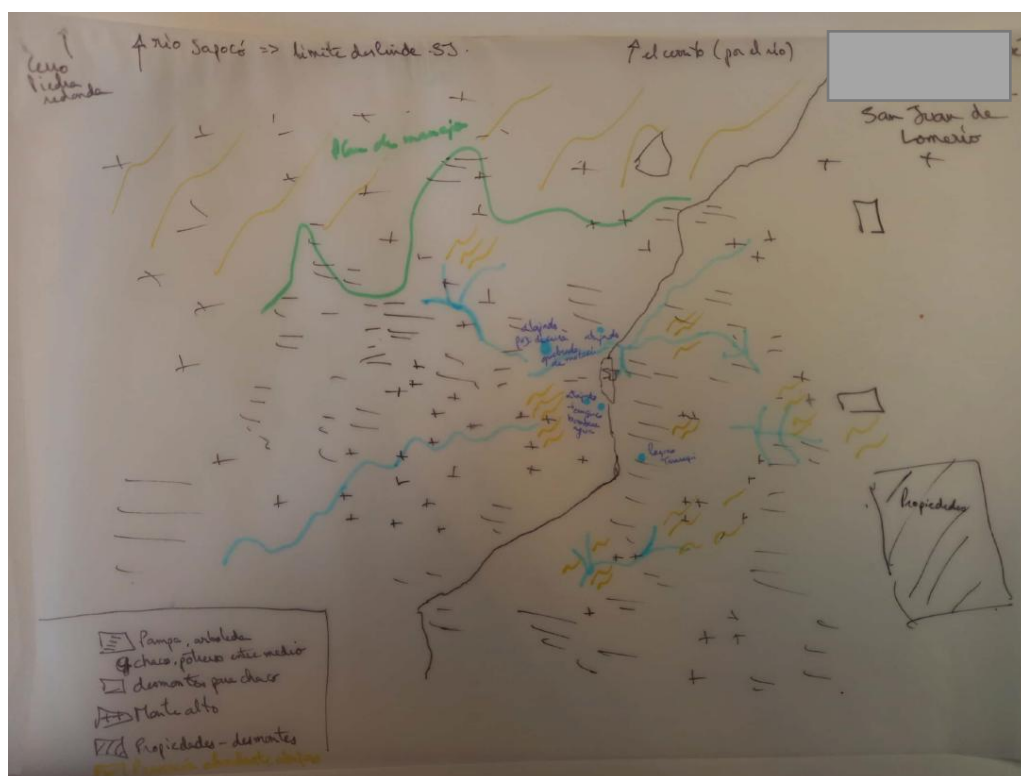


Figure A1. Example of participatory mapping in San Juan de Lomerío

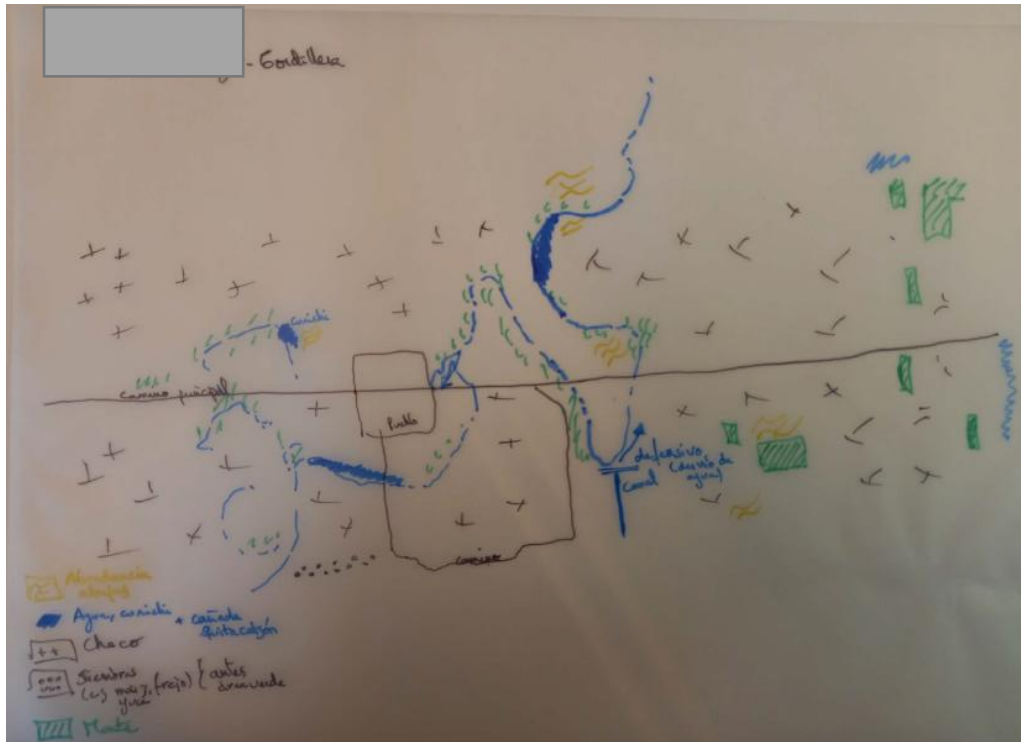


Figure A2. Example of participatory mapping in 16 de marzo Cordillera

6. Elements of participatory action-research and transdisciplinarity

As a researcher, I have been committed to producing useful knowledge that is close to the lived realities of the people and communities I have worked with. However, my involvement with participatory and action-oriented methodologies (Consuegra et al., 2021; Ortiz et al., 2019, 2021) also made me aware of the difficulties of implementing a truthful plural epistemic process (De La Rosa et al., 2024; Gibson, 2024; Ludwig et al., 2023). In this appendix, I will explain how I approached this challenge and acknowledge the limitations I encountered during my Ph.D. research.

Across my Ph.D. research, I included transdisciplinary elements, especially drawing on the long-standing Latin American tradition of participatory action-research. Transdisciplinarity is hard to achieve because it requires a movement and positioning beyond the strict scientific disciplines towards a deep collaboration with other epistemologies, including non-academic and non-disciplinary ones (Tsing et al., 2024; Vilsmaier et al., 2023). A key objective of transdisciplinarity is the co-production of knowledge responding to situated problems that people experience in their everyday life (Lang et al., 2012; Polk, 2015). Participatory action-research has many commonalities with transdisciplinarity, however, it has its own history rooted in Latin America's social sciences and humanities, and it is not necessarily explainable in the terms established by the more Eurocentric notions of transdisciplinarity

(Vilsmaier et al., 2023). Participatory action-research emphasizes the interplays between knowledge and action, and aims at supporting emancipatory social change with epistemic, sociocultural, educational, and political objectives (Fals Borda & Rahman, 1991; Vilsmaier et al., 2020). It is grounded in the processes of sociopolitical struggle in Latin America, mainly inspired by the Brazilian philosopher Paulo Freire and his work on emancipatory pedagogies, and the Colombian sociologist Orlando Fals Borda and his participatory-action methodologies with rural communities (Fals Borda & Rahman, 1991; Vilsmaier et al., 2023). One key aspect of transdisciplinarity and participatory action-research is their engagement with epistemic justice, which recognizes “life-worlds of other epistemic agents and the ways in which they make sense of them, no matter how different their knowledge production processes may be” (Meisch, 2024, p. 384). Epistemic justice acknowledges the agency of those epistemic agents whose knowledge is marginalized from the dominant centers of knowledge production (Baker et al., 2024; Meisch, 2024).

In my Ph.D. research, I did not seek to implement a fully transdisciplinary and participatory process. I was aware that this would prove especially difficult for many reasons. While my thesis is embedded in a wider research project⁴³ including transdisciplinary intentions, it became clear that such project could not ensure a co-design and co-production process from start to finish due to the structural limitations of research funding requirements, long-distance partnerships between Bolivia and Germany, and the fragmented process imposed by the Covid-19 pandemic. Moreover, the patchy character of my research (see section 4.3 of chapter 1) made it impossible to establish a continuous and close interaction with partners in Bolivia, which would have allowed the co-design of research questions and methods towards knowledge co-production and transformative action. I consider transdisciplinarity and participatory action-research to be important frameworks for designing and implementing meaningful and relevant research processes. However, I think they must adapt to the many conditions in which research takes place, instead of being uniform and fixed guidelines. Moreover, I do not consider them to be the only way to achieve an engaged, useful, action-oriented, and pluralistic research (Vilsmaier et al., 2023).

In my research approach, I sought to include collaborative and participatory, action-oriented elements, mainly following the ideas of Katherine Gibson (2024) and Fals Borda (1991). Drawing on post-modern feminist geography and social and political-ecological research, Gibson (2024, p. 32) affirms that working “with people” and not only “on people” provides a basis for research that is critically engaged with potential transformative processes. Moreover, she states that talking to “people about their experiences of economic and social change might be useful to the research process” (Gibson, 2024, p. 32), especially to identify more plural perspectives of economic life, including diverse values and practices. For Fals

⁴³ As I explained on a footnote in section 4 of Chapter 1, during my Ph.D. research, I was a research associate at the Leuphana University of Lüneburg for the research project “Biocultural diversity in farming landscapes of the Global South”, led by Dr. Jan Hanspach (see: <https://www.bioculturaldiversity.de/>).

Borda, participatory action-research is a practice focused on working with movements and organizations that seek to challenge economic and political power asymmetries and trigger transformative social change, while engaging with the tensions of combining different forms of knowledge production (Fals Borda & Rahman, 1991). In that order of ideas, I engaged in careful, collaborative, and participatory research practices with my project partners in Bolivia, a process that I consider complementary to my theoretical and analytical work (Ressioire et al., 2024). Below, I summarize the main outputs of the collaborative and participatory aspects of my research.

Involving community members in the research process

During the initial phase of my research, I attended several meetings with Fundación Tierra and Indigenous community leaders to discuss the relevance of the research questions and the potential study areas. While this was part of the wider research project on biocultural diversity in farming landscapes (see the previous footnote), I used these meetings as an opportunity to identify key community needs that could indicate me which type of knowledge could inform people's assessments of social, economic, and ecological challenges, and their territorial planning processes.

A key result from those meetings and discussions was the definition of four key aspects that people wanted to know more about their communities. First, they needed clearer information about their main livelihoods, especially those that allowed them to keep their communities collectively strong. Second, they wanted to know the key roles of biodiversity, especially those key species that contribute to people's livelihoods. Third, they were concerned about how their main livelihoods relate to the wider landscape and territories. Finally, they found important to know more about the main social-ecological conflicts driven by the frontier expansion, and their effects on community livelihoods. Based on these broad topics, we identified together key useful knowledge that the research could provide. I highlight here those elements that were most relevant to my Ph.D. research:

- Characterizing and understanding the links between agricultural, cultural, and economic practices.
- Participatory mapping of territorial relations and land uses, making challenges and potentials visible for decision-making.
- Identifying key relations between people and biodiversity, as a base for planning more sustainable practices, restoration, and management.
- Dissemination and sharing of the knowledge and information produced through participatory methods that are relevant and accessible to community members.

While I had a previous idea of my Ph.D. research objectives, these meetings influenced the way I framed my research questions and methods. Addressing all of the people's concerns was not my role, but my research, in combination with the work of other researchers in the project and Fundación Tierra, could provide useful information. In addition, it became clearer to me that characterizing diverse economies was a way to make the richness of their livelihoods more visible and motivate discussions about the

role of monetarized markets and other forms of economic relations in strengthening people's livelihoods. I also noticed the participants' interest in understanding the centrality of their relations with the environment, including biodiversity, and how they shape their territorial identity as Indigenous communities. In this line, Fundación Tierra stressed the political and legal importance of showing Indigenous people's close relation to their territory beyond land ownership, to include the cultural and economic, tangible and intangible aspects that are unique to each community. With this in mind, I considered that my research questions could be relevant by describing diverse economies with an emphasis on those elements that constitute and support particularly meaningful relations that make Indigenous territories unique in the wider context of frontier expansion.

Additionally, I collaborated mainly with four community leaders (two in each community) who were interested in participating more closely in the research process: doña Delma and don Pablo (San Juan), doña Vilma and don Justo (Cordillera). With them, we established a continuous dialogue and exchange of ideas and information during my visits to Bolivia, and remotely through online calls and voice messages. Most participatory processes and outreach materials directly linked to my Ph.D. research were possible because of this close but largely remote collaboration. These materials were produced with Camila Benavides-Frías, in the wider research project, with whom we shared part of the fieldwork and exchanged multiple ideas and observations while conducting our Ph.Ds. While the processes leading to these outputs had not always a direct link to my data collection and analysis, they became a way to expand the frame of the research topics to other narrative forms, helping to make them more accessible to non-academic actors, especially community members, while highlighting aspects of our ongoing research process.

Podcast: Voces indígenas chiquitanas

During the Covid19 pandemic in 2020 and 2021, it became uncertain that I could travel to Bolivia and conduct extended fieldwork. With the community leaders, we established a mechanism for communication, and eventually for data collection. This became a series of interview questions about people's relations to neighbors, to crops, and forests, which they could ask other community members, record with their authorization, and send me a file that I could turn into useful information for both my research and the communities' internal reflection and planning processes. While in the end I did not use these interviews as data for my research, mainly because I could resume fieldwork and collect data myself, we decided to create a series of podcasts narrated by doña Vilma to describe community daily life, and aspects of their livelihoods and territorial relations. We considered that this could make the community life and daily challenges more visible to a wider public. For this, we collaborated with an Indigenous radio station in the city of Santa Cruz (Voces Indígenas Urbanas) to broadcast the podcasts and several radio programs hosted by the radio lead, José Chuvé Mengarí.



The podcasts are available here (in Spanish):

<https://www.youtube.com/playlist?list=PLTgWacHPCbcACNeqJhR-NXovRQRMqBBkh>.

Photo-stories and exhibitions

Together with the podcasts, we published and shared in different formats many photos of community life, showing elements of their territorial relations with a narrative description. We shared these photos on the social media of our research project and the website of Voces Indígenas Urbanas. Additionally, we made three photographic exhibitions, one in the city of Lüneburg in Germany, and one in each community that was part of the research in the Chiquitanía. We also shared the exhibition online in the form of a photo-story map



Figure A3: Photo exhibition at San Juan de Lomerío. Author: Stefan Ortiz-Przychodzka, Oct.2024.



The photo-stories are available here:

<https://www.bioculturaldiversity.de/elementor-3815/>



The story map is available here:

<https://storymaps.arcgis.com/stories/de8f7afa74274caa85351454bcee67cc>

Research newsletters

In order to share key results of our research with all community members, we printed a newsletter summarizing findings, impressions, activities, and collaborations. We shared this with every household of both communities and with the schoolteachers.

The newsletters are available here:



San Juan:

https://www.bioculturaldiversity.de/wp-content/uploads/2025/01/20240829_Boletin_SanJuan.pdf



Cordillera:

https://www.bioculturaldiversity.de/wp-content/uploads/2025/01/20240829_Boletin_16M.pdf

Op-eds

Additionally, I wrote two op-eds in collaboration with my project colleagues and members of Fundación Tierra, to raise awareness on the massive deforestation and environmental devastation caused by the expansion of cattle raising and soybean monocrops in the Chiquitanía.

The op-eds can be found here:



El Salto Diario:

<https://www.elsaltodiario.com/bosques/bosques-no-mediaticos-destruccion-bosque-seco-boliviano-avanza>



EnvolVert:

<https://envol-vert.org/es/actualidades/2022/12/en-bolivia-la-forest-seche-de-chiquitano-est-gravement-menacee-de-disparition/>

“Historias de nuestra vida con las abejas”, “Tales of our lives with the bees and their honey”

We published a compilation of stories by people from both communities, about their encounters with bees and honey. This booklet, edited and compiled by Gabriel Zuna, and written in Spanish, Bésiro, Guaraní, and English, reflects the intimacies and close relations of people and bees.



The tales can be found here:

https://www.bioculturaldiversity.de/wp-content/uploads/2023/10/Booklet_Historias-de-nuestra-vida-con-las-abejas-y-sus-mieles.pdf

Ivy Marãey or the land without evil

Lastly, I invited a theater group from Santa Cruz de la Sierra, Akaraku, to present their play called “Ivy Marãey” and to conduct theater and storytelling workshops with kids and young people in Cordillera. This play tells the story of the Guaraní’s quest for land and freedom, amidst the dispossession by large landowners, colonizers, and opportunistic traders. Many kids joined the workshops and created their own plays, describing quotidian stories of their communities, including reflections on human-nature relations. Additionally, Akaraku presented their play in an event of closure of the research project in Cordillera, which attracted many community members and motivated questions and discussions about the importance of the relation to land and the environment for the Guaraní.



Figure A4: Theater plays and workshops at 16 de marzo Cordillera. Oct. 2024.
Author: Stefan Ortiz-Przychodzka.

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7. Author contribution statement

Stefan Ortiz-Przychodzka - “Economies of honey at the agrarian commodity frontier. How diverse economies emerge from the territorial fractures in the Bolivian Chiquitanía”

Overview of articles included in the doctoral thesis

(in accordance with the Doctoral Regulations of 20 July 2023 § 8 Section 3 and the Guideline for Cumulative Dissertations enacted at the Faculty of Sustainability in January 2012)

Ar- ticle No.	Bibliography	Publication Status	Specific first author contribu- tion	Weighing Factor
1	Ortiz-Przychodzka, S, Benavides-Frías, C, Raymond, C. M, Díaz-Reviriego, I, Hanspach, J. (2023). Rethinking economic practices and values as assemblages of more-than-human relations. <i>Ecological Economics</i> 211 (107866). Doi: 10.1016/j.ecolecon.2023.107866	Published in <i>Ecological Economics</i> IF: 6.6	Conceptualization, data collection, data analysis and interpretation, writing, review and editing.	1.0
2	Ortiz-Przychodzka, S, Keleman-Saxena, A, Benavides-Frías, C, Díaz-Reviriego, I, Hanspach, J (submitted to the <i>Journal of Rural Studies</i> , major reviews received in April 2025). More-than-human synchronizations expose the fractures of the agrarian commodity frontier in the Bolivian Chiquitanía.	Submitted to the <i>Journal of Rural Studies</i> (under review, major revisions) IF: 5.1	Conceptualization, data collection, data analysis and interpretation, writing, review and editing.	1.0
3	Ortiz-Przychodzka, S, Díaz-Reviriego, I, Hanspach, J (submitted to <i>Agriculture and Human Values</i> in April 2025, under review). Can non-utilitarian economies help to remake meaningful territorial relations at the heart of agrarian extractivism in Bolivia?	Submitted to <i>Agriculture and Human Values</i> (under review) IF: 3.5	Conceptualization, data collection, data analysis and interpretation, writing, review and editing.	1.0
4	Ortiz-Przychodzka, S, Hanspach, J (in preparation for submission to <i>People and Nature</i>). Honey economies weave meaningful instrumental relations in Bolivia’s Chiquitanía.	Submitted to <i>People and Nature</i> (under review) IF: 4.2	Conceptualization, data collection, data analysis and interpretation, writing, review and editing.	1.0

Declaration (according to § 16 of the guideline for cumulative dissertations): I avouch that all information given in this appendix is true in each instance and overall.

Lüneburg, 09.05.2025

Signature [signed on printed copy]

Explanatory Notes:

Articles included in a cumulative doctoral thesis can also be conference contributions or book chapters besides papers published in journals.

Bibliography: Author(s) – Title – Journal / Book / Conference contribution – Date of publication – DOI (if available)

Specific contribution of PhD candidate submitting the doctoral thesis / Author status according to § 12 of the guideline for cumulative dissertations

- Single author = own contribution amounts to 100%.
- Co-author with predominant contribution = own contribution is greater than the individual share of all other co-authors and is at least 35%.
- Co-author with equal contribution = (1) own contribution is as high as the share of other co-authors, (2) no other co-author has a contribution higher than the own contribution, and (3) the own contribution is at least 25%.
- Co-author with important contribution = own contribution is at least 25%, but is insufficient to qualify as single authorship, predominant or equal contribution.
- Co-author with small contribution = own contribution is less than 20%.

Weighing Factor according to § 14 of the guideline for cumulative dissertations

Single author	1.0
Co-author with predominant contribution	1.0
Co-author with equal contribution	1.0
Co-author with important contribution	0.5
Co-author with small contribution	0

