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Notes and Debates on Socio- Ecological Transformations (SETs)¹

Apuntes y debates en torno a las transformaciones
socioecológicas

Anregungen zur Debatte um sozial-ökologische Transformationen

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Abstract

The paper synthesizes the debates from the workshop, "Socio-Ecological Transformations in Mountain Areas: Approaches, Debates, and Perspectives," organized in Innsbruck by the Highlands.3 research project team. The meeting aimed to update conceptual approaches to socio-ecological transitions and transformations by fostering dialogue between perspectives from the Global North and South, emphasizing critical, situated, and multidisciplinary viewpoints. The discussion started with an analysis of two key texts (Köhler et al., 2019; Brand and Wissen, 2017), which introduce the concepts of transition and transformation from the viewpoints of science and technology and political ecology, respectively. These limitations were examined, highlighting the importance of feminist, decolonial, and Latin American perspectives. The central role of environmental conflicts, participation, and community organization in Socio-Ecological Transition processes in Latin America—often not conceptualized under that term—was emphasized. The workshop challenged dominant narratives of sustainable development and revealed how global energy transitions can sustain extractivist practices. Lastly, the workshop encouraged reflection on territory construction through feeling, thinking, and practicing, promoting a relational, critical, and non-anthropocentric approach to socio-ecological transformation.

Keywords: *Socio-ecological transformations, mountain areas, feminist, decolonial, and Latin American perspectives, sustainable development, territory.*

Resumen

El trabajo presenta una síntesis de los debates desarrollados en el taller "Transformaciones Socio-Ecológicas en áreas de montaña. Enfoques, debates y perspectivas", organizado en Innsbruck por el equipo del proyecto Highlands.3. El encuentro propuso actualizar enfoques conceptuales sobre las transiciones y transformaciones socioecológicas, promoviendo el diálogo entre perspectivas del Norte y Sur global desde una mirada crítica, situada y multidisciplinaria. La discusión partió del análisis de dos textos clave (Köhler et al., 2019; Brand y Wissen, 2017), que introducen nociones de transición y transformación, desde marcos asociados a la ciencia y tecnología y a la ecología política, respectivamente. A partir de estos, se problematizaron las limitaciones geopolíticas, epistemológicas y metodológicas de ciertos enfoques dominantes, subrayando la relevancia de perspectivas feministas, decoloniales y latinoamericanas. Se destacó el rol central de los conflictos ambientales, la participación y las formas comunitarias de organización en los procesos de Transición Socio-Ecológica en América Latina, muchas veces no conceptualizados bajo ese término. El taller puso en tensión las narrativas hegemónicas del desarrollo sustentable, visibilizando cómo las transiciones energéticas globales pueden reproducir lógicas extractivistas. Finalmente, se propuso una reflexión sobre la construcción del territorio desde el sentir-pensar-practicar, promoviendo un enfoque relacional, crítico y no antropocéntrico de la transformación socioecológica.

Palabras clave: *Transformaciones Socio-Ecológicas, áreas de montaña, perspectivas feministas, decoloniales y latinoamericanas, desarrollo sustentable, territorio.*

Kurzzusammenfassung

Der vorliegende Beitrag greift zentrale Impulse und Diskussionen auf, die im Rahmen des Workshops „Sozial-ökologische Transformationen in Gebirgsregionen: Ansätze, Debatten und Perspektiven“ des Highlands.3-Projekts in Innsbruck entstanden sind. Ziel der Veranstaltung war es, konzeptionelle Zugänge zu sozial-ökologischen Transformationen und Transitionen weiterzuentwickeln und den Dialog zwischen Perspektiven des Globalen Nordens und Südens aus einer kritischen, ortsbezogenen und interdisziplinären Sichtweise zu fördern. Ausgangspunkt der Debatte bilden zwei zentrale Texte (Köhler et al., 2019; Brand und Wissen, 2017), in denen die Begriffe Transition und Transformation aus der Perspektive der Science and Technology Studies beziehungsweise der Politischen Ökologie beleuchtet werden. Aufbauend auf der Diskussion dieser Texte hinterfragt der vorliegende Beitrag geopolitische, epistemologische und methodologische Einschränkungen hegemonialer Ansätze und hebt die Relevanz feministischer, dekolonialer und lateinamerikanischer Perspektiven hervor. Besonders betont wird die zentrale Rolle von Umweltkonflikten, partizipativen Prozessen und gesellschaftlichen Organisationen in Transformationsprozessen in Lateinamerika. Aspekte wie diese werden oftmals nicht explizit unter den Begriffen der Transformation und Transition erfasst. Zudem werden hegemoniale Narrative nachhaltiger Entwicklung in Frage gestellt und aufgezeigt, wie durch die global verankerte Energiewende bestehende extraktivistische Logiken fortgeschrieben werden können. Abschließend wird eine Reflexion über konzeptionelle Zugänge zu Räumen angestoßen, insbesondere über das Konzept des Territoriums (territorio). Dabei wird die Bedeutung der Dimensionen des Fühlens, Denkens und Handelns in der Re-/Produktion dieser Räume hervorgehoben, um einen relationalen, kritischen und nicht-anthropozentrischen Blick für sozial-ökologische Transformationen zu fördern.

Stichworte: *Sozial-ökologische Transformation; Berggebiete; feministische, dekoloniale und lateinamerikanische Perspektiven; nachhaltige Entwicklung; Territorium.*

Introduction

With the simultaneous implementation of numerous Secondments within the framework of the Highlands.3² , project, the "Socio-Ecological Transformations" research team from the Institute for Interdisciplinary Mountain Research (IGF) of the Austrian Academy of Sciences (ÖAW), based in Innsbruck, organized the workshop "Socio-Ecological Transformations in Mountain Areas: Approaches, Debates, and Perspectives," on July 12 and 13, 2024. The workshop had two main objectives. On one hand, it aimed to discuss and update conceptual and analytical debates. Considering the context of multiple crises (Brand, 2013), the exchange and discussion of existing approaches allows an understanding of the differences between the Global North and the Global South. On the other hand, the workshop sought to strengthen the network of academic cooperation that has emerged through the Highlands.3 project: "Collective Approach of Research and Innovation for Sustainable Development in Highlands," which aims to create a space for discussion and collaborative knowledge building.

In this context, Alpine and Andean visions on transformations in mountain areas were addressed through a multidisciplinary discussion (geography, sociology, geology, architecture, among others) that explored different approaches, mainly around the notions of socio-technological transitions and socio-ecological transformations.

The workshop consisted of two key moments: the first stage of discussion called "Approaches," around the articles "An Agenda for Sustainability Transitions Research: State of the Art and Future Directions" by Kohler et al. (2019), and "Social-Ecological Transformation" by Brand and Wissen (2017). These texts served as triggers and were chosen for containing much of the global debates on these concepts, as well as for their wide diffusion within the academic field. They allowed for an approach to authors who are working in different academic spaces and reflect their varied perspectives of analysis. As will be discussed throughout these notes, these authors are less recognized within the Latin American field of study, particularly in Argentina. In this way, the concepts that were familiar to the attendees, a group primarily composed of people from different parts of Argentina, mostly scholars and researchers from the National Council for Scientific and Technical Research (CONICET), a German from the Catholic University of Eichstätt-Ingolstadt, and an Argentine based in Austria, working at the Austrian Academy of Sciences, were problematized. This diversity of researchers from different working spaces

² The Highlands.3 project is funded by the European Union's H2020-MSCA-RISE program (<https://www.highlands3.eu/>). Secondments are research stays that project members undertake at project member centers. The workshop was held at the Interdisciplinary Institute for Mountain Studies (IGF) (<https://www.oeaw.ac.at/en/igf/>) of the Austrian Academy of Sciences in Innsbruck, Austria.

allowed for the exchange of reflections on the similarities and differences between our conceptual and analytical approaches and those of the authors we read. In particular, considerations emerged regarding our own trajectories, experiences, and theoretical-methodological perspectives.

These notes contain the reflections and collective exchanges that emerged from the aforementioned workshop. In this way, we hope our experience contributes to the debate on socio-ecological transformations, shedding light on the different scopes of conceptual proposals originating from certain global North and South perspectives. At the end of these notes, we propose some challenges and situated perspectives on the topic.

Theoretical Approaches

As the starting point of the meeting, two texts were selected and shared with the participants: Kohler et al. (2019) and Brand and Wissen (2017), both of which contain, as aforementioned, much of the global debates around the concepts of transition and transformation.

The first text discussed was Kohler et al. (2019), which proposes an agenda for researching sustainable transitions, detailing the state of the art and future directions of these studies. It sets out a work agenda within the Sustainability Transitions Research Network (STRN). Written by 29 authors, mostly linked to science and technology studies, the text has certain particular characteristics due to its focus on these approaches.

The text centers on the category of "transitions," a proposal embedded within debates on Science and Technology, with a special focus on innovation within the system and its continuity with discussions on development. In this context, the need for transformations in socio-technical systems is recognized to address large-scale environmental issues such as climate change, biodiversity loss, and resource depletion. The authors argue that these transitions cannot be solved solely through isolated technological improvements or solutions, but require deep, multidimensional changes that encompass technologies, markets, practices, cultural meanings, infrastructures, policies, industrial structures, and supply chains, among other aspects.

From our perspective, these authors' work presents certain limitations related to the geopolitical context from which they write. Specifically, there is a noticeable absence of dialogue with the political ecology literature, a lack of a problematization of the role of researchers, the omission of the state's role, and other gaps regarding the authorized voices in transition processes and social participation. Moreover, the science and technology focus has led them to overlook issues such as those we previously highlighted, which could have been

included had they combined their perspectives with other critical approaches. For example, in recent years studies from Science and Technology in Latin America, such as in Argentina, have incorporated political and social aspects from political ecology and other related perspectives (see Layna, 2021, or Altamirano, 2024).

In the text by Brand and Wissen (2017), titled "Social-Ecological Transformation," the focus is on the idea of transformation as an umbrella term in a scenario of multiple crises. The authors trace how this concept appears in reports by political organizations and think tanks, as well as the academic debate that influenced these reports, which also sparked deeper discussions. Most of these reports consider economic growth as desirable and suggest a reconciliation between increased technological use and the environment. In this sense, they discuss the conceptualizations proposed by the group of authors in the Kohler et al. (2019) text.

Brand and Wissen (2017) propose the concept of "transformation" instead of "transition" as they believe the former involves deep, non-linear changes in socio-economic, political, and cultural systems, while transition may suggest more incremental and specific changes in certain fields. Transformation then addresses dynamic, multidimensional, and complex systems and recognizes that social innovation is central to socio-ecological change, not just technical innovation. They also propose a dialogue with political ecology as a critical perspective that considers power dynamics, social relations, and the appropriation of nature. Essentially, their stance is based on the need for critical thinking about socio-ecological transformation, considering the complex dynamics of dominant social and ecological relationships, as well as their structures and processes. Otherwise, the environmental debate could be reduced to a capitalist ecological modernization that does not question the fundamental structures of capitalism. For this, it is crucial to sustain democratic foundations in societies and in society-nature relations, which entails democratic control over natural resources and production and consumption processes.

Debates

In the second part of the workshop, titled "Debates," we deepened the discussion beyond the two key texts. Here, we posed the first question: Transformation or Transition?

To deepen the conceptual conversations and theoretical frameworks, we introduced other texts where we found authors such as Escobar (2017), who warns that discourses on this topic differ geopolitically between the Global North and the Global South, despite some current dialogues. The author also

highlights that some socio-ecological transition discourses may be questioned for not addressing relations of power and domination in terms of class, gender, and race, or for their reliance on modern thought. However, Escobar acknowledges that they mostly respond to some form of transformation, unlike the use of the concept transition in other fields of the social sciences.

Socio-ecological transformation and transition appear as two concepts, though not opposed, with distinct conceptual frameworks and potentials. In general terms, transition focuses on processes of change and has a more analytical tone, while transformation focuses on where the change should go and has a more normative tone (asking what should change), while also encompassing more critical positions regarding power and domination relations within the capitalist system and the imperial way of life. Thus, we see that there are epistemological rather than ontological differences between these categories.

In the second question, we asked: How are socio-ecological transitions/transformation (SET) thought about in Latin America? In a line of thought distinct from the two aforementioned key texts, we discussed more radical texts that incorporate feminist and decolonial perspectives (see Lang et al., 2023) and how in Latin America there is a substantial production related to socio-ecological transformations, but these do not necessarily carry that label. In other words, these are often case studies, usually experiences that are not grouped under any common conceptual umbrella.

This final point led to debates that were more grounded in what we as researchers are doing in Latin America with these key analytical frameworks and to thinking about the role that those of us who conduct research in the field play by speaking from where we live and research.

At that moment in the debate, we highlighted the importance of non-linearity, interdisciplinary work, and putting the problem ahead of the analytical perspective. We agreed that more holistic analyses are needed, such as achieving a balance between case studies, seeing what they contribute, and recognizing simultaneous processes with specific characteristics, as well as similarities among diverse experiences.

The debates on socio-ecological transformation and transition also relate to discussions about climate change, with critiques towards the concept/universe of discourse linked to "sustainable development."

Additionally, in Latin America, the debate on SET is intertwined with extractivism, and from there how national states play a key role in supporting extractive projects, seeing them as opportunities due to the potential influx of foreign exchange. The prominence of social movements is emphasized, and notions in dispute emerge from local processes, such as agroecology and fair trade, which are associated with possibilities of transitioning to more

sustainable systems. SETs are diverse, and it is difficult to categorize them as urban or rural due to the entanglements they create in territories.

Other Points to Further Open the Debate

Brand and Wissen (2017) argue that it is important to consider regional and country differences. On this basis, we argue that concepts such as 'climate justice', used in some national and international reports, should incorporate these differences, as in some cases they refer to justice only in global terms. Therefore, if the global South generates fewer emissions and has fewer tools to mitigate the consequences of climate change, the global debate should place more emphasis on these inequalities. Otherwise, a corporate-type transition (Bertinat and Argento, 2022) is promoted, which favors large economic interests and making extractive projects necessary for the renewable energies that underpin the transition (Capellán Perez et al., 2019). On the other hand, the territories we work in are not passive. As Dorn (2024) shows, in the case of energy transition projects, these activities are embedded in regional energy transition projects, discursively intertwined with science and technology. Dorn (2024) emphasizes that this sociotechnical imaginary aims to break patterns of unequal growth related to commodity exports through technology transfer and the promotion of green industrialization. However, Dorn (2024) further notes that it is still unclear to what extent these are political goals or simply discursive legitimization of the primary sector.

Another issue that arises, related to proposals within the energy transition framework, is the transformation of mobility: while in Europe, it refers to a greater supply of electric cars, in Latin America it signifies increased extractivist pressure on territories, especially due to lithium mining. From a global South perspective, we believe more critical analyses are needed on the transition proposals of countries where these electric vehicles are used, particularly considering the consequences they have on the territories where extraction occurs. In other words, these green technologies also imply maintaining, increasing, and/or changing extractivist dynamics in the global South.

In Latin America, studies on transformations mostly involve processes associated with forms of political community or local organization and the incorporation of Mother Earth rights. Transformation here is connected to political processes, emphasizing the links or even the impossibility of dissociating human communities from nature/the environment. We problematize anthropocentric paradigms and discuss how to think about transformation beyond the centrality of human communities. We brought in the geography of transition to think about spaces, scales, and places. All points that are important as spaces of representation, with us asking how and why

transitions are similar or different depending on the place (Huber, 2015). At this point, we need a shift in perspective, and to do so, we consider it crucial to ask: How are places constructed? Who and with what power constructs places? How do places feel? Critical geography has a long history on the concept of territory, and its relationship with feeling-thinking-practicing. On the one hand, this leads us to highlight key authors such as Rogério Haesbaert (2020) and his contribution on notions such as body-territory, which also includes decolonial aspects, and which links territorial debates with the perspective of indigenous peoples and the feminist vision. In addition, the concept of transformations also appears related to those processes that were generated from environmental conflicts (Temper et al, 2018), and that imply debates on possible alternatives to development proposals imposed from other spatial and power scales.

On the other hand, we emphasize the need to problematize Anglo-Saxon or global Northern debates, because although they impact Latin American academic fields differently, they do influence government and corporate agendas (corporate sector), and this shapes public policies in countries like those in Latin America. Provincial governments implement programs with international funding, but their impact on territorial demands is minimal, and their closing reports celebrate sustainability indicators achieved. In other words, there is a power grammar that we must unravel to understand how we enunciate topics and problems, and how sustainable certain practices are according to sustainability parameters established by international agencies but with little regard for territorial realities.

Specificities of Mountain Areas

One of the moments in the debate addressed the question of mountainous areas and whether there are specific characteristics of the socio-ecological transformations/transitions that take place in these territories. We argued that on the one hand certain features of these areas, such as having fewer people, being rich in strategic natural resources (such as minerals), and being distant from provincial, state, and/or national capitals, favor their condition as “zones of sacrifice.” On the other hand, they are also considered vulnerable to climate change or global environmental change, and specific studies are being developed on these particularities (Wymann von Dach & Ruiz Peyré, 2020; Bardy-Durchhalter et al. 2022; Branca and Haller, 2021; Hasenauer et al. 2024).

Methodological Challenges

The study of socio-ecological transformations (SETs) presents multiple methodological challenges. Such challenges reflect the complexity of the

social, economic, political, and environmental factors involved, as well as the interaction of multiple actors with diverse interests and perspectives. This complexity is particularly evident in the relationship between the Global North and the Global South, where power dynamics and historical dependency shape transition trajectories.

As previously mentioned, Escobar (2017) emphasizes the importance of situated discourses, which reflect the experiences and perspectives of the Global South. This requires methodologies that recognize geopolitical inequalities and power asymmetries in the production of knowledge. Therefore, a critical approach is needed that challenges the role of researchers and their relationship with social actors, avoiding the reproduction of epistemic hierarchies.

One of the main methodological challenges lies in the impossibility of generalizing transition and/or transformation processes. Regions are not homogeneous in socio-ecological terms. As such, local dynamics, historical frameworks, and power structures vary significantly from one country to another, and even within the same territory. Therefore, methodologies must be sensitive to the cultural, political, and environmental specificities of each place. To understand transitions in the region, we must generate methodologies that allow us to capture the plurality of experiences and their tensions, while avoiding the imposition of either unique or universal models.

Case studies are a widely used methodology in SET research, as they allow in-depth analyses of specific experiences. However, one challenge is to avoid having these studies become isolated or fragmented. Cross-case analysis involves identifying patterns and connections between different experiences, which allows for building a more comprehensive and comparative analysis. This does not mean seeking uniformity, rather understanding the similarities and differences between transition processes in different contexts.

Another methodological challenge is incorporating a perspective of temporal scalability. Transition processes are often non-linear, with both advances and setbacks. Methodologies must be able to capture these multi-scalar dynamics to understand how and why certain initiatives thrive or fail in different contexts and moments.

Within these approaches, the importance of interdisciplinary work and prioritizing problems over theoretical analysis perspectives stands out. A key challenge is integrating them without subordinating one to the other. In this sense, it is essential that methodologies focus on the problems rather than the disciplines. Addressing interdisciplinarity involves constructing common analytical frameworks that allow for dialogue between qualitative and quantitative approaches, local and global perspectives, and empirical and theoretical methods. All this without losing sight of the specificities of the problem being studied.

An even greater challenge is adopting a transdisciplinary approach that integrates the voices of different social actors. Transdisciplinarity requires an epistemological and methodological openness that goes beyond combining disciplinary perspectives, fostering the co-construction of knowledge with the communities involved. This involves recognizing and valuing local knowledge, incorporating participatory methodologies, and developing collaborative research processes that not only analyze reality but also drive its social and environmental transformation.

In conclusion, the methodological challenges in the study of SET require critical, flexible, and situated approaches, capable of capturing the diversity of experiences and trajectories at the global level. Only through inclusive and collaborative methodologies will it be possible to construct knowledge that not only describes but also actively contributes to just and sustainable transitions/transformations.

Discussions and General Conclusions

In general terms, socio-ecological transition and transformation are presented as two concepts with differentiated theoretical frameworks. As we have already emphasized, transition focuses on change processes and has a more analytical tone, while transformation focuses on highlighting where the change should go, has a more normative tone (it asks what should change), and, at the same time, brings together more critical positions regarding power relations and domination within the capitalist system and the imperial way of life.

The workshop allowed us to conduct joint readings from a diversity of disciplines and work backgrounds that would not have been possible otherwise. This activity had the strength of bringing together diverse voices to reflect on key concepts that we, as researchers, work on in connection with environmental conflict processes, ecological justice, socio-ecological transformations, and sustainability projects in mountainous areas.

The meeting enriched the perspectives that each participant had on the concepts and theoretical proposals of transformation and transition. We were even able to observe that, depending on the academic circuit in which we are situated, the terms vary in their use and application. For example, there is a German-Austrian tradition in which the notion of transformation is stronger, while in other parts of the world, transition is used more, or both terms are used interchangeably.

To conclude, we want to highlight that the methodological aspects involved in the workshop format were one of the key factors in fostering exchange. In particular, they allowed for expanding the possible questions

about the conceptual frameworks that influence our academic and territorial practices, emphasizing the processes of debate and construction of shared knowledge.

CRediT Taxonomy

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Gabriela Maldonado: Conceptualization, Writing – original draft, Methodology, Formal analysis

Lucrecia Wagner: Conceptualization, Methodology, Writing – review and editing: Research, Formal analysis

Sol Trad: Conceptualization, Writing – review and editing

Oscar Soto: Conceptualization

Mariano Novas: Conceptualization

David Montenegro: Conceptualization

Margarita Díaz: Conceptualization

Facundo Rojas: Conceptualization, Writing—original draft, Writing—review and editing

Gabriela Merlinsky: Conceptualization, Methodology: Research, Formal analysis

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