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¿Quién levantará los olivos? Social Relationships with Nature in the olive sector in Jaén

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Zusammenfassung: Dieser empirische Beitrag untersucht den Olivensektor der südspanischen Provinz Jaén. Mithilfe des Konzepts der sozialen Naturbeziehungen (SNB) von Eversberg et al. (2022) werden nach einer Einordnung des Falls 16 qualitative Interviews mit Produzent*innen von Olivenöl und anderen Personen analysiert. Es können dadurch drei Idealtypen sozialer Naturbeziehungen gefunden werden: Pragmatisch, Suffizienz-orientierte (1), pro-ökologisch-idealistische (2) und progressiv-wachstumsorientierte (3) SNB. Eine Untersuchung der Idealtypen ergibt, dass die verschiedenen Naturbeziehungen eng mit unterschiedlichen Zukunfts- und Nachhaltigkeitsvorstellungen verknüpft sind und zeigt damit, dass das Konzept der SNB einen Beitrag zur Erforschung von sozial-ökologischen Transformationsprozessen leisten kann: Während Vertreter*innen der progressiv-wachstumsorientierten SNB eine bioökonomische Modernisierung befürworten, lehnen die beiden anderen Typen eine solche Transformation entschieden ab. Es wird deutlich, dass in Jaén verschiedene Vision von Moderne und dementsprechend auch verschiedene Vorstellungen von sozialer und ökologischer Nachhaltigkeit zu finden sind und diese in Zukunft in Konflikt geraten könnten

Abstract: This empirical study examines the olive sector in the Southern Spanish province of Jaén. Drawing on the concept of social relationships with nature (SRN) as developed by Eversberg et al. (2022), the study begins with a contextualization of the case, followed by an analysis of 16 qualitative interviews conducted with various producers of olive oil and other people of the region. The analysis identifies three ideal types of social relationships with nature: pragmatic, sufficiency-oriented (1), pro-ecological idealistic (2), and progressive, growth-oriented (3) SRN. The examination of these ideal types reveals that the different forms of relationships with nature are strongly connected to divergent visions of the future and of sustainability and therefore proof the validity of the concept of SRN in the investigation of social-ecological transformations. While growth-oriented SRN advocate for a bioeconomic modernization, the other two types clearly reject such a transformation. The findings indicate that diverse visions of modernity, and therefore differing conceptions of social and ecological sustainability, coexist in Jaén and that those might lead to conflict in the future.

Introduction

The Southern Spanish province of Jaén has been the world's center of olive oil production for centuries, gradually expanding until it covered more than 90 percent of its agricultural surface in the last decades (Sánchez Martínez/Ortega Ruiz 2016). However, the sector has seen significant crises in the last decade, most notable after the most recent harvest of 2023: Due to a dry summer and harsh climatic conditions, the harvest was low and prices of olive oil rose to partly more than eight Euros per liter (Redacción Huffpost 2024). This development in prices, in turn, has led to a decrease in domestic consumption of olive oil, creating further stress for producers who lack income in an already bad season (Jiménez 2024). The olive sector is fragile, often subject to wide-ranging changes in yields and therefore prices. Livelihoods that have existed for decades are therefore almost constantly endangered by economic and climatic developments that are beyond the farmers' influence.

In order to understand how the current situation has come to pass, a brief look into the history of olive cultivation provides useful insights: Olives have been growing in Jaén for more than a thousand years, but became increasingly popular in the last centuries (Infante Amatae 2013). They transformed from what was regarded as a tool for subsistence to a cash-crop during the 20th century, ultimately dominating the landscape of the Spanish province from the early 1980s onward.

What is commonly referred to as the "mar de olivos" (sea of olives) is essentially a monoculture of trees with many of the problems associated with this form of cultivation: Loss of biodiversity, use of biocides and generally a high demand of inputs necessary for maintaining the groves have become more prevalent since the 1980s, reaching their peak in the early 2000s (Diputación Provincial de Jaén 2007). Further, climate change will have an effect on the already short supply of water in the region, further fueling conflicts over its use (Estévez Alcalde 2018).

I described the historic development of the olive sector of Jaén and the resulting challenges for its future in more depth in another contribution (Koch 2022). Those challenges result in a growing pressure that something has to change about the way in which olives are grown, and how people live, with multiple visions available: Numerous stakeholders, including the regional government of Andalusia promote an eco-modernist, bioeconomic transformation to increase production and local value generation by inventing and selling new, high-tech products (La Cal Herrera 2020; Junta de Andalucía 2018). Other actors aim at converting the traditional groves to a more ecologically sustainable mode of cultivation, while attempting to market the oil themselves in order to achieve better prices (Koch 2022). It is yet unclear, which path the olive sector of Jaén will take and if its survival can be secured. The current crisis strongly underlines the need for a transformation of the sector. However, bioeconomic visions for the sector do not seem to play a significant role yet (Koch 2022).

When dealing with an economic sector that is based on a biological product, people's attitudes, understanding, and practices regarding their natural environment are vital to understanding the world they live in, what they wish for the future, and what kind of transformations are desired and imaginable to them. The article will map several social relationships with nature (SRN) found in the region of Jaén.

Based on this research, the contribution of this paper aims to further assess those visions for the olive sector of Jaén, based on the thesis that the reasons, why a bioeconomic transformation is not (yet) relevant for the people of Jaén, are based on their passed-down ways of living and relating to nature and that the kind of "modernity" that has been lived in Jaén for a long time differs from goals of ecological modernization. It is guided by research questions asking if a bioeconomic modernization of the olive sector is realistic and desirable (or not), which pathways of transformation exist, and how social relationships with nature (SRN) influence imaginaries of change?

In order to investigate this question, the paper draws on a sociological concept established by Eversberg et al. (2022) that allows for the analysis of people's social relationships with nature. This qualitative framework applies habitus hermeneutics to interview material and combines it with social data. Questions in those interviews focus not only on people's opinions, but also try to account for their actual practices. By combining the knowledge of practices, social position, hermeneutics, in-depth analysis of statements, and relating the results with other people, it becomes possible to establish a space of social relationships with nature (SSRN). This graphic representation serves as an analytical aid to get an overview of the existing SRN and how they relate to others. By viewing the resulting data through the perspective of different concepts of (ecological) modernity and modernization, the ideal types of SRN can be seen as different, competing (and possibly conflictive) visions of modernity.

1. The case of Jaén and current state of research

There is ample data available on the economic development of the olive sector in Jaén (see Parras Rosa et al. 2020; 2021, Sánchez Martínez/Gallego Simón 2011, Sánchez Martínez et al. 2011, Sánchez Martínez/Ortega Ruiz 2016, Sánchez Martínez/Almonacid 2021, SEPE 2021). In 2023, over 90 percent of arable land is occupied by olive trees, with one third of all plots being unsuitable for mechanization and almost two thirds of all plots being cultivated without any additional water (Data from: Sánchez Martínez/Almonacid 2021, Parras Rosa et al. 2020). Considering the already scarce supply of water during summer, it is questionable if production can be vastly increased in the future. The recent harvest seasons underlined this assumption by yielding historically low quantities of olive oil, with prices eventually reaching up to seven euros for a litre of oil in Spain (Merino 2023, Statista 2023). Estimates from October 2023 predicted that there would be 40 percent less oil gathered in Spain compared to the average amount of the last four harvest seasons, with more recent estimates from November of the same year to be optimistic at best (Mercacei 2023). Extreme weather with long episodes of high temperatures leads to a loss of blossoms during spring and summer (ASAJA 2023, MAPA 2023). However, while economic and ecological challenges are recognized and researched, there is little research about the social and sociological aspects of those challenges and how people are currently facing them (for economic data on the subject, see Parras Rosa et al. 2021, SEPE 2021).

This work aims to fill this gap. Its analytical approach also contributes to a number of contemporary debates in agrarian studies in general: For one, it adds to the critical research on bioeconomy as a new form of ecological modernization (see Backhouse et al. 2021, Boyer et al. 2023), by providing empirical, qualitative data in this field of research that often times has to rely on the analyses of political programs. Secondly, the general relation between nature, individuals, and society is also discussed by a Marxist tradition that tries to include nature in Marx's value theory (Taşdemir Yaşın 2017) in order to operationalize it for political projects such as the agroecology movement (Taşdemir Yaşın 2022; van der Ploeg 2021). As Franquesa (2019) shows, the development of rural areas in Spain is a highly contested space for either authoritarian or alternative, democratic movements. Scheidel et al. (2023) argue in this context that a better analysis of more-than-human nature and its interactions with people can actually greatly influence the development and impact of socio-ecological movements and the sustainability of agricultural production. This paper contributes to a wider discourse on sustainability transitions, namely the multi-level perspective and the discourse surrounding environmental geography and the social aspects of water (Bakker 2009, Swyngedouw 2004). The emergence of more sustainable ways of producing olives happens in a context of lock-ins and path-dependencies that have been established over a long time, while the aggravating water scarcity ne-

cessitates regarding this resource as intertwined with societal (re)production. In the discussion of the results, I shall attempt to link the findings offered by the conceptual approach to those concepts. Further, the olive sector in Jaén has a long history, which to this day greatly effects structures of ownerships and modes of production in the region (Infante Amate 2011; 2013). With this in mind, the olive sector in Jaén could potentially be regarded as an emerging conflict between a historically grown economic sector, based on a traditional structure, and several competing visions of future developments (Koch 2022).

2. Conceptual Framework

If social relationships with nature are important for a better understanding of (social ecological) transformations, it is first necessary to define them, before explaining how can they be analyzed and established.

Eversberg et al. (2022) established the concept of SRN to account for the complex interactions between socialized individuals and socialized nature. This means, that social relationships with nature are the *ways in which people internalize and comprehend nature, based on their social position, their mental dispositions and their practices*. Basing their approach on works by Görg (1999) and Becker and Jahn (2006), among many others, and developing an addition to Pierre Bourdieu's praxeology by making it viable to include nature in the framework, Eversberg et al. (2022) attempt to use social relationships with nature to enable researching relationships between individuals and their natural surroundings, but also entail an analysis of how nature is societalized: infrastructures, materials, energy are all necessary for social reproduction, ultimately being extracted of nature (or transformed) and incorporated into society. This process not only happens on a substantial level, but on a mental one as well. Social relationships with nature, therefore, capture the way people perceive nature, act within it, and stand in (direct or indirect) relations with it by including their practices, positionings, and dispositions. This perspective follows a conceptual approach established by Eversberg (2020) and Eversberg et al. (2021; 2022). A sociological view on these relations highlights that all of these interactions are in some way "socially mediated: they are rapports between socialized individuals and socialized nature under specific social conditions" (Eversberg et al., 2022). Eversberg et al. (2022) highlight in their approach the importance of processes of societalization: How nature is perceived, and how individuals and societies interact with it influence each other.

In this contribution, I contextualize the empirical findings of the concept of SRN with a perspective of modernization theory (see Blühdorn 2024, Krüger 2015). It has been established in other works, that the concept of bioeconomy can oftentimes be seen in the tradition of ecological modernization (Backhouse et al. 2021, Boyer et al. 2023). Based on the ideal types constructed through the SRN, I want to argue that the bioeconomic vision for the future of the olive sector can be seen as a challenger to the already established version of (Mediterranean) modernity of Jaén. Debates on the economic and social development of Southern European, and generally Mediterranean regions state those regions are often seen as somewhat "underdeveloped" and in need of modernization, while in reality, they adapted to the advent of global, capitalist market relations in a specific way and are in no way existing "outside" of modernity (Ben-Yehoyada 2014, Braudel 1975). Modernity in this case is not a uniform set of market relations, institutions and cultural norms, but it encompasses still aspects of "traditional" society, often in the form of specific cultural practices (see Gilmore 1982), while the overall framework (so market relations and national institutional framing) changed drastically. The specificity of how people reacted and adapted to the notion of modernity as it was established in Central Europe has to be accounted for. For Jaén and its olive sector, this means that a possible "mediterranean" modernity is coined by their specific adaptation to capitalist market relations, while preserving cultural and economic prac-

tices of olive cultivation that oppose the centralization of capital and attempt to ensure a certain degree of autonomy through its collective organization (see Koch 2022, Infante Amate 2011; 2013). By framing the olive sector of Jaén as a historically-specific kind of modernity, it becomes possible to compare the ways in which the people relate to their natural surroundings and the future of their region (so *their* modernity) with the bioeconomy strategy of Andalusia, a project of ecological modernization which has to be justified through implicitly framing existing practices as pre-modern or old-fashioned.

3. Method

The data consists of semi-structured interviews focusing on various aspects of social relationships with nature. 43 interviews with producers and other stakeholders active in the region have been conducted in Spanish in 2021 and 2022, of which 16 were analyzed in depth regarding their social relationships with nature. The underlying assumption regarding sampling was that, due to the central importance of the olive sector for the region of Jaén, almost any person living in the region has some relation to the sector, and that, therefore, any perspective is relevant and valuable to my research. The initial contacts were established through online research and following phone calls and e-Mails. During the first phase of interviews, more contacts could be gained by asking the interviewees if they knew of other people who would be interested in sharing their experiences. This resulted in a very diverse mix of participants, ranging from restaurant and business owners to farmers, public servants, and academics. I was careful to include as many female voices in the sample as possible. However, less than a third of the interviewed people were women. All interviewed people were asked to give their consent to being interviewed on record, which all of them provided. Saturation was reached after a preliminary assessment of all 43 interviews, and noticing that 16 of them displayed the full range of distinct SRN found among all participants. Those interviews were then coded and analyzed in depth using the elementary categories introduced in this section. Most of the interviewees are living off the production, meaning that they work more than ten hectares, while some own substantial plots of several hundred hectares. Accordingly, the degree of mechanization and the type of cultivation in general vary strongly within the sample. The interviews aimed at getting insights into the farmers' stands on different developments in their region and economic activity. Lasting between 40 and 90 minutes, the interviews can be classified as problem-centered interviews that are considered a mix between guideline-based and narrative techniques with a low degree of standardization compared to other forms like the focused interview (Bortz/Döring 1995, Merton/Kendall 1946, Küsters 2009). This open form of interview is advantageous in researching social relationships with nature, in that people often not only talk about things they like or that they find important, but at the same time distance themselves from (in this case) other people's practices and aspects of, i.e., olive cultivation, which they don't find desirable, unprompted. It is therefore possible to get a more extensive account of *why* people engage in certain practices and *why they avoid others*.

Additionally, social data sheets were filled out by most of the interviewees. Gathering socio-economic data like age, income, housing situation, religious beliefs, and political affiliation, as well as on selected practices such as meat consumption or modes of transportation, allows for a better understanding of the *social position* as well as the way of living of an individual. While the socio-economic data were collected and compiled in a table for better comparison, the interviews were coded according to elementary categories, which are in themselves a product of *hermeneutic analysis* of interviews by Eversberg et al. (2022) and can be seen in Table 1. They have been established in order to capture a broad spectrum (or rather several spectra) of differences in the socially specific ways in which people relate to nature. Additional dimensions referring to

information on family, their perspective regarding future developments, and their wishes for the future are incorporated in the interview guideline. Coding was done for one interview at a time, not in parallel. The coded sections varied in length, some consisting of several words, while others consisted of several sentences. Analyzing qualitative data to find a person's social relationship with nature necessitates a step-by-step analysis of the interview, building a coherent structure of meaning from various possible interpretations that narrow down in variety the more the interview progresses.

Connected	Separate
Ecocentric	Anthropocentric
Emphatic-idealised	Instrumental-economic
Caring, concerned	Careless
Reflexive	Pre-reflexive
Precarious, disempowered	Active, self-efficacious
Sufficiency-oriented	Escalatory, growth-oriented
Pro-ecological	Anti-ecological
Affective	Cognitive, analytical
Global, long-term	Local, short-term
Individualistic, bottom-up	Structure-oriented, top-down
Anti-consumeristic, ascetic	Consumeristic, hedonistic

Table 1: Elementary categories for hermeneutic interpretation of nature-related dispositions (from Eversberg et al. 2022)

Once qualitative data is coded and analyzed according to the aforementioned elementary categories, it is further possible to situate different individuals in a space of social relationships with nature (SSRN). It has to be noted that, while many of the elementary categories of Table 1 can be found as being on either end of an axis in the SSRN, the establishment of the axis was not a spatial representation of the elementary categories, but it merely displays where those categories tend to be found.

Placing the various SRN in a space of social relationships with nature allows the identification of certain ideal types and describing in as much detail as possible the similarities two people of the same type share with each other, while also pointing out the differences with other people (Kreitz 2010, Bremer/Teiwes-Kügler 2010; 2013). Since those types shall reflect a common social relationship with nature, the similarities between individuals have to be analyzed considering the societal surroundings in which those relationships were formed, as well as the trajectories along which they have moved through the space and how they might likely develop in the future. This praxeological method of typology uses biographical information on the interviewees as well, but since it is not the defining aspect of the final type, one cannot speak of real types (Tippelt 2010, Bohnsack 2010). Those types can provide a suitable impression of the plurality of social relationships with nature within one single economic sector of one region in Spain, being supported by a sufficient number of cases in order to establish clearly distinguishable types.

The primary goal of this approach is to find the socially-specific ways in which individuals relate to nature, while not forgetting about the broader social, economic, and cultural context in which those relationships are formed and actively influence each other. There are similar studies in this context, like Beiser Mc-Grath and Huber (2018), Muradian and Pascual (2018), or Berghöfer et al. (2022) that operationalize other theoretical concepts in order to assess human-nature relations.

There is also a number of quantitative approaches (Hedlund-de Witt et al. 2014; Poferl et al. 1997; UBA/BMUB 2018, Eversberg et al. 2024, Teichler et al. 2025). While some are mostly asking about attitudes and values regarding environmental issues, Eversberg et al. (2024) and Teichler et al. (2025) link questions about attitudes with socio-economic data and form types, according to people's stance on socio-ecological transformation. While the latter two studies might seem similar to the concept of SRN at first glance, there are important differences between them: First, quantitative approaches often aim at generating generalized data for a whole population, while qualitative research is limited in its reach, but goes much more into detail regarding individual analysis. Second, while data on socio-economic status, attitudes, and practices can be linked in order to form types, the SRN approach goes deeper in that it analyses individual relationships with nature and how they are constituted, which incorporates not only socio-economic data, but also personal accounts of experiences with nature, individual practices, and preferences that cannot be accounted for by quantitative methods. It is precisely those practices that are at the center of the approach: They shape people's understanding of nature by interacting with it. Relationships of care, be it paternalistic or altruistic, pro-ecological or growth-oriented, find their expression in, but are also shaped by practices. They are the key to understanding and possibly changing the possibility of social-ecological transformation.

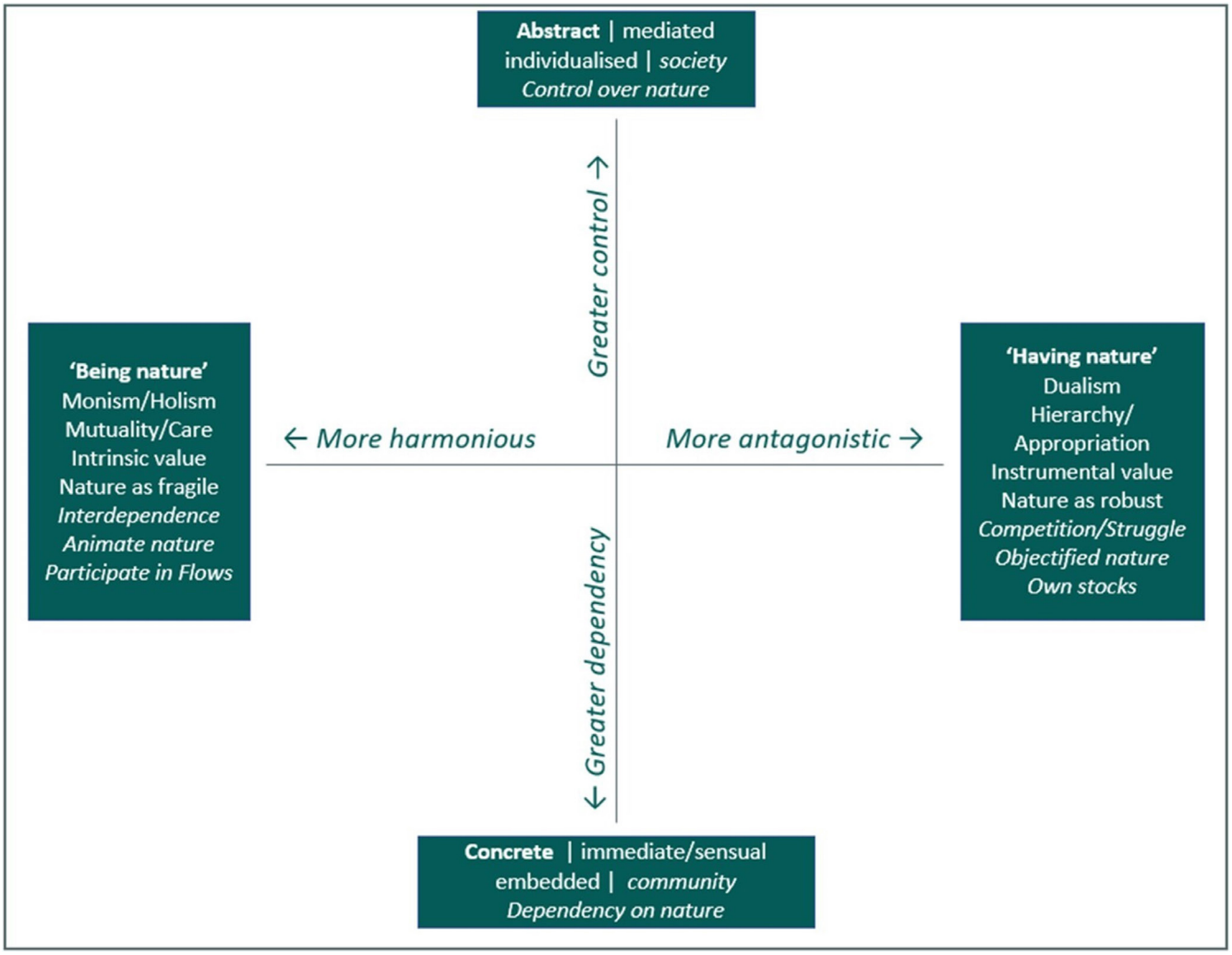

Figure 1: Space of Social Relationships with Nature (SSRN) (from Eversberg et al. 2022)

Figure 1 shows the space with the full titles of its axes. According to Eversberg et al. (2022), the space allows for „an analysis of how the abstract processes of expansionary societalization structure the uneven and conflictual socio-metabolic terrain of differing socially specific relationships with nature, and of the struggles around a potential transformation of the societal nature relations unfolding on that terrain." The space is somewhat homologous to Bourdieu's social space in that dominant relationships with nature, i.e., having control over more resources or abstract nature corresponds to the logic of social relationships (Bourdieu 1987, Eversberg et al. 2021, Vester et al. 2015). It is structured around mutually opposed poles, an abstract vs. concrete relationship with nature, and if someone considers themselves as part of nature vs. considering themselves as separated from it (Eversberg et al. 2022). An abstract relationship with nature entails someone having no or little direct contact with what they consider to be nature and with the material sources and goods they consume in their everyday lives. The practices that express this specific relationship with nature result in the framing of nature as, for example, an ecosystem or a reservoir of certain resources that can be extracted, which entails a great amount of control over socialized nature (in the form of transformed resources, commodities, infrastructures, etc.) in their position. A concrete re-

lationship would be expressed by practices that show awareness of the living nature in front of people, who get in touch with it, value community more highly, and are more dependent on nature due to less available nature/control over it.
The horizontal axis, on the other hand, distinguishes between a relationship with nature that either considers it an amount of resources, like raw materials or fuels that can be owned, refined, sold and bought vs. a relationship on the far left that sees humans as an integral part of nature, where the way in which resources flow, are extracted, and used matters more since people considers themselves as a part of this flow (Malm 2016 from Eversberg et al. 2021).

4. Analysis

Figure 2 shows the results of the habitus-hermeneutical analysis of 16 interviews and their respective social data sheets. Before discussing those results in further detail to understand their placement in the space, the significance of the space of social relationships with nature and the aggregate results will be shortly summarized.

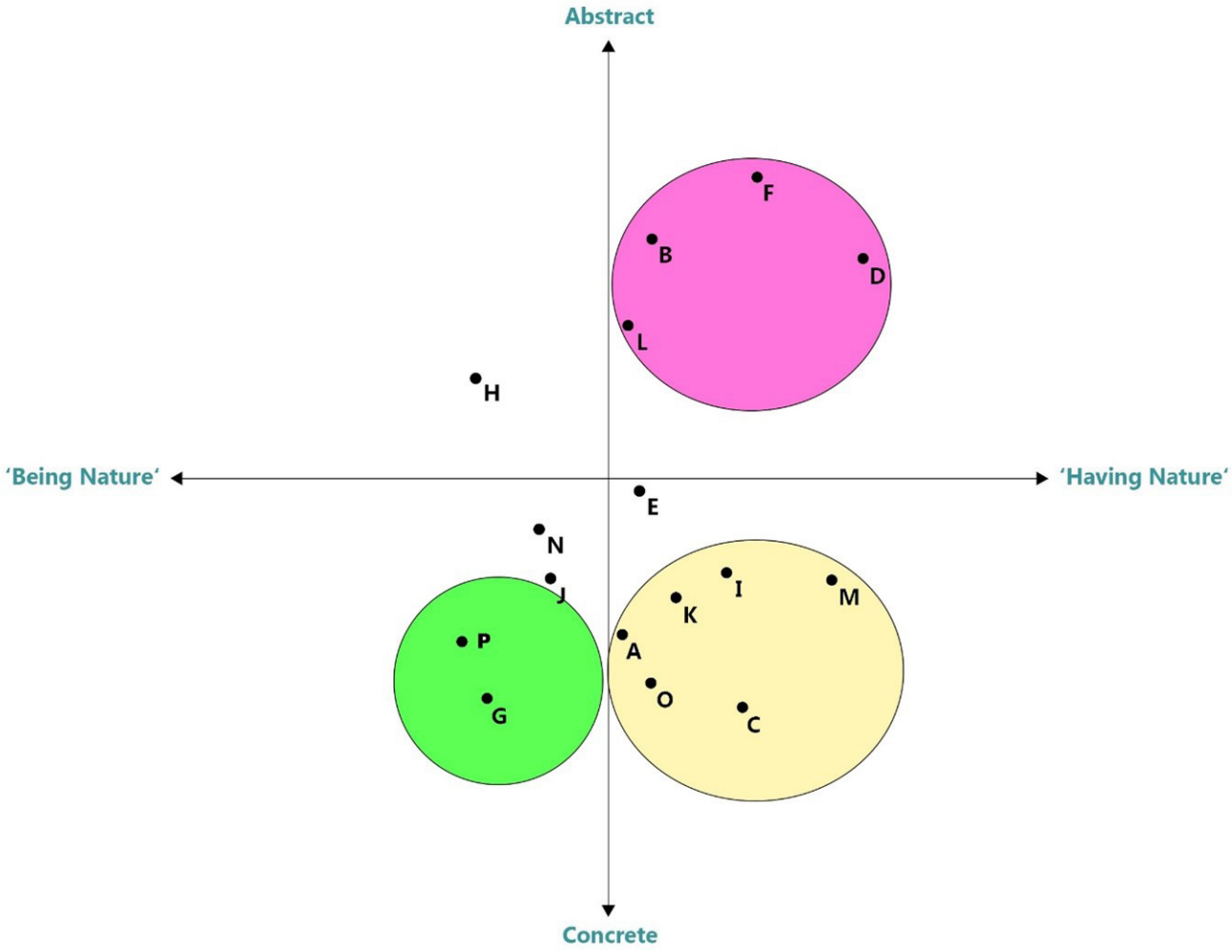

Figure 2: Space of social relationships with nature, including types (own elaboration)

It must be noted that the placements in the space relate to each other, meaning that their placements are relative to each other and not absolute. This implies that the information regarding social positions such as education, income, and family history, among others, is also no indicator that a person is particularly poor or wealthy, only that, e.g., *other people plotted* in the space have access to more natural resources in comparison. As previously discussed, the space of social relationships with nature is somewhat homologous to the social space of Bourdieu in that "the more nature" is available to a person, the more "abstract" their relationship with nature tends to be. The ways in which concrete nature is experienced and worked can be very different: The degree of mechanization is far higher, sometimes there is staff, which again puts the farmer in a more managerial position, which is more abstract. Grouping the analyzed social relationships with nature yields three different ideal types. The green one is being titled "Pro-Ecological Idealism (PEI)", the yellow one "Pragmatic, Sufficiency-Oriented (PSO)", and the purple one "Growth-Oriented Progressives (GOP)".

In order to better understand the placements in the SSRN, it is necessary to take into account the socio-economic data of the interviewees. Therefore, before introducing exemplary descriptions of individual SRN and the statements of the interviewees, Table 2 will provide some data on the interview partners placed in the space.

Interviewee	Age	Gender	Family income	Highest Degree	Farmer?	Plot Size	Type of cultivation (tradicional, ecológico, intensivo, superintensivo)	Type
A	-	Male	-	-	Farmer	15 hectares	-	PSO
B	55	Male	3.000-4.000 €	Doctor (engineering)	Not farmer	-	-	GOP
C	61	Male	+ 4.000 €	Apprenticeship	Farmer	10 hectares	Tradicional (50% regadío)	PSO
D	58	Male	2.000-3.000 €	Apprenticeship	Farmer	< 10 hectares	Tradicional (50% regadío)	GOP
E	56	Male	2.000-3.000 €	Bachelor (engineering)	Not farmer	-	Tradicional (regadío)	-
F	-	Male	-	Bachelor (engineering)	Farmer (full time)	300 hectares	Intensivo y tradicional (regadío)	GOP
G	67	Male	2.000-3.000 €	Apprenticeship	Farmer (full time)	26 hectares	Ecológico (secano)	PEI
H	66	Male	3.000-4.000 €	Doctor (biology)	Farmer	10 hectares	Tradicional (secano)	-
I	37	Male	500-2.000 €	Apprenticeship	Farmer	40 hectares	Tradicional (regadío)	PSO
J	42	Female	500-2.000 €	Doctor (biology)	Farmer	-	-	-
K	43	Female	-	-	Farmer	-	Tradicional secano)	PSO
L	36	Female	2.000-3.000 €	High school	Farmer (full time)	150 hectares	Tradicional(regadío), intensivo y superintensivo	GOP
M	65	Male	+ 4.000 €	Apprenticeship	Farmer	40 hectares	Intensivo y tradicional (regadío)	PSO
N	68	Female	-	-	Farmer	-	Tradicional	-
O	67	Male	+ 4.000 €	Apprenticeship	Farmer (full time)	14 hectares	Tradicional (regadío)	PSO
P	-	Male	-	-	Farmer	< 10 hectares	Tradicional	PEI

Table 2: Overview of socio-economic data of cases (own elaboration).

The following section of the text will provide two examples from each ideal type that could be identified in the present sample. The descriptions of single SRN not only provide a livelier impression of the interview partners but also aim to describe the essence of the corresponding ideal type, which is a core finding of this contribution.

4.1 Pragmatic-Sufficiency-Oriented

Hernán (A) is a good example of the type "Pragmatic, Sufficiency-Oriented (PSO)". In this group, mostly farmers with between 10 and 30 hectares of olive trees can be found. The size of the grove is therefore sufficient to provide a full income; however, it is not big enough, and often not concentrated enough and/or well situated enough to justify the sole ownership of heavy machinery, therefore most of them produce olive oil in the traditional way. They have a very concrete relationship with nature, and there is little to no room for any kind of romanticization of it. They do, however, often share a historic connection to the land they work, which is often inherited, and the parents already owned some of the olive trees in the groves, but they mostly do not become sentimental about it in any way. The grove has existed for a long time and must continue to exist in order to secure everyone's livelihoods. Change, even the change towards the current monoculture of olives, is therefore seen as critical, but not rejected straight away. Their pragmatism leads the members of this cluster to acknowledge the olive's dominance, the economic necessity of its continued existence, as well as the need for some form of change in the future, given the aggravation of various dangers to the harvest, through global competition and various other factors. What they really want, and seemingly always have wanted, is a stable income for them and their families. The means by which it is earned are hardly of importance. While, at first glance, it seems unrealistic for members of this type to move upwards or to the left of the space of social relationships with nature, it is precisely their pragmatism that might enable them to do just that. If surviving in a changing sector would entail adopting a different perspective on social-ecological transformation or even bioeconomic change, it is likely that the former will have a warmer welcome than the latter, simply due to the degree of change necessary in order to achieve a bioeconomic transformation.

Hernán is, like most of the 15 people analyzed in this sample, an olive farmer. Originally from Madrid, but with family ties to Jaén, he spent most of his childhood summers in the province helping on the farm of his grandparents. The father was a professor at a university, and the mother stayed at home with the children. Growing up, he became an electrician and spent most of his professional life working as one in Madrid while still visiting Jaén from time to time. After his two children had reached adulthood, he decided to renovate the farmhouse of his grandparents and move to the countryside of Jaén to become a farmer. He currently works around 20 hectares of land, all of *tradicional*, meaning there is no additional irrigation, but the use of fertilizers and pesticides is accepted. Being interested in the topic and eager to learn more about his chosen new dedication, Hernán decided to inscribe in a local university program titled "Olivar y Aceite de Oliva" (Olive trees and olive oil), which makes him rather an exception among his fellow students given his 59 years of age. He earns between 2.000 and 3.000 Euros per month together with his wife and they frequently visit each other either in Madrid or Jaén. Their income enables him to afford small machines to help with debris in the groves and his prior job allowed to him save some money to renovate the farmhouse and live comfortably, after losing the position of electrician in the crisis of 2008. As a farmer and a person who has always had a connection with nature, he holds his natural surroundings in high regard, but first and foremost as a means for survival. Nature is owned by people and its primary function is providing his survival. He is situated rather closely to the y-axis because he understands that applying more and more fertilizer to the soil and leaving no vegetation under the trees cannot guarantee the (economic and ecological) sustainabil-

ity of his grove.

"[…] and it will stay a product of survival for the good of nature, for sure, because people will have it as a forest. So, the best solution the olive grove has is climate change, because [with it] there will be no more business and it will begin to be… come back to being a crop."

However, the function of his olive trees is still the provision of his livelihood, and there is little room for a "romanticization" of this professional relation. For Hernán, agriculture on a small scale is an "economy of survival", where there is a mutual dependency between nature and the people inhabiting it. People's role in this relation is not that of a caretaker, but rather of a pioneer and hard worker who provides for his kin by conquering nature, but moderately. Promises of growth and technological progress are met with skepticism, since those ideas are related to abstract forces connected to the economic crisis of 2008 where many people, especially in Spain, lost their livelihoods. Consequently, his position on change is a rather conservative, but also pro-ecological one: On the one hand, changes towards ecological cultivation and applying techniques that have been practiced for centuries to ensure that nutrients stay in the soil, such as leaving the vegetation cover underneath the trees is welcomed, but on the other hand, increases in productivity are not important and valuing the products of already existing traditional agriculture more.

4.2 Progressive-Growth-Oriented

Alfonso (B) fits well into the cluster that can be found in the upper right quadrant titled "Growth-oriented Progressive (GOP)". Members of this cluster are either farmers with a sizable amount of land, most often more than 200 hectares, or academics working either directly in the sector or in its vicinity, for example, in administrative positions or at the university. What they share is their very abstract view of nature, a high degree of education, and a strong affinity for economic growth. Each member will tell you with absolute certainty that the numbers show that expansion, intensification, and concentration of ownership are at the core of the changes that need to happen within the sector. Those proclaimed changes are often connected with wishes for sustainable practices, but the efficacy of this bioeconomic, techno-optimistic vision of sustainability and environmental protection remains questionable.

Alfonso is an electrical engineer originating from Northern Spain but currently living in Jaén. While he is not an active farmer himself, he is very engaged with the sector and a strong proponent of a bioeconomic transformation. Growing up in a different part of the country and with his father being a farmer, he always had a connection to agriculture, but decided to pursue a career in engineering instead, finishing a doctorate at a local university. Currently holding a position at the same university he graduated from, he is earning a decent living with between 3.000 and 4.000 euros per month. Considering himself politically center left, he is still positioned in the upper right quadrant of the space of social relationships with nature. The reason is that he is mostly referring to nature as a stock of resources, ready to be exploited. His reasoning is clearly economically motivated; however, he is also in favor of a certain degree of sustainability because for him, sustainability and economic growth can be united under the banner of a bioeconomic transformation.

"But yes, I'd like that in the following years, the technology is developed here in Jaén, too, or in Andalucía, […], yes, the technology, because this would bring much more added value, there would be actual factories here or the capacity to develop those bioindustries, […]. So, my personal objective in the sector is this, that by-products are valued and that this is reflected in the farmers' income, that it [the rent] increases and the life of the citizens who live of the olives gets better, right?"

His vision is mainly anthropocentric and Alfonso argues always from an economic perspective. That the

bioeconomy claims to be modern and green and sustainable seems to fit with Alfonso's personal political beliefs, but are effectively not the deciding factor. Employment, added value and new products are his goal and they can and should be extracted from nature that for him is a rather abstract construct, best measured in hectares and tons rather than experienced.

4.3 Pro-Ecological Idealism

Carlos (G) is part of a type named "Pro-Ecological Idealism (PEI)". Members of this cluster, which is not very strongly represented in this sample, but certainly does exist, are convinced that their way of living can and does serve as an example for others. They are neither rich nor poor, they are not especially highly educated, but they see the same changes in the sector as everyone else. While being pragmatic in the switch from conventional forms of olive growing to the ecological version, they also adopted ideas of strong sustainability. Even though none of their neighbors seem to have adopted their ways until now, they still firmly believe in the impact of their own example. This optimistic pragmatism coins their overall perspective on the future of the olive sector: They set an example, and slowly but surely, more people are going to join their cause. However, there is little illusion about the slow pace of those developments and people summed up under this ideal type would call for the government to intervene in order to preserve the environment, while what they ultimately want is not so distant from the pragmatic, long-term sufficiency type: As long as the natural environment in its current state can maintain its integrity, so no further loss of biodiversity, no further aggravation of water scarcity and no further mechanization of production, the olive sector including its ownership structure can stay intact.

Carlos is a 67-year-old man from a small village in the province of Jaén. He has spent his whole life here, just like his parents did before him. Like his father, he became a farmer and herder, but also learned the profession of mechanic. He lives in a remote small house in the mountainous region to the west of the province, together with a seasonal worker who is helping him tend to his grove. He has two children who both did not become farmers, but a kindergartener and a musician, and live elsewhere in the region. He only grows ecologically produced olives.

"Well, effectively, I am Carlos, I have an ecological grove, I am an ecologist since… well, 10 years, but back then, none of us wanted to be ecologists, because there was just no fertilizer to throw onto the earth, …"

What separates Carlos from the other farmers is less his background, income, education, or lifestyle, but his actual affection for nature.

„For me, [nature] is all there is. Speaking of nature is all there is, noticing that all the air we are breathing is coming from here, coming from nature. So, for me, it's the most important thing. Once I understood that, everything else that happened in the world, all that has happened, I just refused to go along with it, I refused."

It is noticeable that when Carlos speaks of nature, it is not some vague concept, but his permanent surroundings. His love for his work, the grove, and the animals he cares for coin his beliefs regarding changes in the sector. He is very critical of the transformation towards the monoculture of olives as it exists today, and also views bioeconomic transformations as correct on paper, but far from a feasible reality. In his eyes, nature is something concrete that must be protected and cared for, because it has intrinsic and emotional value for the people inhabiting it, because being a shepherd and farmer is what he wants to, and because it enables him to live a life surrounded by living nature. For him, the best way to achieve his preferred lifestyle while minimizing his negative impact on nature is by producing ecological olive oil, meaning that the use of pesticides and herbicides is cut to a minimum.

5. Discussion

The first outcome of the comparison of the types certainly is that financial resources do not seem to play a fundamentally important role in forming people's relationships with nature. No matter the type, the incomes often range around 2.500-3.000 Euros per month. Education, on the other hand, seems to be more relevant, at least when it comes to distinguishing concrete from abstract relationships. Since there are olive farmers summed up under each ideal type, it might even be possible to claim that the everyday activity of farming in itself is less important than formal education when it comes to a person's perception of nature. The clearest antagonism can be found between "progressives" and "idealists". While "pragmatics" and "idealists" at least partially share a vision of preservation, the cultural elite wants to achieve far-reaching bioeconomic transformation.

PSOs reject this, since their traditional way of working the land, adapting to changing conditions and earning their living would be massively disrupted by a concept that is superimposed upon them by what they consider outsiders like members of the administration or even the EU that is, despite providing substantial subsidies, not held in high regard among farmers that care about their autonomy and the sustainability of their livelihoods. PEIs reject a bioeconomic transformation because it would entail a further mechanization of groves, increased overall production of biomass, and therefore contribute to the dilemma of growth that the region is already facing today. From their perspective, an ecological olive grove can enrich local fauna and flora and prevent further environmental degradation.

Together with this link between PSOs and PEIs, the characteristics of the pragmatic ideal type of SRN support the main assumption of this work: A vision of ecological modernization in the form of the bioeconomy exists in contrast to the historically grown modernity of the people of Jaén. The most common type of pragmatic ideal type, together with the pro-ecological ideal type show that there is no "pre-modern" or even "backwards" relationship with nature to be found. Rather, people have always adapted to the changes in their living conditions. They do not cling to a supposedly more glorious past, they do not romanticize nature, they want to provide for their families and continue to work in a way that seems meaningful to them. Bioeconomic policies attempt to modernize that which is already modern, and this appears pointless to the farmers of Jaén.

Therefore, the only potential for movement and alliances is among the two "lower" types in the space. Pragmatic farmers might, like in the example of Carlos, develop a more abstract understanding of phenomena like the aggravation of water scarcity due to climate change and the pressure of international competition. This, combined with their rejection of bioeconomic transformation, might bring those groups together to further a social-ecological transformation that entails the protection of the current ownership structure while enabling farmers to change their mode of production gradually from traditional, low-intensity farming to ecological, low-intensity farming, with the remarkable difference of their product being valued not only for its geographic origin, but for the mode of its production.

Drawing on insights from studies on multi-level perspectives (for example, Geels 2014; 2019, Eitan/Hekkert 2023), the current situation of Jaén's olive sector can be described in terms of an established socio-technical regime that is being challenged by the external pressure, which might lead to the rise of certain innovations that are currently still niche projects (Geels 2014). The historically-grown regime of the olive sector, which is built on a relative degree of economic autonomy on the side of small-scale landowners through the organization in cooperatives, is challenged by aggravating water scarcity in the region. Ecological modes of cultivation and bioeconomic transformation are still not relevant on a wide scale, and it is yet to be seen what the future of the sector will look like. Cooperatives and the fragmented ownership-structure in the region, however, are still dominant, so even though environmental pres-

sure might rise in the future, change is not likely to be adopted without cooperatives adopting alternative methods of cultivation or organization. On the one hand, this might hinder necessary transformations towards more sustainable production, but on the other hand, the democratic organization of cooperatives is also capable of blocking attempts to concentrate power in the hands of individual landowners, since the former already (collectively) own the means of production of olive oil, technical infrastructure that is very expensive to acquire.

Jaén is therefore locked in certain path-dependencies: It seems hardly imaginable to reach far-reaching transformations without cooperatives adopting them. As Eitan and Hekkert (2023) point out, this can be beneficial and problematic for transformation at the same time: The structure of cooperatives can facilitate the adoption of reforms through established practices, while those same structures and practices might be the reason why no transformation is being adopted in the first place. A closer look into the role of cooperatives, their organization, and their development seems necessary for further research on the topic. In the future, it will also be fruitful to connect the findings of an analysis of SRN with research on hydro-social cycles (Bakker 2009, Swyngedouw 2004, Wiegleb 2016): The already existing scarcity of water and its management in the region might be a suitable indicator for power relations and overall social and economic trends. Research on the hydro-social cycle also connects an aspect of material nature to societal dynamics, so a connection to SRN research might yield relevant results, especially in agricultural regions like Jaén.

Another interesting approach for further research might be field of futures research: Various areas of everyday life, like consumption patterns and usage of different spaces such as gardens (see Moore et al. 2019) in order to become more sustainable, introduce ideas not only about what has to change in order for a socio-ecological transformation to happen, but what those aspects of life have to change into. Most notably, concepts like degrowth and agro-ecological approaches could be relevant for the transformation of Jaén's olive sector (Cid Aguayo/Latta 2015; Barlow et al. 2022). They also link back to the multi-level perspective in that they argue for civic movements and bottom-up change in order to overcome the resistance of already established regimes. However, as I pointed out previously in this chapter, in Jaén, the historically-grown organization of the olive sector in the form of democratically organized cooperatives might prevent the sector from adopting a bio-economic transformation, but also does not seem to stand against (at least judging from their members' SRN) change towards more sustainability, as long as their way of living is not fundamentally endangered.

Possible political implications therefore have to account for the specificity of Jaén's olive sector: It has been and still is a source of economic security for many people, it is largely organized in cooperatives and the analyzed social relationships with nature indicate that people's SRN are connected to this way of life: Many farmers do not want to adopt change that will alter the ownership structure of the sector, they simply want to be able to make a living off of their land. A transformation towards more sustainable methods of production, therefore, might need to start on the level of cooperatives, since they, due to their democratic organization, are able to protect the current ways of living of many small-holder farmers. More specific recommendations would require further research into the effectiveness of different policy instruments.

As has been stated previously, the typology constructed in this article is by no means comprehensive for the region of Jaén. The limitations of qualitative data are apparent: The sample size is comparably small, while the effort to analyze each semi-structured interview is substantial, leading to a smaller, although more detailed description of SRN. While it can be safely assumed that in the overall population of Jaén, more types could be identified with a bigger sample, the combination of socio-economic data sheets and interviews with individual people also yields significant advantages: Identifying underlying structures of

meaning in a person's relationship with nature and regarding changes in their life would not be possible without a semi-structured interview in which individuals have a chance to set the agenda of the conversation (within certain limits). People therefore have the ability to reveal what is central to their beliefs, often discussing *why* they believe in certain things and going into great detail on what really matters to them and *where* those beliefs come from.

6. Conclusions

This contribution applied the concept of a space of social relationships with nature as it was established by Eversberg et al. (2022) to the context of rural Southern Spain. The application revealed several results: Some light could be shed on the question if a bioeconomic modernization is desirable for the people living in the region. Two of the three ideal types found were in opposition to this pathway, but differed in their respective objectives connected with this path. Those differences could be identified by analyzing the SRN. The application of this approach was fruitful not only in the sense that various SRN were found even within a relatively small sample, but, more importantly, latent conflicts between them could be traced back to the ways in which the interviewed individuals relate to their natural environment.

The establishment of the three ideal types is by no means a complete picture, but shows that there are overarching factors uniting or dividing the different SRN. By presenting quotes from the qualitative material, SRN, and hints about people's wishes for a future development of the olive sector could be identified. While PEIs and PSOs in the lower half of the space seem to be closer to each other regarding their SRN, and GOPs seem to be somewhat "off", this points out that alliances and potential shared visions for the future of the olive sector are more likely to exist among members of the former two types, possibly conflicting with GOPs. However, this does by no means say that power relations are strongly favoring the types in the lower half of the space, since the influence of bigger land-owners, members of the administration and academia (who form the upper type) is not measured here in comparison to the other types. The situation in Jaén could be described as a non-conflict, possibly based on denial of the severity of future crises, since all groups are aware of the necessity of change, but there is hardly any unity among the interviewed stakeholders. The differing types that could be identified in this contribution do, however, give an impression of possible futures and interests that more often than not are, in fact, conflictive.

Disclosure statement

The author reports there are no competing interests to declare.

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