Returning to Green Livestock Farming? Sustainability Discours on Cattle Ranching in the Context of the Green Transition in Argentina

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Sustainability Discourse on Cattle Rearing in the Context of the Ecological Transition in Argentina.

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Table of Contents

Introduction

Figure 1: An Argentinean cow magnet from a souvenir shop in Buenos Aires.

Could traditions save our planet? Might a return to the past be the answer to the meat industry's sustainability issues? As there is increasing scientific evidence for cattle's contribution to greenhouse gas emissions, humans have introduced increasingly creative solutions to tackle bovine-origine methane (see (Giroud, 2019)). Other farmers and agricultural engineers argue that the problem is not the cattle, but the conditions and methods of production applied in modern industrial livestock production. Their solution: more nature, less technology. This means considering the cattle as ruminant animals, rather than beef machines, integrating them into the local ecosystem instead of enclosing them in factory farms, and renouncing external chemical inputs.

At the same time, the industrial-scale agriculture of the Green Revolution is often hailed as a great achievement of humanity (Holt-Giménez et al., 2021). Backtracking on progress seems counterintuitive. Nevertheless, there is frequent criticism around key technological innovations from the Green Revolution, namely the use of toxic agrochemicals and genetically modified crops, as well as the patents around these products. This criticism is articulated across countries, cultures and professional fields. However, the costs of the Green Revolution are an unequal burden, mostly faced by smallholders and family farmers in poorer countries, who could not reproduce the same

economies of scale as large-scale producers or profit from the same institutional support as farmers in developed countries (ibid.).

For emerging markets and developing economies[1] specialized on agrarian exports, having a cost-efficient and competitive agricultural sector is fundamental. In a globalized meat industry, expansion strategy is key, and there is little concern for local issues, with big sums of money involved (Belk, et al., 2014). At the same time, cutting costs by reducing reliance on external inputs paid for with disadvantageous exchange rates is an appealing strategy for producers in countries with high inflation. Both aspects are especially salient in the case of Argentina, who has a historic reliance on agricultural exports (Richardson, 2008). As the sustainability of agrarian produce from South America is coming under increasing scrutiny for its environmental impact, paired with continued economic crisis and domestic political discontent, finding solutions to promote Argentinean meat production as an international brand is imperative.

Recent developments in agricultural production following the Green Revolution, have sustainably altered the production methods and structure of food systems in the Pampa region[2] (Gras, 2009). Most notably, there has been a move away from traditional family farm producers towards more productive, industrial-style large scale farms managed by agribusiness (Vergara-Camus & Kay, 2017). This development has been well received by business leaders and governments, as the increased productivity leads to an increase in lucrative exports and thus more tax revenue for the state (ibid.). However, this modernization of agriculture triggered a pushback of traditional farming models which are part of the Argentinean cultural identity (Gras, 2009). Yet, there is resistance from smallholders and family farmers (Comerci, 2014), and multiple alternative models for rural existence have been proposed.

Aim

This thesis seeks to examine the Argentinean political discourse on livestock practices in the context of the green(er) economy, looking with, beyond and around cliches to examine the contemporary development of defining sustainable best practices for the sector. The research

[1] According to the IMF, there is no formal definition of an emerging market, and the term defies a uniform narrative, besides a sense of economic growth. In general, attributes of emerging markets include progress in reaching middle-income levels, greater global economic relevance and market access. It is so to speak a step away from a developed economy. There is some overlap between an emerging market and a middle-income economy, as emerging markets have bigger sized economies compared to developing nations. Furthermore, they are economies that can produce higher-value-added goods, integrate in global financial markets and participate in global trade.
A developing economy in general perform poorer in economic indicators, having a smaller market, lesser growth, more limited infrastructure and less industrialization. However, the IMF adverts that the distinction between emerging markets and developing economies is imprecise. Some emerging markets are developing economies. (Dutagupta & Pazarbasioglu, 2021)

[2] Understood here in its ecological sense, not in reference to the Pampa province of Argentina.

project aims to clarify the role of Argentina's agricultural traditions in addressing sustainability issues of the livestock sector applying argumentative discourse theory. The study will identify the dominant definitions that determine which practices are promoted as good practices within sustainability policies, considering mainstream and alternative conceptions of relations within food systems. Thus, the analysis will explore the dynamics that determine the potential transformation of the livestock sector into a green economy sector, highlighting the dominant discourses and practices surrounding beef production in Argentina.

Relevance

This research approach is significant because it critically addresses salient contemporary topics of sustainability and food security, applied to the case study of cattle rearing in Argentina, a major global player in the livestock sector. By examining how traditional agricultural practices intersect with modern sustainability goals, the study provides valuable insights into the challenges, opportunities and pitfalls of attempting to shape agriculture into a green economy sector. It contributes to a wider debate on commodity reliance for development, addressing the sustainability-aspects of the topic. It also comments on the political economy of livestock production in a South American context while addressing ethical questions on human-nature relationships, offering an environmental humanities perspective to Latin American Studies.

Although there is plenty of literature on livestock production and historic economic development in the country, this study connects to earlier studies on neoliberalist policies in Argentina. It establishes dialogue with critique of the green economy, offering a critical, multi-dimensional and interdisciplinary approach that explores alternatives to natural resource-dependent development.

Research question

With this project, the following question should be answered:

To what extent does sustainability discourse on livestock production draw from cattle ranching traditions when constructing strategies for integrating beef production into a green economy in Argentina?

This question will be addressed first by a literature review that dives into the theoretical frameworks of sustainability and the green economy, extensive and intensive livestock farming, agroecology, and the neoliberal rationality. Next, the context of cattle rearing in Argentina will be addressed and data collection outlined, followed by an analytical chapter which will describe the methodology applied and interpret the results. Finally, the conclusion will summarize the findings, explain possible extensions of this research project and draw a final conclusion.

Methodology

The research will employ critical argumentative discourse analysis following the principles outlined by Lalander and Merimaa (2018) following Hajer (1997). This involves analysing qualitative data

collected through semi-structured interviews with professionals from the livestock sector and other relevant stakeholders, as well as during field visits with consenting informants. Additionally, some visual materials such as social media content, web presence and propaganda will be consulted.

The critical argumentative discourse analysis will enable the researcher to deconstruct the narratives and identify the power dynamics at play in the discourse surrounding sustainability in livestock production. This approach is context-focused and reduces the risk of reproducing biases by fostering criticality. Furthermore, it encourages engagement with the context, ensuring a broad scope that accounts for changes over time. Lastly, it confronts different perspectives without hierarchizing them, allowing marginalized and alternative views to receive equal treatment to mainstream discourses.

1. Theoretical approaches to sustainability

Literature Review

Sustainability and good practices in cattle rearing are two concepts that are mostly perceived as positively connotated. However, both are open to interpretation and imply different things in different situations. Arguably, the sustainability in ecological policies and the good in best practices need to be carefully defined to carry any meaning and effect. Indeed, there is great, and often highly emotional, debate on the place and role of livestock production in a green economy, which ranges from the total exclusion of animal products to the promotion of cattle ranching as a sustainable activity.

Questioning the ethics of meat production is a complex endeavour on which different thinkers of different cultures and epochs have intervened. Nonetheless, in the view of an ever-growing global population and an ever-increasing use of resources, dealing with the (side) effects of livestock production has gained in urgency. While not eating (certain types of) meat continues to be a religious act and ethical consideration, scientific investigations have highlighted the environmental consequences of meat production. Furthermore, scholars in political economy indicate that the environmental impact is only one dimension of externalities that meat production generates (see Schneider, 2014). Indeed, to understand the role that meat production plays in contemporary global and local food systems, sustainability should be understood in a wider sense than just in relation to environmental matters.

Behind the multitude of propositions to foster sustainable production methods in the livestock sector there are different theoretical views. There is literature from agrarian and natural sciences that compares and contrasts production methods with the aim of identifying the most suited ones to a certain ecoregion, climatic condition or (a) green economy. Meanwhile, scholars from social sciences have examined the societal role of cattle ranching and the effects that changing productions norms have had on rural populations. Notably, researchers in political economy with a (renewed) interest in dependency theory, such as Cáceres (2014), have highlighted how the distributions of means of production, capital and land ownership in meat production and consumption have reinforced inequalities between and within countries as well as existing dependencies in the global South (see Vergara-Camus & Kay, 2017; or Weis, 2013). In sum, sustainability is interpreted as a central issue for contemporary livestock production. However, there is little consensus across schools of thought of what sustainability means for cattle rearing and how it is to be achieve. Indeed, authors from different theoretical backgrounds, notably from neo-Marxist traditions (see Goodman & Salleh, 2013; or Lalander & Merimaa), criticise more neoliberal approaches as essentially non-sustainable (see Arsel, Pellegrini & Mena, 2019). A brief

review of the existing literature will serve as an attempt to ground these debates within the Southern Cone context.

In order to understand how the sustainability debate and livestock production are interlinked, the following will first provide a critical approach to the concepts of sustainability and the green economy. After that, different approaches to cattle rearing will be discussed, including the implications they have for defining sustainable best practices in livestock production. A special focus will be set on agroecology, building on its potential to holistically reflect a multi-dimensional approach to sustainable production methods. Both the discussion of agroecology and that of livestock production are grounded in the Argentinean context, and special attention will be paid to the political economy of livestock production in this case study. Therefore, this section will close with a reflection on how developments in Argentina's economic history and neoliberal political choices have shaped the peculiarities of this case study.

1.1. Sustainability and the green economy

Ensuring sustainable consumption and production patterns is part of the United Nations Sustainable Development Goals (General Assembly, 2015). The idea is to realize a shift towards modes of consumption and production that promote "economic and social development within the carrying capacity of ecosystems" (ibid.). The United Nations (UN) delegates to the member states to define this ecological transition and to devise appropriate measures to achieve the goal of sustainable consumption and production. The concept of sustainability in relation to consumption and production patterns remains rather vague and open to individual interpretations, thus exposing it to appropriation by different actors.

Paragraph 28 of the 2030 Agenda specifies that the implementation of these sustainable consumption and production patterns is a public-private partnership initiative, which should involve governmental, international, corporate actors, as well as other non-state and societal actors (General Assembly, 2015). Thus, the UN proposes a definition of sustainability within the parameters of the contemporary capitalist system. It is not about creating a new mode of production, but about realizing an ecological transformation of the current system towards an economic model that respects the limits of the earth, without questioning the fundamental modern economic logic.

On the other hand, this concept of green economy, or ecological capitalism, faces criticism since the beginning of its proposition for being simply a new proposition to continue the hegemony of international capital (Goodman & Salleh, 2013). Indeed, the concept of the green economy does not suggest a redefinition of the notion of neo-colonial development nor of neoliberal market logic

(ibid.). Nor does the concept resolve potential conflicts between economist and environmentalist visions of development and, thus, does not represent a solution for conflicts regarding the environment (Lalander & Merimaa, 2018).

At the same time, the premises of the green economy offer new opportunities for economies, especially developing ones, to attract financial resources. Through highlighting sectors of the domestic economy as especially environmentally friendly, governments can reposition their country in the global market and add attractiveness to their economy (Mendoza, 2018, p. 179). In the South American context, the green economy discourse opens possibilities to reconcile a discourse of developmentalism and national sovereignty with insertion into the global market economy (Lalander & Merimaa, 2018). More specifically, the green economy discourse allows governments to avoid having to terminate economic policies favourable to extractivist activities and other unsustainable sectors such as agribusiness and, at the same time, retain legitimacy in the sustainability discourse (Mendoza, 2018, p. 172). Thus, essentially (centre-) left governments can continue rent schemes and capture export funds for their social programs, avoiding costly political conflicts, and continuing political alliances with important economic sectors, agribusiness being one of the central ones (Vergara-Camus & Kay, 2017).

Although the SDGs suggest that economic activity and development and environmental protection can be coordinated and mutually beneficial, other interpretations of sustainability openly oppose economist definitions of development. For some more critical to capitalism, the "green economy" agenda is simply a manifestation of a wider move for the financialization of the environmental agenda (Goodman & Salleh, 2013). According to capitalism critics in Neo-Marxist tradition, true sustainability is achieved through a collective and collaborative practice of coexistence with nature and respect of natural boundaries (ibid). Environmental degradation and socioeconomic inequalities should be addressed by democratic-deliberative "mobilizations and building of alternatives" that intersectionally "overcome the fragmentation and atomization of the struggles, encouraging convergence and common agendas" (ibid.). The end goal of this should be environmental and social justice, which stem from "the commodification (marketization) of life, nature and the marketization of the commons" (ibid.). Instead of "green growth", there should be a "qualitative transformation" towards a care-based sustainable economy grounded on non-monetarized values (ibid.). In this perspective, regeneration and renewal in symbiosis with nature is proposed as a challenge to the "abstract managerial ecologism" of the hegemonic sustainable development models (ibid.).

This debate around "green growth" and true sustainability can roughly be described as a discursive conflict between economism and ecologism, which represent distinct worldviews and understand

human-nature relationships and values differently (Lalander & Merimaa, 2018). Economism entails support of market capitalist principles and a "managerial approach" to environmental issues (ibid.). It contains an anthropocentric and pragmatic stance towards nature, referred to as environmentalism, which is the conviction that there is no need to adapt current values or patterns of consumption and production to engage with environmental problems (Dobson, 2007, p. 2). Instead, strategies of modernization, societal restructuring and technological innovation are proposed as the solution to ecological challenges (Lalander & Merimaa, 2018). This is rejected by ecologists such as Dobson, who embrace ecocentrism and emphasize the value of ecological systems, including non-living components of the environment, natural processes and relationships (ibid.). Ecologism goes beyond capitailsm critique as it rejects evaluating environmental issues from the human standpoint only and prioritize environmental concerns in all situation, since nature has intrinsic value (ibid.). Achieving sustainability is presupposed to only be possible should humans radically change their relationship with the nonhuman natural world and adapt their mode of social and political organization (Dobson, 2007, p. 3).

Ecologist and economist ideologies are mutually exclusive and engage different preclusive development models. Ecologists strictly reject extractivism and prioritizes nature protection (ibid.). Economists value social development and economic growth besides sustainability (Goodman & Salleh, 2013). They propose a pragmatic renewal of global capitalism with flexible and practic solutions that are responsive to indivudal situations, rather than ruled by strict moral principles (Lalander & Merimaa, 2018). In this model, "good life" can be measured according to socio-economic indicators of "human well-being, such as GDP, economic growth rates and poverty indexes" (Arsel, Pellegrini, & Mena, 2019). Ecologists on the other hand, see the concept of socio-economic development as problematic in itself because it excludes all non-human perspectives (Lalander & Merimaa, 2018). However, as these philosophies have clashed and engaged over time and genuine environmental concern spread, the conceptual boundaries have relaxed and broadened (Lalander & Merimaa, 2018). There are both capitalist and socialist ideologies that more or less strictly reject extractivism and there are multiple development models that value nature and life to different degrees, being more or less anthropo-/ecocentric (ibid.).

Agriculture and rural community life have served as a projection screen for several utopias and alternative development models (Pais, 2008, p. 27). While it is notable that such "back to the roots" approaches often do not include meat production and cattle ranching as part of their alternative visions (ibid.), there are nonetheless initiatives that are trying to sell sustainably produced meat. Some buzz words include farm to table, kilometre zero, biodynamic farming, head to tail or regenerative pasturing. Arguably, none of these concepts are really new and often embrace a

reconsideration of more "landed" production methods that are more accountable of resource use and animal life, being often particularly attached to the local context (Dutra Keiran & Vasquetto, 2022, p. 64). What they have in common is that they emphasize des-industrialization of livestock production "minimizing external inputs" in feed, toxic contaminants and fossil fuels, and net productivity of multiple products per land area, rather than a high-yielding one (Weis, 2013). Besides being (more) environmentally sustainable, such methods also generate a greater social sustainability, providing rural jobs by being more labour intensive (ibid.). Farms that embrace alternative production methods, notably in the Global South, are mostly small scale and family run and/or centred around a form of local collective organization (ibid.). Indeed, Comerci (2014) relates that family farmers, local collectives and small-scale cattle ranchers are at the forefront of fighting the overexploitation of fields by unsustainable livestock production. Notwithstanding, sustainable methods represent a small share of the total meat market and mostly depend on personal contacts and direct marketing for sells (Belk, et al., 2014), not yet truly impacting the global ecologic footprint of livestock production (Weis, 2013).

There is no fixed strategy for fostering sustainable consumption and production in the livestock sector yet (Gonzalez Fischer & Bilenca, 2020). While some call for the (drastic) reduction of meat and dairy products (Weis, 2013), others have proposed to integrate efforts to protect certain natural environments, such as grasslands and forests, into practicing cattle rearing (Gonzalez Fischer & Bilenca, 2020). Indeed, Gonzalez Fischer and Bilenca (2020) demonstrate that the (un)sustainability of livestock farming to a large extent depends on the techniques used and the management applied to the herds. At the same time, the authors note that there is a wide variety of practices, even within one country (ibid.). For efforts to increase sustainability in cattle rearing, Gonzalez Fischer and Bilenca state that it would be necessary to define best practices that are considerate of the diverse situation in the sector. They also advise applying pairings of advances in breeding, pasture management and agrochemical with technology use (ibid).

There is no time horizon for when sustainable methods will prevail in livestock production, and the overall scenery of multilateral negotiations on climate policies does not inspire confidence in critics (see Weis, 2013). In fact, Weis (2013) voices doubts if governments and legislators are able and willing to resist the political pressure of multi-national agrobusiness (ibid.). As Vergara-Camus and Kay have shown (2017), in countries that are especially dependent on agricultural exports, politics and agribusiness are so closely intertwined, that even left-wing governments are reluctant to introduce reforms that could upset a major economic sector and thus upend important cashflows to their political initiatives. Mendoza meanwhile indicates that in rentier states such as Argentina, there is a conflict between the "green" and extractivist agendas, as "popular

environmental fronts of support for sustainable development" clash with the extractive enterprises, including agribusiness, that generate wealth, revenue and employment which directly benefit voters (Mendoza, 2018, p. 182). As the government actively promotes extractivism as part of national socioeconomic development, the "green" parts of the green economy are put to deliver material improvements and promote political goals rather than serve the environmentalist cause in itself (Mendoza, 2018, p. 186). By creating such an "extractive imperative" that upholds environmentally damaging economic activities for the sake of national development, alternative development visions and strategies are crowded out (Arsel, Pellegrini, & Mena, 2019). It is therefore questionable if (individual) states will push for more sustainable food systems or attempt to include livestock production in a green economy.

1.2. Agroecology

For many development organizations, the vehicle to an environmentally friendly and socio-economically resilient alimentary production is agroecology (Holt-Giménez et al., 2021). Agroecology is a (counter-)movement addressing the increasing capitalization and industrialization of agriculture following the Green Revolution and its negative consequences for peasants and ecosystems (ibid.). It is often represented as a vehicle for greater resilience of farmer's and crops to external shocks of different origins (ibid.). While Agroecology represents "a new approach and paradigm" in agricultural sciences (Sarandón & Marasas, 2015), it builds on observations from biology, cultural anthropology and ecology to understand how and why "indigenous and diversified peasant farming systems" managed to build resilience and preserve biodiversity while generating surplus production (Holz-Giménez et al., 2021). Therefore, Agroecology is both pluriepistemologic and multidisciplinary at its core (Sarandón & Marasas, 2015). Indeed, Wezel and Soldat (2009) argue that it is movement, scientific discipline, and practice at the same time, and is increasingly used with different meanings by different actors with different interests (Sarandón & Marasas, 2015).

Interestingly, agroecology conceptually predates the current sustainability debate but roughly overlaps the beginning of the Green Revolution, since it emerged from the first ecologist movements in the 1960s which opposed the political and public ignorance around the negative consequences of industrialization (Wezel & Soldat, 2009). Academic and public interest in agroecology increased over time, notably in the late 1980s and 1990s as the methods of the Green Revolution unfolded, making the negative externalities of industrialized farming more visible (Sarandón & Marasas, 2015).

Activists and academics in the Americas have played a significant role not only in the development but also in the popularization of Agroecology as a method, movement, and scientific discipline. The origins of agroecology are relatively remote, and link to an US-based Russian agronomist who suggested the term around 1930 to describe the application of ecological methods to commercial crop plants (Wezel & Soldat, 2009). However, the expansion of agroecology as an academic field of study stems from a different context and can be placed in the late 1970s and 1980s, when researchers developed an interest about the knowledge and practices of indigenous and peasant farmers in a Third World context, notably in Latin America (Altieri, 2015). By the time first classes and training courses were offered by individual institutions in Colombia, Mexico and Andalucía (ibid.), an evident focus on tropical and subtropical zones had been set, which attracted aid organizations and NGO's attention to agroecology for development topics during the 1980s (Wezel & Soldat, 2009). Furthermore, during this period, agroecology as a practice integrates into a context of mobilization around rural social questions, adding a participative and engaged orientation to the academic discipline (Cuéllar Padilla & Sevilla Guzmán, 2018). Aided by this coalition of scientists, NGOs and social movements, agroecology consequentially spread "farmer-to-farmer to hundreds of thousands of smallholders" by the mid 1990s (Holt-Giménez et al., 2021).

In the aftermath of the Green Revolution, agroecology's main virtues are that it is a cheap, but effective mean to "restore productivity and ecosystem functions to degraded farmland" (Holt-Giménez et al., 2021). It is thus especially attractive for small-holders in the Global South, since it extricates them from the increased capitalization of agriculture that went with the chemico-mechanic intensification of production methods (ibid.). Agroecology encourages a diversified, systemic approach to food production, where inorganic, external inputs are excluded in favor of making use of ecosystemic, on-farm resources (ibid.). This should foster biophysical and market-based resilience by promoting a risk-averse, diversified and self-sufficient farming style (ibid.). According to Holt-Giménez (2021), grassroot organizations have seized on the potential of agroecology to create a "just transition" from a "fundamentally extractive" ecological and economic systems to "resilient food systems" that address the redistribution of resources in a way to render life viable in the countryside.

Although agroecological practices do a functional job preparing for extreme weather as well as climatic conditions and to respond to disasters, it has a harder time reacting to socio-economic issues (ibid.). In itself, agroecological methods are not dependent on scale and can also be applied on larger farms. However, until now, agroecology is a minoritarian approach in food production and agronomic research in general (ibid.).

In Argentina, agroecology represents a minority of production systems and technical approaches (Sarandón & Marasas, 2015). Nonetheless, several peasants' and family farmers' organizations and NGO's as well as to a much lesser extent government programs and educational institutions promote agroecology as a development strategy for sustainability and development in small-scale production (ibid.). For instance, the UN-affiliated FAO has highlighted the agroecology experience of a mixed agriculture and livestock farm in the Buenos Aires province as an inspirational initiative of great potential for the Pampa region (Food and Agriculture Organization of the United Nations, 2016). The example cited is also exemplary, as it highlights the decentralized approach that agroecology promotion in Latin America often takes, where educational institutions will reciprocally collaborate with pioneering individuals and other organizations to create context-specific knowledge and strategies on agroecology (Altieri, 2015).

1.3. Extensive and Intensive livestock farming

According to the different ways one conceives human-animal and human-nature relationships, there are different ways to arrive at the stake. All approaches to cattle ranching of course have an end goal in common, namely that animals are raised to later be slaughtered for human consumption. The process of cattle rearing itself though, takes visually distinct approaches. In (social science) literature, two main categories are established, extensive and intensive. However, these are overall terms for a variety of methods.

In practice, the political hegemony of agribusiness, in the Argentine case, results in the industrialization and consequent intensification of agricultural practices (Cáceres, 2014). Consequently, the country is witnessing a reduction in the participation of small producers and family livestock farmers in relation to the expansion of global capital in the Argentine agricultural sector, thus transforming rurality and the mode of meat production (Gras, 2009). Argentine livestock farming is undergoing major changes in the valorisation and internal performance of the sector. Agribusiness and capital are increasingly gaining in territory, influence, and valorisation, coming into conflict with small producers and family livestock farmers who are competing for the same spaces and resources (Comerci, 2014). Two modes of production confront each other here: intensive or agro-industrial production (capital and technology intensive) and extensive or agrosocial production (traditional pastoral, land-intensive livestock raising) (Loewy, 2019), each with its own discourse and propositions towards sustainability.

In the past decades, beef production has come under increasing public and scientific scrutiny for its environmental impact. Gonzalez Fischer and Bilenca relate in their 2020 study that this originally touched upon the greenhouse gas (GHG) emissions generated by this industry, which

positioned the sector as one of the main sources of human induced GHG. This involves both methane emissions by the cattle itself as well as GHG releases from deforestation associated with feed production (Gonzalez Fischer & Bilenca, 2020). Therefore, there have been calls to reduce beef consumption and to change beef production systems (ibid.). Nonetheless, Gonzalez Fischer and Bilenca estimate that beef production is likely to grow and highlight the importance of further studying beef production systems and their environmental impact going beyond GHG emissions (ibid.).

Gonzalez Fischer and Bilenca (2020), noting that there is a wide range of beef production systems worldwide, since they are adapted to "local environmental characteristics, culture and economies", stress the necessity of accounting for the local context and diversity of systems when trying to describe and/or optimize the sustainability of beef production. They also retain that trade-offs occur when moving from one production system to another, and that different systems have different strongpoints and pitfalls (ibid.). Nonetheless, studying the Argentinian case, they conclude that there is potential to increase beef production without increasing its environmental impacts should best practices be followed (ibid.). Comparing more intensive systems to more extensive ones, they observe that greater intensity is associated with higher ecotoxicity and more damage to biodiversity, while greater extensity correlates with higher GHG emissions and erosion per kg of beef produced (ibid.). Again, they remark that there are variations in the effect and need of changes in practices across regions (ibid.). In conclusion, there is probably no one-size-fits-all approach but rather a set of individualized best practices to be adopted, which highlights the importance of self-set goals by the sector and general agency of producers (ibid.).

Taking a multi-dimensional approach to sustainability of livestock farming, Litre et al. (2007) highlight the centrality of Gaucho family ranchers in the creation of a more holistically sustainable beef production chain in the Southern Cone context. They postulate that traditional Gaucho cattle ranching could contribute to the preservation of the Pampa biome and provide a crucial source of income for rural populations if well managed (Litre et al., 2007). In their conclusion, they also highlight the centrality of family cattle ranching for transmitting cultural values and fomenting social adhesion in the Pampa region (ibid.). At the same time, they stress the need for proper management of the activity in order to guarantee a positive influence on the economic, environmental and social sustainability of cattle ranching in the Pampa (ibid.).

Although family-run, "open-field" cattle ranching was the historically dominant mode of production in the Pampa ecoregion since the early 20th century (Comerci, 2014), the expansion of agro-exports in the context of the commodities boom has promoted the hegemony of big agrobusiness in the agrarian and political structures of power (Lapenga, 2017). Under the

paradigms of neoliberalism, a reevaluation of territoriality occurred, whereby land and agropecuary production became commodities to be invested in and exchanged (ibid.). As a result, agroindustrial production strategies expanded with the agricultural fronteer, claiming more and more land and a bigger share of national production, notably exemplified by the emergence of soybeans as a predominant crop, used mainly as cattle feed (ibid.). Thus, agrobusiness came into conflict with traditional cattle ranchers, as technology intensive, export-oriented agricultural production came to be the favoured strategy for the agrarian sector in Argentina (Gras, 2009). As their economic and political standing wanes, traditional family cattle ranchers have to compete with agrobusiness for natural and economic resources, while at the same time resisting territorial dispossession and the disappearance of a traditional way of life (Comerci, 2014).

With reference to the Pampa ecoregion, De Rito et al. (2020) establish that demographic characteristics matter for how nature and the environment are perceived and interpreted by people working in the agricultural sector. According to De Rito et al. (2020), farmers who have an "emotionally and/or physically close connection with the farm" have a stronger perception of the utility of nature, human-nature relations, and of environmental degradation. They state that these farmers are less associated with intensive land management practices and more often have a family background in farming and rural work (De Rito et al., 2020). However, their paper also found that farmers' awareness of environmental degradation and ecosystem services did not significantly impact their practices (ibid.). For the authors, this is due to the high competitiveness pressures in the Argentinian agricultural sector, which forces producers in the Pampas to adopt certain methods even if they are contrary to their views on environmental and biodiversity conservation (ibid.). As a result, the authors stipulate that "guidance criteria for sound environmental management strategies and policy instruments for the conservation of biodiversity and the provision of environmental services" should be established which account for the particular "ecological, social, and economic characteristics" in a particular region (De Rito et al., 2020).

What true sustainability means for the livestock sector is yet to be defined. Adherents to a certain production method will stress their strategy as especially economically and/or ecologically sustainable. However, as discussed above, sustainability can be defined according to multiple criteria and there is therefore some debate on which approach to cattle rearing is the most sustainable. Indeed, in some settings it is questionable if livestock farming can ever be a sustainable activity (Gonzalez Fischer & Bilenca, 2020). Theoretically, it should be possible to model a best possible production case for farming a certain piece of land according to "hard science" (ibid.). How such academic propositions are adopted in regulations, business practices and public policies follows other rules entirely.

Overall, it seems to be easier to define what unsustainable methods are in the livestock sector. Land-grabbing and dispossession are topics often addressed by Neo-Marxist scholars as direct consequences of the intensification of meat production. Schneider (2014) introduces the concept of meat grabbing to reinforce the direct link between a growing meat consumption and "the global land rush". Her paper illustrates how industrial meat production generates a distorted sense of food security, where an unsustainable social and ecological situation in rural areas is the price accepted for the developmental comfort of meatified diets. Schneider documents the case of China, where expanding agribusiness and industrially intensifying livestock production was seen as the way forward to grow meat consumption of a domestic consumer class. Schneider's Chinese case study is directly linked to the displacement of rural populations in South America, where intensive monocultures for animal feed are replacing established family-run production (ibid.). According to Gras (2009), this capital-led ownership replacement is dangerously unsustainable in the long-term as it destabilizes local social configuration, economic livelihoods for family farmers and domestic food security. Indeed, Cáceres (2014) explicitly establishes that expansion of industrial agriculture in Argentina generates socio-environmental conflicts by appropriating natural resources from local ecosystem and dispossessing small(er) scale local producers. Gras (2009) notes the need for public policy to mediate an unsustainable situation.

In contrast to unsustainable intensive livestock production, Neo-Marxist scholars position local family producers that are rooted in the land (Comerci, 2014), and/or small scale producers that capture emissions by the way they work the land (Weis, 2013). These models are not explicitly extensive, and Gras (2009) relates that for many family producers decreasing their acreage allowed them to achieve economic sustainability and continue their activity. She also describes how some other family farmers have progressed to "family entrepreneurs", who associate with external partners to improve their business (Gras, 2009). Indeed, as the personal experiences detailed by Keiran and Vasquetto (2022) relate, intensification is also practiced by family livestock producers. As Gonzalez Fischer and Bilenca (2020) maintain, sustainability in cattle rearing does not follow a simple matrix of sustainable/unsustainable, but rather a multidimensional and context-dependent model.

Despite this, the fact remains that the current dominant model of livestock production, notably in South America, is environmentally damaging and socially destabilizing (Schneider, 2014). Nonetheless, regional governments, both right and left-wing, have been maintaining policies that favour and promote the activities of agrobusiness since at least the 1990s, if not the 1970s (Vergara-Camus & Kay, 2017). To maintain national income that could be directed towards popular social programs and promote economic growth, but to, at the same time, appease powerful interest

groups, governments sustain policies favourable to industrial-scale livestock production rather than effective programs benefiting rural families (Cáceres, 2014). Vegara-Camus and Kay attribute this to a rentier state model that prioritizes the demands of clientelized groups, such as urban workers or agribusiness, over the interests of more marginalized populations. They predict that as long as this model continues unchallenged, the current hegemony of unsustainable agricultural practices will continue (Vergara-Camus & Kay, 2017). Like Weis (2013), they predict that real change will come from rural movements and civil society organizations (Vergara-Camus & Kay, 2017).

1.4. The Neoliberal rationality in the Argentine food systems

The historical reasons for agribusiness' dominance in South America has structural, political, and most importantly, economic reasons. The Argentinean agrifood system has experienced major changes in the last half a century, besides the technical developments of the Green Revolution, which have upended the socioeconomic relations in food production (Teubal & Rodrígues, 2001). Teubal and Rodríguez note that the main factors behind these transformations were a series of macroeconomic policies and economic developments related to the structural adjustments, privatization efforts and openings to globalization undertaken notably in the 1990s (Teubal & Rodrígues, 2001). As a result, the authors argue that the neoliberal transformations to Argentinean agrifood systems have contributed to "an increasingly polarized and "de-articulated" society", which has seen a rise in income inequality and a decrease in employment and wages (ibid.).

Teubal and Rodríguez also relate that these processes have affected especially hard independent farmers, smallholders and rural workers, who started abandoning their production from the 1990s onwards and got caught in a process of pauperization (ibid.). They see economic, institutional and technological reasons for this. On one hand, the liberalization and deregulation policies left them more exposed and vulnerable to the international price fluctuations for agrarian produce. Furthermore, increasing industry power due to vertical integration, concentration, and agglomeration of capital by multinational players led to the imposition of production conditions and prices unfavourable to rural labour and land-based production. At the same time, the institutionalized technologies of the Green Revolution increased dependencies on technologies and other external inputs that profited industry players more while reducing profit margines for the rural producers (ibid.). Overall, these developments, notably at the very beginning of the food supply chain and at the very end at distribution, were highly favourable to capital and promoted the economization of food production. The global socioeconomic consequences for the nation

meanwhile were destabilizing, as significant economic, productive and political power is transferred towards agrobusiness corporations (ibid.).

The "structural readjustment" market liberalization policies that Argentinean governments undertook from the late 1980s onwards and which deregulated food systems in the country (ibid.), were part of a wider push by international consensus and multilateral institutions to liberalize global trade and open up markets to international capital, thus reorganizing state governance according to managerial and entrepreneurial principles (Brown, 2015). According to this neoliberal logic, Brown writes (2015), "persons and states are construed on the model of the contemporary firm". Brown continues that neoliberalism expects "both persons and states" to behave themselves according to strategies that "maximize their capital value in the present and enhance their future value, […] through practices of entrepreneurialism, self-investment, and/or attracting investors". Saidel (2015) evaluates that under neoliberal logic, the state should be governed by the markets, rather than trying to regulate and intervene in it. Consequently, it becomes unnecessary to intervene to amend inequalities (Saidel, 2016). Rather, the only social policy subscribed by neoliberalist thinking is economic growth (ibid.). In the neoliberal order, political ends are replaced by economic framing and ends (Brown, 2015), and policies are analysed according to the associated costs and benefits (Saidel, 2016). This, Brown argues (2015), remakes the state as democratic state commitments, such as equality, inclusion and liberty, are subordinated to competitiveness, economic growth and capital enhancement. Hence, "the state's table of purposes and priorities has become indistinguishable from that of modern firms, especially as the latter increasingly adopts concerns with justice and sustainability", Brown writes.

As the results of neoliberal free-market affirming policies Brown cites *intensified inequality, crass or unethical commercialization* "of things and activities formerly considered inappropriate for marketization"*, economic havoc* "wreaked on the economy by the ascendance and liberty of finance capital", and the *ever-growing intimacy of corporate and finance capital with the state* (Brown, 2015). This confirms Teubal and Rodrígues observations that the liberalizing and deregulating macroeconomic policies in 1990s Argentina led to increased income inequality and un(der)employment, the financialization of food production, greater exposure and vulnerability of producers to international price fluctuations for agricultural goods, and the elimination of credits for small-scale producers (Teubal & Rodrígues, 2001). Indeed, Teubal and Rodrígues description of post structural adjustments agrifood systems fits Brown's observations that under neoliberal logic, "fields, persons, and practices are economized in ways that vastly exceed literal wealth generation" (Brown, 2015).

While for Brown the "profoundly destructive" consequences of neoliberal policies are clear, the ways out of neoliberalism and a potential post-neoliberal future are unclear and essentially come down to struggle and rethinking (Brown, 2015). At the same time, she remarks that the success of neoliberal rationality is reflected in "the lack of a scandalized response to the state's new role in prioritizing, serving and propping a supposedly free-market economy" (ibid.). Her work *Undoing the Demos* theorizes a near-future where liberal democracy has been completely eroded by neoliberalist rationality and public values and goods have been dramatically curtailed (Brown, 2015). Reaching an alternate future for her, would include reaching "beyond the struggle for existence and wealth accumulation", in whatever humanistic philosophical tradition (ibid.).

Brown establishes with Foucault that the neoliberal framework is inadequate to address the problems within it, as it relegates "the overall exercise of political power on the principles of the market" which transforms "enactments of the principles of justice" (Brown, 2015). Goodman and Salleh (2013) write that neoliberal initiatives can acknowledge that the present is experiencing multiple spiralling crises. According to them, it is not that ecologism and sustainability do not exist in a neoliberal framework, but that "ecological" sustainability is translated into "economic" sustainability and subsequently to "free markets". Neoliberalism's own articulation of sustainability would therefore be the green economy (Goodman & Salleh, 2013). To say it with Brown, the green economy represents neoliberalism's conversion of the basic principles of sustainability to an economic semantic order.

2. Cattle rearing in the Humid Pampa

Livestock production in Argentina takes many different forms across a country with vastly different climatic zones and ecosystems. To narrow the sample down, the research will focus on the Pampa ecoregion.[3] The following section will discuss first the definition of sustainability employed, then what methods were applied to qualitative data collection. This will include a description of the case selection and interviewing techniques, followed by a discussion of the limitations of the method chosen. Afterwards, information about the sample and its relevance will be given to situate the informants geographically and socio-economically.

2.1. Operationalizations

Sustainability

The working definition of sustainability was based on sustainable development literature. As exemplified by the United Nation's Sustainable Development Goals, that includes "economic and social" dimensions besides respecting and protecting natural environments (Asamblea General, 2015).

2.2. Data collection

To examine the framings applied to sustainability and cattle ranching traditions in Argentina, interviews were conducted with professionals from the livestock sector and other people involved, thus collecting qualitative data on the political discourses around traditions and sustainability in livestock policies. This pool of interviews serves as the main body of source material, which is subjected to critical discourse analysis following the principles of argumentative discourse theory as described by Hajer (1997). Additionally, visual material will be referred to, including social media and internet sites of informants, as well as advertising material and pictures taken during field visits to selected farms. Both types of sources will be treated as discourse.

Case selection

The participants were pooled from the area that corresponds to the Humid Pampa ecoregion. The selection of participants should reflect a diverse range of situations and opinions, representative of the "full range of variation" of sustainability practices and opinions on Argentinean traditions in the field (see (Seawright & Gerring, 2008)). The distribution of production methods across interviewees does not aim to reflect the real-life distribution of these methods in the sector. Rather,

[3] Not to be confused with the La Pampa province, a state in Argentina, that is partially covered by Humid Pampa landscape.

it strives for a balanced inclusion of different viewpoints and interests, promoting a complete picture of Argentinean political discourse on sustainability in meat production.

This results in a nested research design. There is a macro-level case selection to this, namely the Humid Pampa ecoregion within Argentina, that provides the main level of unity among the data points (participants) selected. The sample of cases considered within this macro-case, follows a setting similar to most-different-system-design, whereby the role of traditions for sustainability is probed. The fifteen interviewees were mostly selected based on location (in the Humid Pampa). Efforts were made to keep the sample representative by portraying the full variation of practices and situations in the relevant population (see Seawright and Gerring, 2008).

Conduction of interviews

The participants were interviewed in Spanish in a semi-structured way, both during field visits and by video call over Zoom or, alternatively, over WhatsApp. Answers were recorded on an iPhone or directly from Zoom, during the spring months of September, October, and November 2023. The interviews are based on a catalogue of twelve questions, which can be found in the annexe, and lasted for ca. 30 to 60 minutes. Visual material was also collected during visits, as well as provided to the author by some of the participants themselves. Some participants referred to previous interviews, videos and images published on internet platforms for the researcher's further edification. While these visual materials also influence the subsequent analysis, the interviews constitute the main source of information.

Limitations

The amount and quality of answers is reliant on participants' willingness to engage with the questions and topics at hand. Although from reviewing literature and examining the context, some expectations can be established, predicting results beforehand is hard. Biases are to be expected, not only from the selection of participants but also in the answers, as the control over the information shared lies with the informants. Only so much can be done to triangulate and complement the information shared and provided, but since the interviews are the main body of analysis, their flaws and limitations will be reflected in the quality of the conclusions drawn from them.

The selection of participants poses limitations, as not all targeted groups might be equally available, and less well-endowed potential informants might not have the time to participate in a lengthy field visit and interview. Additionally, the definition of the sample might exclude tenant farmers and other producers, who do not own the means of production themselves and do not have any form of publicity or public visibility for their individual production without going through their employer or lessor.

It is important to consider that rural infrastructure in Argentina is in certain areas quite precarious or inexistant. There can be issues with reaching more marginalized potential informants, due to limited electric, internet and phone coverage (Dutra Keiran & Vasquetto, 2022), as well as more complicated physical access. Similarly, bus or train connections to smaller localities are virtually inexistant and thus isolate more peripherical establishments out of the sample, should virtual interviews not be an option.

Reliance on electronic media and digitalized information also excludes potential informants that have decided against digitalization or did not see a need to have any form of publicity presence in any way. Preferred communication methods of a Gen-Z, urban, European academic and a traditional cattle rancher from the Argentinean Pampas could differ quite a bit. Due to privacy concerns, cold calls were not executed, which potentially excluded smaller establishments without websites. Hence, the research setup tends towards more media-savvy, better-off informants.

Additionally, the reliance on voluntariness means that the research will attract more vocal participants. Given the wording of invitations and the context of the first outreach, certain stakeholders might feel discouraged to participate, because they have no interest in the concepts and issues mentioned. Some potential informants may have declined interviews due to disagreement with the research as presented. The use of the term sustainability could have posed a hurdle for the inclusion of informants who either disagree with the necessity of the application of this concept to the livestock sector or who did not have a concrete interpretation of the term, i.e. did not feel engaged with an essentially academic conceptualization. Additionally, asking about traditions might have encouraged notions of stereotyping by potential interviewees or clashed with personal perceptions of modernity and competitiveness of businesses.

In contrast, actors who already have an opinion on sustainability and cattle rearing in Argentina will feel prepared and stimulated to collaborate. They might already have an interest in the topics and motivations behind the research and seize on a further opportunity to promote their views and standing, which could skew results against more mainstream opinions that feel less addressed by the initial interview request.

Furthermore, the interviews might favour inherent thematic biases as a group of actors might want to stress certain aspects of sustainability more than others, leading to unequal coverage of issues. However, this could be a chance as it highlights the aspects most important to a certain group of actors. At the same time, the interviewer's actions gain importance as they moderate topic coverage and can introduce different accents. Yet, the interviewer's performance might vary from day to day and later interviews might be better quality than the first ones, as experience is gained from practice.

Lastly, it is important to stress that although a historical perspective is fundamental to understand the importance of traditions and historic developments for the framings sustainability in the livestock sector receives in Argentina. The interviews were conducted over a relatively restricted period of time, during the same season and year. There is limited triangulation for developments after the 2023 elections, which represent a major change in Argentinean politics from which significant policy changes were expected. Discourses around sustainability and cattle ranching are dynamic and may evolve even within the study period. Capturing and accounting for these changes in real-time is challenging. As this thesis examines contemporary discourses, it may not completely account for historical changes and continuities in livestock traditions and sustainability practices. Therefore, findings might be potentially dated and hold their strongest representativeness as snapshots of a certain political moment in a specific political context.

2.3. Sample

The participants were selected to constitute a diverse case sample, where different provinces, production methods and livestock intensity are represented. At the same time, several participants were selected from each province to account for interprovincial differences. Furthermore, the selection of participants includes producers, professionals and experts that adhere to different cattle rearing styles, ranging from "traditional", extensive cattle ranching to intensive, feedlot style production, also including alternative methods such as regenerative farming and holistic herd management. Herd sizes, land possessions and income were not controlled for and contribute to the individual situations of the participants and the influence they can wield. However, the bigger the sample size the smaller the influence of extreme cases on results, according to Seawirght and Gerring (2008). Given that the number of either producers (10) or experts (5) interviewed for this study remains in the single digits for both categories and does not exceed 15 total interviews, this study can be seen as a more superficial description of nationwide trends in political discourse (see (Seawright & Gerring, 2008)), but represents a more in depth study of a niche group within livestock production, namely agroecological producers.

Geographic location

The Humid Pampa ecoregion is a subtropical grassland, "characterised by long warm summers and mild winters" (Faggi et al., 2008), air temperature averaging 25.5°C in January and 11°C in July (ibid.). It is the heartland of Argentinean agricultural expansion and traditional home to the Gaucho in popular imagery (Gras, 2009). As Gras relates (2009), the region was historically important for the socio-economic development of the Argentinean nation. According to Gonzalez Fischer and Bilenca (2020), by 2020 the region still counts as one of the most productive in

agricultural and cattle raising terms. However, Grass (2009) notes that the region has undergone great changes since the 1970's, whereby not only the main products changed towards grain and especially vegetable oil crops, but also the socioeconomic structure of the farms active in the region. Indeed, Gonzalez Fischer and Bilenca (2020) state that the region has undergone notable intensification across time. As a result of agricultural practices, urbanization and other human-induced changes, the Humid Pampa is no longer a homogenous or text-book case of subtropical grassland (Faggi et al., 2008). Faggi et al. (2008) stress that while there is climatical, biological and geological variation across the Humid Pampa, which permits the region to be divided into further subregions, the differences between pristine natural areas and urban and intensively cultivated areas are clear cut. Hence, the selection of the Humid Pampa serves mostly as a control for climatic conditions, while allowing for variation in practices and socialization.

In administrative terms, the Pampa ecoregion corresponds to the whole Buenos Aires province, southern Entre Ríos and Santa Fe provinces, south-eastern Córdoba and north-eastern La Pampa province in the Republic of Argentina (Faggi et al., 2008; Gras, 2009), roughly forming a semi-circular space around the Río de la Plata estuary. As nature cares little for administrative frontiers this would include territories in Uruguay. However, for purposes of unity and continuity this study considers the Argentinean regions only. Due to the federative organization of the Republic of Argentina, some administrative variations in the institutional conditions facing actors across the provinces apply. To control for such divergences, several informants were contacted per province to have some inner-provincial comparability. However, for more peripherical provinces, notably Entre Ríos province and La Pampa it was nearly impossible to establish contact with informants, leading to the exclusion of La Pampa from the sample. Entre Ríos is only represented by a company active in multiple provinces.

Typology of informants

Data collection was completed over an eleven-week fieldwork period in Argentina. Using Buenos Aires, CABA, as a base, different informants were contacted. In total, fifteen people were interviewed in fourteen interviews ranging between 20 to 65 minutes. If possible, field visits with cattle farmers were conducted to observe their practices and sustainability measures first hand. It was possible to visit six farms, of which four in the province of Buenos Aires, one in Córdoba province and one in Santa Fe province. Furthermore, the researcher was invited to the company headquarters of a big cattle breeder and beef producer in Buenos Aires, and also talked on-site with the president of the Argentinian grass-fed association. In total, ten cattle owners/beef producers were interviewed. Six technical experts, who professionally work on promoting best practices in cattle rearing, were consulted. These experts have backgrounds in natural sciences related fields, mostly veterinary medicine, and livestock management, but also agricultural science, biology and environmental engineering (see table below). Besides this, one participatory science project on soil regeneration and a congress on gender and agroecology were observed, where further contacts were established, and future interviewees introduced.

In the following, the informants will be referred to in code, to preserve their anonymity. The contains information on their role (expert (E) or livestock producer (P)), location (province (Buenos Aires (BA), Cordoba (CO), Santa Fe (SF), or multiple (M)) and productive orientation (conventional © or agroecological (E)); followed by a number to distinguish similar individuals in the same province. This leads to codes like this:

Producer **CO**rdoba province agro**E**cological Nr.**1**

The following table summarizes the sample population:

Informant	Number of Cattle	Size of land	Professional Expertise	Field visit	Gender
PMC	16 500	40 000	Veterinary medicine; business management	No	M
PBAC2	6500	10 000	Business law, business management, agricultural production	Yes	M
PSFE1	500	1770	Mechanical engineering, farming and cattle rearing	Yes	M
PBAC1	700	1250	Health management, livestock production	No	M
PCOE1	700	350	Agronomy, agroecology, agriculture and cattle rearing	Yes	M
PCOE2	500	350	Psychology, cattle rearing	No	F
PBAE3	55	66	Horticulture, cattle rearing, politics	Yes	F
PBAE1	60	60	Agriculture and cattle rearing	Yes	M
PBAE2	24	13	Geography, education, agriculture	Yes	F
ECOE	-	-	Veterinary medicine, livestock production	-	M
EBAE1	-	-	Livestock production, sustainability	-	F
EBAE2	-	-	Agroecology	-	M
E/PSFE2	20	0	Veterinary medicine, livestock production, animal wellbeing	No	F
ESFE1	-	-	Agronomy, agricultural engineering, agroecology, sustainable development	-	F
ESFE3	-	-	Environmental engineering, sustainability	-	F
EME	-	-	Agroecology, agriculture, biology, sustainability, environmental analysis	-	M

Production methods

Producers

Out of the ten producers, three follow conventional production methods and the other seven produce according to more holistic methods. These alternative producers use rational pasting and/or regenerative cattle rearing, with the aim of regenerating the soil and preventing erosion. They refer to their production as agroecological or agroecology affiliated.

Three producers interviewed run small exploitations of 13 to 66 ha with total headcount between 24 and 55 animals. Four midsized producers manage 350 ha to 1770 ha with total headcounts of animals reaching between 500 to 700. Besides this, two large landowners were included, one managing 10.000 ha and 6500 cattle, the other operated on 40.000 ha land with a total of 16.500 heads distributed across six farms. The remaining producer does not own land herself and keeps her cattle with a contracted other farmer on his land and pays for his services. She is considered a small producer since she owns 20 heads. The median land surface owned by the cattle ranchers calculated for this research is 350 ha and the median herd size is 500 heads of cattle.[4]

Technical experts

There is a group of technicians at the National Institute for Agricultural Technology (INTA) who work on projects to implement agroecological principles in food production. Their experiences and expertise are exchanged through the nationwide agroecology network at the INTA, which is coordinated from the capital, but implementation is decentralized. Four experts work for the INTA.

Spatial distribution

Buenos Aires is the most represented province in the sample, with six producers and two experts active there. For Santa Fe and Cordoba provinces two producers were interviewed for each. Two technical experts in Santa Fe province participated, as well as a doctoral researcher in environmental engineering. One independent technical expert from Cordoba province was interviewed. Furthermore, a big agropecuary company that manages two farms and a feedlot in Buenos Aires province as well as one farm in each Entre Ríos and Corrientes provinces was included. Additionally, the national coordinator of agroecology projects for the INTA based at the headquarters in the capital (CABA) provided information.

The geographic distribution of participants is shown on the map below (Figure 2). Cattle ranches are represented by the cow symbol and technical experts by the human figure.

[4] The average amount of land (5385,9 ha) and cattle (2563,6 heads) owned is not representative, since both are heavily skewed by the two large producers in the sample. Indeed, the values for the two largest producers are outliers in the sample.

Agroecological producers are represented by dark blue cows, and technical promoters of agroecology by orange symbols. Feedlots are denoted by the yellow cow symbol, and conventional extensive farms are denoted by brown cows.

Figure 2: Geographical distribution of informants (map based on Google Maps)

As visible from the map, there is a concentration of productions in Buenos Aires provinces, or alternatively in an extension of greater Buenos Aires region. There are some outliers Experts and production sights roughly north of the Corrientes-Entre Ríos division cannot strictly be considered Pampa ecoregion. However, given limitations on who answered requests for collaboration and interconnections between informants, the sample is more flexible in the inclusion of informants than an ideal distribution across geographical space infrastructural inclusion.

It is also worth noting that the biggest landowner interviewed, an agropecuary company, has six different sites included on the map, while the distinction between three small agroecological producers around Lincoln in Buenos Aires province cannot be displayed due to scale. There is also the case of E/PSFE2 who is both a technical expert and livestock producer, but since she does

not own land herself, the choice was made to denote her on the map as an expert at the location of her institution.

Although intensive and extensive farming, conventional and alternative methods, as well as agribusiness and family farmers are all represented in the sample population in terms of people interviewed, small to medium scale agroecological producers are disproportionally present. Given (personal and virtual) interconnections between producers adhering to alternative methods and existing networks of rural (ex)change, such as ConCiencia Agroecológica in Buenos Aires province, it was easy to profit from personal references and online linking to establish contacts. Overall, niche producers and experts were more ready to share their views and experiences on a personal level. This might be due to their willingness to capitalize on opportunities to encourage change in the livestock sector but could also be explained by more agile and less bureaucratic communication channels in small establishments compared to big agrobusiness corporations working with different departments headed by different individuals.

3. Analysis

3.1. Methodology

In this study, sustainability policy for the Argentinean livestock sector is treated as a discursive environmental conflict. Following Hajer (1997) and subsequently, Lalander and Merimaa (2018), the analysis of the interviews assesses discursive ontologies, such as distinctive opinions on cattle ranching, sustainability, and the role of governments. Furthermore, assumptions on natural relationships were probed, for instance concerning (animal-)human social relationships and/or ecological systems. It was focused on the actors and their motives for (not) creating story-lines around cattle ranching traditions, as well as their reasoning for (not) engaging with sustainability. Lastly, the use of metaphors and other rhetorical devices in the collected material was examined (see Lalander & Merimaa, 2018). The aim of this research is to understand how traditionalist discourse is mobilized by the involved actors to position themselves politically to affirm and/or contradict sustainability discourse towards the livestock sector and thus promote their practices and position in political decision-making. By assessing the role of cattle ranching traditions in the sustainability debate, the study approaches the question of how the transition to the green economy is being conceived (or not) in Argentina and to what extent this involves strategies that instrumentalize cattle ranching traditions.

Focusing on discourse and story-lines permits to study sustainability policy without resorting to a fixed definition of best practices and, as a result, including a variety of actors, notwithstanding their actual political representation. Centring on discourse rather than the ultimate political solution of sustainability issues in agriculture allows for flexibility and adaptability to policy changes, guaranteeing the relevance of this work beyond the immediate political context, which is especially salient due political and governmental changes after the 2023 presidential elections in Argentina, notably concerning government-led initiatives and state-funded research. Furthermore, argumentative discourse analysis fits the diverse case selection for this study, as biases due to administrative and economic factors are limited since the unit of analysis is not the policies in place nor the institutionalized political process itself, but the "democratic-discursive atmosphere" (Lalander & Merimaa, 2018) around meat production policies. Rather than in material inputs and policy outcomes, the interest in this study evolves around actors' agency and motivation, formulation and legitimization of definitions and political rhetoric. Thus, this study maps the immaterial means and deliberative conflicts in socio-economic development, leading to the promotion of certain production system paradigms and particular visions of a sustainable future. For this purpose, it is considered more important that collaborators are active participants in the livestock sector or sustainability policymaking, rather than that they articulate a coherent position

on sustainability. Conflicts and incoherences among and within positions are especially analysed since they offer glimpses at the hierarchy of norms and narratives (see Lalander and Merimaa, 2018).

Analysis method

The method of analysis builds on an argumentative discourse theoretical approach, similar to what is applied in Lalander and Merimaa's 2018 paper on the discursive paradox of environmental conflict in Ecuador. Central to this approach is "the active role of subjects" in (re)producing and transforming discourses, and "the understanding of political conflicts as argumentative struggles where different actors seek to position themselves in relation to the other and transform the discourse" to garner support for their definitions and interpretations of events (Lalander & Merimaa, 2018). This approach follows Hajer (1997) who defines discourses as "specific ensemble of ideas, concepts, and categorizations that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities" (p. 44). Within discourse, Hajer identifies story-lines as "a generative sort of narrative that allows actors to draw upon various discursive categories to give meaning to specific physical or social phenomena" (Hajer, 1997, p. 56). These story-lines permit actors to create possibilities for problem closure through expanding their competence beyond their real understanding of the phenomena through the diminution of the "discursive complexity of problems" (Lalander & Merimaa, 2018). Hajer proposes that his focus on discourse permits to consider "the mobilization of bias" which occurs when more powerful actors or gatekeepers manage to impose their definitions in the political debate, crowding out alternative views and thus repressing other actors (Hajer, 1997, p. 42). According to Hajer (1997), there is a political conflict hidden in the debate around the definition a problem is given and included or suppressed aspects of social reality. The author highlights the value of this approach for studying environmental politics as it transcends "single problem – single answer" models in social sciences (Hajer, 1997, p. 43). In line with "wider post-positivist interpretative tradition", discourse analysis following Hajer allows researchers to comprehend the ascension of "a particular understanding of an environmental problem" to dominance and perceived authoritativeness, weighted against the discreditation of other understandings (ibid.). To understand this analytically, he recommends examining the regularities and variations of oral and written materials and studying the social backgrounds and effects of specific modes of talking (ibid., p. 44).

To ground the story-lines emerging from the material collected during fieldwork, the discourses on traditions and sustainability will be analysed within three dimensions, space, time and interrelations, which will each be subdivided to highlight common trends and elements across

informants and the interest groups they belong to. Such a multi-dimensional approach towards discourses aims to ensure the connection between verbal and graphic enunciations of abstract concepts to the material and immaterial realities of the field.

Following Hajer (1997), the material of analysis will first be related to its context and then considered in the light of the relations within which it was produced. Building on Foucault's theorization of discursive orders that constitute objects as "communicable entities" (Hajer, 1997; p. 48), sustainability and traditions will be traced across the discursive practices in which the stakeholders, as represented by the informants interviewed, engage. As the analysis moves across the "subject-positions" and "subject-functions" inherent in the collected material (Foucault, 1968; p. 58), the inherent biases, rules and effects of the evocation of tradition as strategic element in sustainability discourse towards livestock production in Argentina should be elaborated. Since Foucault conceptualizes discourses as an essentially part of reality (Hajer, 1997, p. 51), this study traces the discourse in question across the contextual dimensions of space and time, thus positioning the discursive practices in the field. It also includes an analysis of the relations inherent to the examined discourses, structured according to the three dimensions (economic, environmental and social) of sustainability dominant in the contemporary descriptions of the concept operationalized for this study.

In the dimension of space, the story-lines of sustainability and traditions are traced from their most concrete particularization in a local context, their embeddedness in a nation-wide discursive practice, until their inclusion in the abstract international sphere.

The dimension of time is evoked to track changes, permanence, discontinuities of a discursive practice. This study will first examine enunciations of past(s) in the narratives of sustainability, moving on to the anchorage of sustainability discourse in the reality of the present, followed by an analysis of the assumptions made about how commitments made by the subjects are expected to be reproduced within the existing discursive framework but beyond the presence of the subject, i.e. in the future. As the subject essentially constitutes itself through discourse, which in turn is part of reality (Hajer, 1997; p. 51), the present emerges as the "key moment" of analysis because it is when the argumentative interaction between subjects occurs to form discourse (Hajer, 1997; p. 54). The past remains an essential dimension to track the different relations that interweave discursive practices to create "discursive orders" (ibid., pp. 47-48). The inclusion of the future is needed to transition from a circular analysis of the present beyond "routinized proceedings" and better track change and transformation, thus providing direction for the struggles expressed by a story-line.

The interactions behind practices are significant for political analysis, as they shape which discourses emerge as hegemonic and thus determine which set of actions are established as "best practices" (Hajer, 1997; p. 60). By examining economic, environmental, and social relations inherent to the corpus of analysis, the reproduction of cognitive and social commitments is analysed, and the "conditions of discourse structuration" (ibid.) evaluated. Through this, the discourse-coalitions on Argentinean livestock production can be approached.

3.2. Analysis

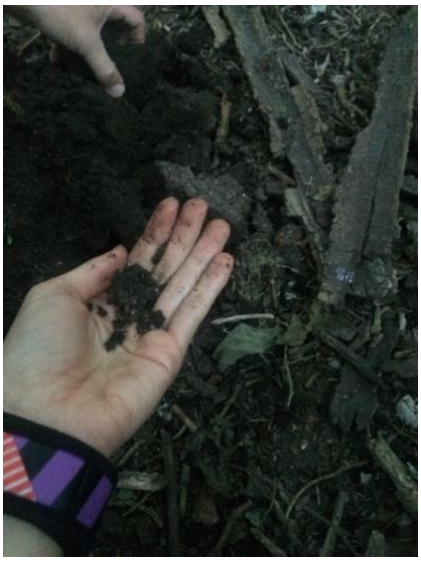
Space

Local

Sustainability issues

Figure 3: Poliphytic pasture covering the soil of PBAE3's fields.

The local dimension is the most significative for the articulation of environmental sustainability. Especially among agroecologist, the soil was a welcome topic to illustrate the sustainability of their production. Even PBAC2 confided that the carbon offsetting and storing capacities of the pasture soil and its vegetation were an important and significant contribution to prevent harm to the environment and climate change. PBAC1 meanwhile related how he offsets the emissions of his cattle by planting trees locally on his grounds.



On field visits, agroecological producers such as PCOE1, PSFE1, PBAE1 and PBAE3 took great pride in showing the vegetation covering of their fields and the diversity of plants that their land sprouted. PSFE1 said that the part of his work he was most proud of, was being able to measure the quality of the soil in his fields after the agroecological transition and seeing how it had improved over time. On the field visit, this producer took the researcher on a tour of his fields to compare soil quality on fields at different stages of agroecological transition.

Fig. 4: PSFE1 and the author observing soil density after agroecological transition.

PCOE1 explained that his main motivation for learning about alternative methods in agriculture and transitioning the establishment he inherited from his father to regenerative livestock production comes from seeing and experiencing the financial and ecological damage genetically modified (GM) soy monocultures were doing to the environment around him. During the field visit, he pointed out particularities of the local biome located at the transition between the wet grasslands of the Pampa and the significantly more arid climate of the Chaco. He described how the resource intensive cultivation of GM crops was not adapted to this kind of climate and degraded the soil over time, leading to erosion and desertification. On the field visit, he called attention to the amount of loose dirt and dust blowing across the early spring fields. In a book on regenerative cattle ranching he co-authored, he drew on his personal experience as a farmer to offer solutions and alternatives to this issue by describing the microbial, structural and mineral benefits regenerative cattle ranching had for the soils (Dutra Keiran & Vasquetto, 2022, p. 66-80). According to him, the local benefits that regenerative pasturing generates, namely carbon capture, soil regeneration, increased biodiversity and greater fertility, result in "existencial

harmony" that represents sustainable "good practices" and a realistic alternative to current modes of production, generating "resiliant" "human growth" in the countryside (ibid.).

Fig. 5: The road leading to PCOE1's farm in southern Cordoba province with former soy fields on the left

Local community

PBAE1, PBAE2 and PBAE3 cited local initiatives as inspiration and motivation for their own engagement with agroecology. All three of them are part of an agroecology group centred around the city of Lincoln coordinated by EBAE2. The producers related how through groups organized on WhatsApp and Facebook around agroecology and rural change they could learn more about alternative methods and optimize their production by visiting other farms and listening to others' experiences. Furthermore, the producers stated that they participated in other agroecology projects not related to livestock production, notably in horticulture.

In a context of neoliberal services and defunded rural infrastructure, digital and social media play an important role for local connections. Besides facilitating connectiveness and collaboration as mentioned above, digital canals are crucial for the commercialization of agroecological produce and non-conventionally produced foodstuffs. PSFE1 and PBAE3 stated that they use WhatsApp or social media to tease, promote and sell their products. Being relatively small producers marketing niche products, PSFE1 and PBAE3 manage to reach an interested public over digital channels and efficiently get in contact with potential clients. PCOE1, who is very active across different social media channels to promote his farm and regenerative cattle rearing, explicitly advices agroecological producers in his book "La Madurez Biólogica" [5] to use social networks for communication and promotion (Dutra Keiran & Vasquetto, 2022, p. 170). PCOE1 himself sells produce from his farm directly to interested customers and recommends social media as a channel for cost, time, and resource efficient sales (ibid.). However, despite digital communication channels, for all three producers, the sales still carry a strong interpersonal component. None of them operates an online store for their fresh produce, but depend on direct contact between client and producer. Rather than as a separate space, the digital domain operates as a deterritorialized extension of the local.

Fig. 6: PBAE3 advertises horticular produce on WhatsApp.

Digital or not, local connections and mouth-to-mouth promotion continue to be relevant in the livestock sector. Small agroecological producers PBAE2 and PBAE3 said that they sold their calves for finishing to other farmers in the area, who valued and were aware of the quality of their cattle. PSFE1 commented that he was currently working on a 0 kilometre sales system for his products in collaboration with his spouse, who is responsible for the marketing and commercialization side of their business. However, he admitted that at the moment they were still reliant on personal recommendations, although most of their sales happened directly over Instagram. Until the set-up of a proper online shop, the couple would continue to sell their produce on an interpersonal basis and to consumers from the community they live in. Even PBAC2, a large, conventional rancher, sells some of his cattle locally and is proud of the good local standing his genetic stock enjoys. In

[5] "Biological maturity"; translation by the author.

fact, the field visit to PBAC2 was interrupted by a neighbouring rancher who had spontaneously come over to negotiate the sale of a bull.

Overall, agroecological producers are more vocal about the importance of community and neighborly relations, but the example of PBAC2 shows that conventional pastoral cattle ranching also builds on local connections, since hiring local staff, building a local reputation and conducting local sales are crucial parts of growing a big cattle business. Local interpersonal connections go both ways, as PBAE2 illustrated with the story of how a local rancher had given her an injured bull calf, letting her keep it if she was able to nurse and raise it. Although neighborly relations do not always run smoothly, locally based ranchers such as PBAE2, PBAE3, PSFE1 and PBAC2 talked about the communitarian aspect of rural life as something valuable to them and which added value to their businesses.

Research and advisory

Conversations with experts confirmed the importance of the local for knowledge transmission and elaboration of sustainable practices. EBAE1, ESFE1, ESFE2 (who is also a producer (PSFE2)) and EME work for the INTA, at different locations. A nationwide institute funded by public resources, the INTA operates 451 different units dispersed across the country's 23 provinces and the capital, covering all five big Argentinean ecoregions (INTA, 2022). While nation-wide activities are coordinated by the headquarters in the capital, the INTA's research and service offers are dispersed across "regional centres, experimental stations, research centres and institutes, extension units and experimentation centres" (ibid.). According to ESFE1, the INTA originally had the mission to bring technological innovations and scientific improvements to producers and peasants in the countryside and inform them about how to produce, thus promoting productivity and rural development. Critical of this bottom-down approach, ESFE1 notes that this perspective has been changing in more recent times, and that she and her colleagues, notably in the experimental field and related to agroecology, now work together with farmers and ranchers in the area to co-create knowledge about agropecuary production in Argentina. The open-access map of the INTA's agroecology network sites lists demonstrative and experimental fields run by the INTA, as well as cooperatives, federations, educational institutions private producers, such as PSFE1, and self-organized initiatives that have collaborated with the institute on agroecological change (INTA, 2022).

The different INTA modules organize a variety of events for a general or specialized public, such as workshops, capacitation, congresses, expositions, talks and seminaries, dispersed across the country, often oriented around local needs, economic activities, and ecologies (see Agenda (INTA, 2023)). For instance, the experimental station where ESFE1 works, organizes producers' meetings

and field visits at collaborating producers, notably PSEF1, and has also collaborated with the National University of Rosario's Faculty of Agrarian Sciences to create a participative science project entitled "stories from the living soil" [6], which was observed for this research. Besides documenting the agroecological transition and assessing production methods, such events and projects also serve a social purpose of introducing researchers and producers to each other and promoting networking, as well as documenting the state of sustainability in the area.

Overall, the INTA's activities seem to be well received among producers, with conventional producer PBAC2 and agroecological producers such as PBAE3 and PSFE1 acknowledging the quality of the institute's work. However, PCOE1 formulates similar criticism as enunciated by ESFE1 (see above) in a book he co-authored on regenerative livestock farming (2022). Criticism of the scientific establishment is expressed on many levels in "La Madurez Biológica", especially towards the links between agribusiness interests and academia. The co-authors articulate a general distaste for a perceived ignorance and arrogance of academically educated consultants and engineers towards the ecological and social realities in the field. They see the implantation of "urban" university-educated "experts" to the countryside as problematic and doubt the motivations and honesty of such experts. Instead, they argue in favour of practice-oriented, situation-adapted, cooperative, and non-commodified education from the primary to the tertiary level which is integrated in rural life and follows no economic or political agenda (see (Dutra Keiran & Vasquetto, 2022)).

Politics

The importance of the local for sustainability policies is unclear and depends on local dynamics and political constellations. Although PCOE1, PBAE2 and PBAC2 lamented the lack of political attention given to local rural infrastructure, notably educational institutions, most informants did not mention the local as a political arena. The exception is PBAE3, who is a city councillor and current secretary of production of the municipality. She is vocal on defending the interests of local small and medium scale producers and promoting local sustainability initiatives such as a farmers' market and horticulture projects. The significance attributed to local politics for sustainability policymaking could come from the fact that in Argentina, local municipalities are relatively independent political unities in a federative nation state that can issue their own regulations and ordonnances. PBAE1 mentioned that his municipality, for instance, had a solid ordonnance that regulated the application of agrochemicals. He had participated on its elaboration with a committee and was satisfied with the result. However, he stressed that the control of such regulations was problematic since the municipalities often lack the means or will to enforce them. Nonetheless, he

[6] Translation by the author

was happy about how the participative political process around such regulations could raise the community's awareness of environmental protection and how thus local governments could be pressured to do more for the environment.

In conclusion, the value of the local for policymaking lies with the interpersonal connections in this sphere, but is limited by the general scarcity of resources, infrastructure, and attention given to the rural.

Regional

There are limited differences between informants from different provinces. Informants had similar definitions of sustainability and used similar arguments across all provinces visited. This is unsurprising as producer PCOE1 who had longer experiences with regenerative cattle rearing and actively promoted greater sustainability in ranching served as a source of inspiration for other producers in different provinces. This producer is very active in doing talks and seminars on sustainable cattle ranching. Through this, PCOE1 promotes Voisin's system of rational grazing. As this production method spreads, a net of farmers with a similar production philosophy emerges. Similarly, advisors and technicians who believe in agroecology will promote similar production systems and champion comparable definitions of sustainability. There is coordination behind the agroecology projects of the INTA and experts might know about each other's work through institutionalized exchanges. Thus, technicians in different provinces gave similar advice and share comparable opinions.

Local issues are amplified in the regional sphere. Interviews with stakeholders across the Pampa highlights how the whole region is facing similar sustainability issues, notably soil erosion as a manifestation of environmental degradation and a rural exodus as part of a wider phenomenon in a national context of neoliberal austerity, domestic financial crisis and economic globalization. At the same time, informants also longed for the extension of positive local dynamics, namely the community spirit, beyond local boundaries.

Environmental issues

From conversations with the informants, three main environmental issues faced by the agriculture rich Pampa can be identified: a loss in biodiversity, a prolonged period of draught, exacerbated by the La Niña phenomenon and possibly climate change, and soil erosion due to degradation. The last is mentioned as the most urgent by adepts of agroecology. Empirically, all three environmental issues can to some degree be related to unsustainable practices in livestock production. However, they are perceived of different relevance by informants.

Biodiversity loss

Among adepts of agroecology, there is acute awareness of the negative side effects of agrochemical intensive, monocultural conventional agriculture for the Pampean ecosystems. ESFE1 uses drastic language when she speaks of an "ecocide" happening in the Pampa under current agro-industrial production, which is encouraged under the agricultural policies in place. PCOE1 and PCOE2, who are nephew and aunt, are less intellectual in their choice of words, but equally graphic. PCOE2 narrated that:

to have a single crop monoculture, [such as] maize, you must kill all other expressions of nature, and this goes against biodiversity.

Similarly, PCOE1 states in "La Madurez Biológica" that "the Pampa has given her life for us, literally" (Dutra Keiran & Vasquetto, 2022, p. 174f). He evokes images of sacrifice, where the "living beings" of the Pampean ecosystem absorb the pollution from agrochemicals "at the front line", providing a valuable service to human consumers by acting as a buffer to contamination (ibid.).

Fig. 7: Anti-industrial agriculture propaganda poster in Rosario.

Besides the moral implications evoked by the morbid vocabulary used to describe the ecosystemic consequences of agro-industrial monocultures, illustrated vividly on a political poster on a mural from Rosarios (figure 8), the loss of biodiversity can also have direct negative impacts for farm management. EBAE1 argues that the loss of species is also an economic issue because loss of biodiversity is essentially a loss of resources, which goes in hand with a reduction of the ecosystem's ability to provide services to humans. Underlying this claim is a conception of ecosystems as being more than the sum of its parts, the different species that live in it. The interactions of the parts with the natural environment they live in should generate a systemic equilibrium that maintains itself, which can be made use of to optimize alimentary production in the system. On the field visit, PSFE1 pointed out various benefits of producing in a rich and diverse environment, noting the importance of bees for

pollination, the significance of local trees and shrubbery for protection from aeolian driven erosion, the role of living roots and tubercules for soil density, and excrement-degrading insects. He explains that by producing in a way that respects the local ecosystem and makes use of the services nature provides, he can produce more efficiently and with less outside inputs which he would need to get from the industry, while also preserving resources for future generations. What he proposes is to think production as a living system, where the farmer collaborates with other species instead of eliminating them. The soil is not just a "prop", but a habitat for useful microorganisms and insects, as well as cultigens. Instead of combatting nature, the farmer cares for it.

Fig. 8: Beehives on PSFE1's land. (Made available)

Besides this idea of partnership with nature, there are managerial considerations to promoting biodiversity. Using vocabulary from economics and business management, PCOE1 and his co-author explain that cooperating with biodiversity "is an obvious cost-benefit issue" (Dutra Keiran & Vasquetto, 2022, p. 65). PBAE3 related that she opted for a diverse and equilibrated selection of plants adapted to the seasonal cycles of nature for her pastures, because such a poliphytic pasture is resilient and efficient. By making use of species with different characteristics, she is guaranteed pasture all year round and independent of weather events, as well as resistant to invasive weeds, all without having to resort to expensive agrochemical inputs. She also claimes to save time and work with a perennial pasture, because she does not have to resow since seeds are naturally distributed. To her, agroecological production is a win-win case, for nature and herself.

Holistic cattle management

All agroecological experts and producers are adepts of regenerative cattle ranching. The method in question is referred to as Voisin style rational grazing (VRG), an approach to pasture-based cattle rearing developed in the 1950s by the French agronomist André Voisin. It is not per se an agroecological method, and more commercially oriented experts like ECOE also promote VRG without openly favouring agroecology. According to EBAE1, benefits of VRG include preservation of biodiversity, soil regeneration and resource efficiency.

VRG is an intensive rotation grazing system. PCOE2 describes that its main difference to traditional extensive pasture-based livestock production is that the pastures are parcelled into plots and that the cattle are rotated across these plots. Frequent rotation between the plots should avoid overgrazing and consequent pasture degradation, thus preserving soil and pasture quality by permitting regeneration in empty lots. The idea behind this is to follow the natural forage chain of the native ecosystem across the seasons, as ESFE2 put it, making the cattle herd mimic the natural movement of herbivores across a grassland ecosystem. PCOE1 recommends rotating between plots at least once daily, but EME admits that there are more loose adherents of rotative grazing that rotate less frequently. The alternative producers interviewed all rotate at least once a day.

Fig. 9: PBAE3 leads her cattle to a fresh plot of pasture, managed under VRG.

All producers that had embarked on regenerative cattle rearing and/or agroecological transition stressed that their identity as a producer and their products were different from the average beef producer in Argentina. PBAE2 related how her neighbours would perceive her as "somewhat strange" and unusual for how she keeps her cows. Similarly, PBAE1, PBAE3, PCOE1 and PSFE1, indicated during field visits how their pastures visibly differed from their neighbours'.

According to EBAE1, the key to sustainable beef production is planning. This should guarantee that, on one hand, there is always enough fattening pasture and water available, and on the other, that stress on natural resources remains limited. She claims that planning is what sets rational

pasturing apart from traditional cattle ranching. Not planning and quantifying are an important error committed by unsustainable producers, she says. Although still minoritarian in academic and institutional research from ESFE1's experience, VRG builds on basic natural science and follows a managerial approach to nature. Rational grazing is not simply letting natural processes happen, but an active involvement of the farmer with his animals and pastures, as PBAE1 attests.

Soil erosion

Planning and adapting to nature are also important in Pampean cattle ranching due to other environmental constraints. A key promotion point of VRG for both producers, notably PCOE1 and PCOE2, and experts (EBAE1 and ECOE) is that regenerative grazing methods counteract soil erosion by promoting perennial coverage of the soil and continuous plant growth. Furthermore, the concentration of the cattle in parcels and their rotation as well as direct access to water in all parcels should ensure an equitable distribution of weight across the pasture, preventing excessive soil disruption by moving animals. Crucially, preventing erosion and regenerating the soil should preserve resources and guarantee food security for a growing world population, PCOE1 believes.

According to him, soil erosion is a public policy issue, besides being an environmental and productive issue. Soils that have been overburdened and compacted over time cannot properly absorb water (Dutra Keiran & Vasquetto, 2022, p. 80). When heavy rain arrives, the soil will further erode as the water washes away the loose top layers and the soil will encrust. Instead of being absorbed into the field, the rainwater will instead escape towards the rural dirt road. The waterholes generated by this will erode and degrade these roads. PCOE1 describes that such waterholes can also affect other rural public infrastructure, such as the overground power grid, which in his area led to weeklong blackouts (ibid.). He laments that soil erosion is not more of a policy priority, since the cost generated by environmental damage to infrastructure in areas of soil degradation is "enormous" (ibid.). The issue is urgent, he writes, since another valuable resource, water, is also being lost in the process of erosion when damaged soils cannot absorb rain.

The draught

In the 21st century Pampa, water is a valuable resource. On the drive to his farm, in the same moment as introducing the problem of soil erosion, PCOE1 mentioned that the region was going through a three-year La Niña period of draught in the run-up to the 2023-2024 El Niño event. This draught was a topic that would accompany all field visits and most interviews. Some informants would explicitly refer to the draught period, but the topic of water scarcity would also come up spontaneously on the field visits in conversations and encounters between the informants

and other members of the rural community. They would remark on how much rain had fallen, what rain predictions were, and would in general just rejoice at the fall of rain.

Different producers had different stories to illustrate how the draught is affecting their region, which show how the draught is a problem for the Pampean ecosystem and the whole process of cattle rearing. PBAE2 described how her project of growing native trees from seedlings to provide shade to her cattle failed because the plants died of lack of water. PBAE1 related that he had to reduce his herd size because there was not enough water available, which was a general trend that the CEO of a big agriculture and breeding company, PMC, noted as a commercial difficulty for his company. Touring the fields with PBAC2, the draught made itself visible in the low water level of a small lake bordering his property, rendering a private boating pier grotesquely useless. PSFE2 remarked, that her herd was mostly unaffected by the draught because they grazed in a riverside area, where the local ecosystem was especially wet, while large zones of the region had been profoundly impacted by the three-year draught.

2020 to 2023 had been a prolonged la Niña episode, which manifested in consecutive heatwaves in summer and consequential draught, which integrates into a global context of rising temperatures. PBAC1 directly links the experienced draught to climate change, which is a topic that most producers are reluctant to bring up. PBAE2, who is a trained geography teacher, criticizes this ignorance of environmental issues by the livestock sector in the context of the draught. She thinks that when issues like the severe draught and the resulting wildfires come up, people will start to worry, even if they are normally not aware of sustainability topics. This, she says, opens the debate around these topics more. Related topics will receive more media coverage, especially in rural media, where sustainability issues had not been dealt with two or three years earlier. Hence, she sees a silver lining to the draught. To her, the possibility of debating the environmental problems and sustainability of livestock and agricultural production is appearing. She contrasts:

> *When the feedlot was imposed, it was like well, that's it, it's there, and it's here to stay and there was no possibility of discussion. Well, now it seems to me that something could be raised.*

National

The political problem

The national is the space that is expected to mediate the issues and problems that have transcended the local and that resonate collectively to some degree. It corresponds to the most strongly politicized sphere for the informants, which expect the national government to create public policies to guarantee an adequate context for their productive activities. However, the general tenor was that the national fails to deliver.

Dissatisfaction with government policies was a general sentiment with different degrees of disenchantment, which reflects itself in the outcome of the 2023 presidential election in Argentina. PSFE1, for instance, believes that the main motivation for Argentinean politicians in their work were their "own benefits" and that the last governments were "steal[ing] with four hands, […], steal[ing] anything and everything". PBAC2, who is, despite everything, a convinced Peronista and supported their coalition's candidate Sergio Massa in the presidential elections, acknowledges that there is a general problem with corruption and abysmal decision-making, but sees the problem more with individual bad actors than the system as a whole. PBAE1 and PCOE1 meanwhile were disenchanted enough with the general proceedings of Argentinean politics that they stated not wanting to be involved and refrained from pronouncing any generalized criticism on the topic, attacking mostly specific policies.

The main bone of contention was the Fernandez' government's tax and restrictions on meat exports for domestic price control, which PSFE1 identified as a vote-buying measure that subsidies domestic, mostly urban meat consumption. PBAC2, a retired business lawyer and law lecturer, explained that export taxes on agricultural produce paid by producers serves to finance other subsidies that the government had put in place. For the government, this makes sense, since agricultural exports are the most profitable Argentinean economic sector. As many people in Argentina profit from state subsidies, according to PBAC2 there is a strong pressure on the government to generate revenue to maintain this rentier system. "And the best thing they have come up with", PBAC2 says, "is to put pressure on the countryside".

Large scale producer PMC complains about the lack of liberalization of the meat market under the Peronist/Kirchnerist governments but notes that the governments' decisions must be understood within the particularities of the Argentinean diet. He claims that Argentina has a traditionally very high per capita beef consumption. Biafaretti et al. (2014) confirm that meat is a staple of the diet. However, in the context of recurring economic crises and financial hardship purchase power was diminished. Thus, domestic beef consumption decreased, as consumers switch to more economic alternatives, mainly poultry and pork (Bifaretti et al., 2014). Considering this development, the Kirchnerist governments opted to get involved in alimentation and to subvention domestic beef consumption, banning the exportation of the most popular Argentinean beef cuts, thus creating more domestic supply to lower prices. This policy is unfavourable to producers as it restricts them to the less attractive domestic market and reorients them away from lucrative foreign markets.

Subsidies to consumption are not the only problematic policy agroecology experts and alternative producers acknowledge. PBAE2's earlier comment on the hegemony of the feedlot stems from the context that the government has since the early 2000s actively promoted feedlot meat

production. As the national coordinator for agroecology in the INTA, EME stresses that this had various negative consequences for the environment and the rural community, as the state support for the feedlot essentially constitutes a subvention of unsustainable practices. PCOE2 laments that the societal value of regenerative cattle ranching is not recognized and stimulated in policies. This is especially frustrating since regenerative producers, such as her, are not only producing high quality foodstuff but also providing environmental services by fostering biodiversity, soil regeneration and CO_2 capture. ESFE1 puts the lack of policies that encourage sustainable livestock production down to a lack of consciousness of the environmental impact of conventional food production. She believes that public policy could play a helpful role in creating a sustainable future in Argentina, with policies that promote rural infrastructure, animal welfare and environmental protection. ESFE1 laments that on the political front, nothing is being done to foster sustainability up to now. But including sustainability in agrarian policymaking would be of "tremendous importance" stated ESFE3.

However, the absence of policies or the persistence of counterproductive policies are not the only problems that national politics presents to livestock producers. The reversal of policies from one administration to the next and the short-term introduction of new policies is equally criticized. P/ESFE2 argues that this swing in policies makes planning impossible and forces agricultural producers to have multiple backup plans at the same time, because they "do not know what they will face tomorrow". PCOE1 laments that politics do not follow nor do politicians understand the times and timelines of cattle rearing, which is a long-term business. He explains that raising a mother cow for meat production takes a full cycle of about four years, from the birth of the mother cow till the slaughter of her first calf. This is equivalent to one presidential term in Argentina. The introduction of short-term policies, therefore, can prove extremely disruptive to livestock producers, as they make it impossible to preview a business and production plan in the long term. What cattle ranchers need foremost, PMC argues, are "clear and stable rules" in the form of stable, long term public policies that permit predictability. A defender of free markets, PMC says that producers need to know how they can move forward in their business and "have the freedom to work". ECOE1 states that such predictability would be crucial to motivate ranchers to introduce new methods and greater sustainability to their production. He believes that the State should intervene less, and if he does, in a more helpful, less counteractive way, to incentivize better production rather than restrict.

For some producers, the perceived hostility of the Fernandez government interplays with what they see as a miss- or underrepresentation of livestock producers in politics. While there is statistical coherence that alternative producers such as PCOE1 should feel underrepresented in

political processes, since agroecological production overall, as EME attests, still accounts for a minority of producers in Argentina, large landowner PBAC2 complained ranchers' and farmers' interests were just not as well and efficiently organized politically in Argentina than in Brazil. PCOE2, who has founded an association of grassfed beef producers, relates that there are a multitude of agrarian interest groups and federations in Argentina, but that most of them represent conventional farmers and stand for traditional methods. PBAE1 agrees that those groups do not necessarily do bad work, but that they lack a sustainable outlook. The problem, for PBAC2 lays more in the fact that there is such a multitude of groups, with dubious internal organization and limited cooperation with each other, so that their impact on policies remains limited. He himself has been involved with the associations that represent Hereford and Angus breeders, but has reduced his involvement drastically recently, because he was dissatisfied with the outcomes, besides also being a bit of an outlier in such social circles for his comparably leftist leanings. PMC, whose company owns the biggest extension of land in this sample and the largest cattle herd, is the most, if not the only, satisfied informant on the issue of political representation, keeping with EME's assessment, that Argentinean politics mostly accounts for agrobusiness interests, not sustainability.

The economic problem

Although informants compared Argentina to its neighbours (Uruguay for social and productive terms by PCOE1, Brazil for institutional political and productive aspects by ESFE1, PBAC2 and PMC1), Argentina is a unique case due to certain economic and financial peculiarities, namely that the nation faces hyperinflation with a currency that is weak in international comparison.

The domestic price rise and purchase power losses related to inflation are a problem, as they render the domestic market less attractive for a relatively expensive and resource intensive product such as beef. At the same time, accessing imported goods, such as a range of agrochemicals and GM seeds, is expensive, especially for smaller producers with less access to foreign currency since they focus mainly on domestic sales. This is why PCOE1 promotes agroecological production. Weaning off agrochemicals and other external inputs, PCOE1 hopes, should permit smallholders and family farmers to cut costs and be more independent and resilient in a context of high uncertainty.

International

Of all the spaces discussed so far, the international is the perhaps most ambivalent. It contains both hopes and frustrations of the informants. It is also a space with many open possibilities, where the interplay for the informants is not yet decided.

Many producers are interested in selling in the international market, since the European and Chinese market are seen as attractive outlets, the first one because its consumers are comparatively

high in purchasing power and value premium products accordingly, the latter one because it takes cuts and produce that could not be sold on the domestic market, such as meat from older animals or innards. PCOE2 links the European market in specific to a market of more conscious consumers, which will value sustainably produced products. In comparison, in the domestic market consumers are more indifferent to production standards and more price sensitive. However, PCOE2 and PCOE1 acknowledge that serving international markets at the moment is more of a hypothetical question for them, to some extent due to the export restrictions imposed by the government but also because, as small, niche producers, they lack the infrastructure to adequately market and distribute their products on an international scale.

Despite this, grass-fed producers PCOE2, PCOE1 and PBAE1 know that meat from their animals also serves the international market and they have taken the necessary steps to make this possible, by following the production norms set out by international certifications. Nonetheless, they express some frustration that their produce is not adequately distinguished as regenerative or agroecological when their animals are slaughtered and processed together with meat from conventional producers.

International certifications are an issue of contention. They usually include a highly abstracted set of indicators of meat quality, sanity standards or environmental indicators that producers must adhere to (Elgert, 2012). These are externally determined and controlled by some international organization or enterprise, generating a certain opaqueness (ibid.). Example for the meat sector include various organic certifications, animal wellbeing qualifications, breed-specific accreditations, stamps for environmentally responsible land use or EU Hilton standard for quality. For the Argentinean market, such certifications are rather unimportant. Producers, such as PBAC2, who have established domestic outlets will not go through the trouble of adhering to them. For producers who wish to sell on high end foreign markets, especially those which are more regulated, such as the Europe, Japan or the USA, adherence to relevant and well-known certifications is a strategic selling point, even if they operate at small scale, such as PBAE1. Receiving recognition for the quality of their work by an external body can be a source of pride, as PBAE1 transmits when he talks about how adhering to the Hilton criteria permitted him to sell his meat to a multinational supermarket chain. PCOE2 also certifies the meat she produces, although she says that some of the international certifications fall short of properly acknowledging the value of her produce. She thinks that there is a flood of certifications nowadays, one for more or less everything she feels. The certifications she advertises on Instagram for her beef are a Grassfed stamp, Angus certification and EOV-Land to Market. Being able to show such certification labels is impressive and distinguishes her products.

Fig. 10: Examples of certifications for beef (Asociación Grassfed Argentina, 2022).

However, PCOE2 doubts that some specified values, as demanded by standardized international certifications, properly capture the quality and sustainability of a product, because they are often less strict than regenerative and agroecological production philosophy and allow for unsustainable loopholes to uphold competitiveness and productivity. EME notes that, for sustainability purposes, the greatest potential lies with niche certifications rather than the most popular ones. PCOE1 affirms with a shrug that "some certifications are genuine, others are [false]". For these adherents to agroecology, there is a discrepancy between market-led sustainability initiatives that use certifications as a tool to promote better or best practices, considering them more of a marketing strategy than an apport to sustainability. It is not that they are critical of market capitalism. Rather, there is a perception that the certifications function as a commercialization of sustainability instead of a commitment to sustainability.

There is a sense of market failure among a few agroecological producers, when it comes to international markets, paired with a sense of government neglect. PCOE1 and PBAE2 suspect profitability being put before sustainability in the international context, which neglects the local consequences of global food chains. PBAE2 believes, that on globalized markets where profits are the main motivation, producers will engage in sales that make little sense for the local context, but a lot of sense for their personal benefit, when export restrictions compel cattle breeders to sell reproductive bulls abroad instead of using them locally. PCOE1 comments on an opposite example of damaging agrochemicals restricted in developed nations being sold by multinationals from these countries to producers in the Global South (Dutra Keiran & Vasquetto, 2022, p. 173). A perception of market failure comes short of acknowledging the feeling of deception PBAE2 and

PCOE1 are experiencing. They perceive that in a globalized age where profit is the priority, developing countries and their smallholders and family farmers find themselves caught between an unsustainable, deregulated market and inadequate, careless intervention by governments both abroad and at home. For them, the neoliberal rationality opposes sustainability.

Nevertheless, in a context of state failure, international recognition can prove important for alternative production methods and independent sustainability initiatives, giving legitimacy and visibility to nationally marginalized methods. EME stresses that the FAO supports and proposes agroecology for sustainable food production, and that there are various NGOs working on this topic internationally, with whom the INTA has collaborated. PCOE2, meanwhile, as president of the Grassfed Association Argentina, has been trying to leverage international resources for Argentinean producers through the association. They have cooperated with the *Banca Etica* from Italy to facilitate sustainable producers' access to credits and organized a convention with international speakers for rural-based knowledge exchange on sustainable livestock production. Furthermore, she is very proud to have hosted the Head of Trade of the Netherlands Embassy in Argentina, which valorised regenerative cattle ranching and highlighted the international possibilities that these production methods have. For internationally connected agroecology supporters like EME, PCOE1 and PCOE2, the idea is to find alternative knowledge coalitions and to mobilize collaboratively to circumvent the institutional shortfalls caused by a neoliberal rationality in government and food production. In this way, they expect to create a green economy in a bottom-up, non-hierarchical, cooperative way, instead of waiting for a neoliberal, agrobusiness friendly Argentinean state to intervene.

Temporality

Pasts

The past is the dimension wherein the origin point of traditions lies. The informants stressed that it was a highly important dimension to understand the issues that they and their country were facing. Often, however, they had a conflictual relationship with it, as it provided both models to follow and models to absolutely reject with reference to sustainability.

The good past

Many producers, especially those engaged in agroecology, shared a strong sense of longing to return to some golden era where there was harmony between humans and nature and rurality was alive. The good past, which is associated to sustainability and an intact environment, comes before the bad past, associated with a fall from grace when unsustainable methods were introduced and the environmental thus disturbed. Often, the fall from grace is identified as the emergence of post-

green revolution industrial agriculture, which displaced extensive, pasture-based livestock production or mixed farming.

The good past is something that the informants experienced through the livings of their grandparents, or parents if the informant was around retirement age (PBAE1 and PBAE2), who had fed and sustained their families from the work on the land without being reliant on external inputs. Small and medium scale family producers liked to stress their family connections to the land they farm when asked about their relationship with the local environment, relating previous experiences the family had made with the land and how things worsened over time, but that they wished to reverse this. A past beyond this immediate generational outlook was not mentioned or considered.

The projection of the good past was visible on field visits, when informants would show their farm, not just the pastures, but also houses and gardens belonging to their property. PBAE2 and PBAE3 are the only informants still to live in the farmhouse that has been passed down the generations in their family. PBAE1, PCOE1 and PSFE1 did also draw attention to the farms as complexes and that they currently still had some use for the farmhouse. PSFE1 and PBAE3 drew specific attention to how the Pampean family farms were historically conceived as a coherent, almost self-sustained unit, where a diversity of natural and domestic species was present.

The good past does not correspond with some mythical foundational past of Argentina, when Gauchos roamed the land of large estancias on horseback. Rather, it represents a golden age of family farmers and local production. According to PBAE2 and PBAE3, it emerged because of land redistribution policies, when small farms were given to working families. PBAE3 managed to link her farm directly to public policy under Perón in the 1950s, when a large local landlord was expropriated to redistribute land to Italian rural workers, such as her grandfather. PBAE2's house and farm are older and have been in the family for longer, which makes its creation more distant and thus harder to contextualize its origins.

Three producers (PBAC2, PBAE2 and PBAE3) expressed some nostalgia for the period under president Perón. However, none of these informants were active in cattle ranching during this period, and the oldest of them was 24 by the time Perón died. They depicted the policies of the Peronist government as positive for the rural population and Argentina in general, as it coincided with development efforts, economic wellbeing, and social redistribution. At the same time, the Peronist period coincided with what the informants depicted as some form of mythical past for Argentinean agricultural production, when production was perceived as more traditional and less environmentally demanding, yet competitive enough to feed the nation. However, the political implication this nostalgia has for the informants is unclear. While the pre-1980s Argentina is an

inspiration for rural development, with infrastructure in place supporting the communities living on and of the land, it is not necessarily so in political terms. None of the informants wanted a return to the national development models of pre-neoliberal Argentina or to change the existing integration into global markets. Rather, they are searching for ways to stop and/or reverse the perceived rural exodus and precarisation of rural populations. Their goal is primarily to recreate a more social rurality, in every sense of the term.

The bad past

The bad past covers the most recent past, from the 1990s onwards, which includes the effects of the Green Revolution and neoliberalism. The bad past represents the abandonment of the good past, its lifestyle, production methods and infrastructure.

By most informants, across age groups and occupations, the 1990s are the socio-economic junction in time when it comes not only to production methods but also nationwide economic development as well as environmental degradation. There are two main developments described in the interviews that peaked during this period: economic liberalization and the Green Revolution. In the Pampean context, this meant, on the one hand, the disintegration of local rural infrastructure, notably national train lines that linked smaller communities, as well as the introduction and popularization of GM soy. The informants described this period as the hardest for rural communities, as they suffered from a generalized economic crisis and a lack of perspectives, exacerbating the rural exodus. While the Green Revolution had been going on for a while, the introduction of GM soy production around 1990 correlates with the most drastic changes in land use and rural organization in Argentina, according to the informants. Compared to cattle ranching or traditional granary agriculture, the cultivation of GM soy requires less human labour and rural infrastructure. It implies, however, greater technologization and application of external inputs in the form of agrochemicals, which require higher investments in capital. Given its high demand on international markets, GM soy emerged as an extremely popular crop for fertile soils such as in the Pampa. PCOE1, EBAE2, PBAE1, PBAE2 and PBAE3 narrated how, in a context of lacking socio-economic perspectives, it became increasingly popular for rural families in the Pampa region to sell or rent their land to third parties and move to the cities to engage in different economic activities. As a result of the replacement of traditional production by soy cultivation and the correlated rural exodus, existing productive and social infrastructure was dismantled while biodiversity and soils suffered degradation through monocultivation and heavy chemical interventions.

The informants made different personal experiences with the socioeconomic situation of the 1990s and GM crops. PBAC2, one of the biggest landowners interviewed, who also cultivates several

GM corps, stated that, due to the economic slump of the 1990s and rural emigration, he was able to buy a lot of good land cheaply, laying the founding stone for his large-scale livestock and agriculture business. Several smaller producers (PCOE2, PBAC1, PBAE1 and PBAE2, as well as some of their neighbours and acquaintances) eventually left the countryside and their family productions to follow a different economic activity in the cities. As a generation change occurred within the last fifteen to twenty years, these people returned to cattle rearing eventually. However, PBAC1, PBAE2 as well as PSFE2 use livestock production as a second income besides their main economic activity, while PBAE1 supplements his pension with the revenue he generates as a cattle rancher. PBAE2 as well as PBAC1 mentioned that having other sources of income allowed them to approach livestock production in a more relaxed and flexible manner. Meanwhile younger producers, namely PCOE1 and PSFE1, were motivated through their personal and family's experience with GM crops to transition to agroecological production including livestock.

Present

The new rurality

In "La Madurez Biológica", PCOE1 speaks of a "new rurality". The authors employ the term to talk about neoliberal rural life, a shift in rural conception that has perhaps led to the death of the Pampa and the Gaucho as previously known. This present is the direct result of the "bad past", and roughly coincides with the establishment of the feedlot in the early 2000s, following EME's narrative timeline. EME links this actuality of feedlot and agro-industrial production to unsustainability. Secondary teacher PBAE2 links it to austerity and the disappearance of rural institutions. PCOE1 links it to speculation and debt. PBAC2 meanwhile links it to a rural exodus. Their different opinions converge on the need for change.

Although the term "new rurality" shares some temporal and etymological overlap with the COVID-19 pandemic "new normal", it overlaps with it rather than corresponds completely. In the sequence of events, the "new rurality" precedes the post-pandemic "new normal". Indeed, the neoliberal dismantling of rural services and the disconnection between communities which characterizes the "new rurality" has accelerated during the pandemic. During the planning of the field visits, PBAE2 and PBAC2 related that bus journeys were complicated to plan, because regular and direct bus services had not been re-established by the end of the pandemic. PBAE2 texted that where she lived, "it's all pretty random" and busses followed a variable, reduced schedule and might or might not run at a certain hour on a certain day. The locality close to PBAC2's farm, meanwhile, is not being serviced by any bus (or train) companies any longer since the pandemic. In the closest bigger town, the bus station is no longer serviced. Buses now stop at a petrol station

at a roundabout on the main road. The disruptive neoliberal dynamics of 30 years ago, when the region's railway connections were capped, continue in the "new normal".

The "new rurality" is not static. It is influenced by national and transnational events and phenomena and gives inspiration as well as impulse to change. The agroecology initiatives, which should lead to a sustainable future, are planted within niches in the new rurality. However, in a context of accelerated liberalization and accented austerity under President Milei, ESFE1 argues that it remains to be seen what is continued.

Futures

Agroecology is not the only vision for the future. Most informants saw a need for improvements and transformation in the status quo. Two main models were proposed, which champion different orientations towards nature and distinct practices. Yet, both articulate a desire for adaption of livestock production that rearticulate the rural as a productive space to project sustainable futures for Argentina.

Adepts of agroecology wished for greater attention to and valorisation of sustainably produced foodstuff. This, they assume, should guarantee the availability of resources and fertile land for future generations. An important story-line for this future vision is health, both human, animal and environmental, as EME explained. He states that agroecology not only considers the quality of the products, but also looks at "welfare".

The main argument is, as PCOE2 put it, that sustainable farming follows a system of "production of healthy animals on healthy soils for healthy people". PBAE1, PCOE2 and PSFE1 expressed how agroecology would supply society with healthy food, as agroecological produce is more natural and in tune with nature. On one hand, they assume this is beneficial for humans and the environment because it relies less on toxic agrochemicals, thus reducing contamination, pollution, and health risks from agriculture. On the other hand, they assume that agroecological produces, more specifically grassfed beef, is healthier for human consumption and better fulfils human nutritional needs compared to industrially produced foodstuffs, especially meat grown in feedlots. This perception stems from agroecology's holistic appreciation of food systems, where human and nonhuman elements in production are interconnected. On the micro-(nutrient) level, as PBAE3 expressed, agroecology contributes to a future of "healthy soils". Practices such as rational pasturing should contribute to regenerate the soils of the Pampa that have been degraded by careless agricultural practices towards a future of sustainable and self-sufficient food production. Reducing agrochemicals use, meanwhile, PCOE1 explained, would reduce environmental risks for ecosystems and human populations while on a smaller level also ameliorating the financial balance of smallholders and family producers by reducing their dependence on external inputs. PCOE2

related that such a sustainable way of livestock production would guarantee survival and subsistence for rural families, as production refocuses on the land and decouples from technology. Individual consumer and producers' choices are important to get to this sustainable future. Regenerative cattle ranchers PCOE1, PCOE2 and PSFE1 called upon the consumers to develop a greater consciousness for more sustainably farmed beef and healthier consumption habits. However, technical agroecology experts, such as EME and ESFE1, say that nationwide changes in agricultural practices are needed, but that these could contribute to positively transforming Argentina's economy. PCOE2 argued that transitioning towards sustainable livestock farming should happen on a systemic level:

> *It cannot be the responsibility of a few. And even less can it be sustained at the expense of producers. A national livestock programme with international projection and a network of capable, responsible and committed actors must be designed.*

Nevertheless, EME, argues that such a future, for the moment, is highly unattainable because policymakers and the public are not sensibilized enough about the environmental and health consequences of industrial agriculture. He calls for greater "honesty" and better information in discussing food systems. Once such a change in awareness about the consequences of food production has occurred, EME believes that changes in policies will follow. For him, institutional support for agroecology is crucial. But what he emphasizes more strongly is: "when you stop subsidising an industrial system, the other system practically appears".

Reliance on technology and greater automatization is what more conventional producers PMC and PBAC2 as well as ECOE propose as the way forward for Argentinean livestock production. Modernizing production by including more machinery and cutting-edge technology could increase sustainability by promoting greater efficiency resource-, time- and money-wise. This builds on recent developments that promoted intensification in Argentinean livestock production, slowly but surely replacing traditional extensive cattle ranching. For agribusiness entrepreneurs, this implies investments in machinery in the present, which should permit them to remain competitive on a global scale for the future. Such investments, PMC argues, can unleash a virtuous circle whereby the strive for efficiency and competitiveness will stimulate individual producers to adopt technologies that not only increase productivity but also increase sustainability. He stresses that the entrepreneur spirit of Argentinean cattle ranchers is crucial to make the country's livestock production stand out among international competition.

Both future visions have a common element at heart, despite fundamentally disagreeing on the role of technology and external inputs. Indeed, all conceptions of cattle rearing proposed by the informants as modern and innovative represent an intensification of livestock production

compared to traditional extensive cattle ranching, which in turn requires planning and planification, according to informants. Agroecological producer PCOE2 and agro-industrial producer PMC argue that their way of producing requires more active involvement and reflection on the part of farm managers than has traditionally been the case. Management is a key concept in both cases, as it is assumed that inadequate planning and non-management is behind lacking sustainability. For most informants, simply putting cattle on a piece of land is an outdated approach to meat production. Rather, they encourage producers to observe the land, technology and animals at their disposition to optimize a productive system. The difference between agroecological and conventional producers hereby is to what extent socio-environmental externalities of livestock production are accounted for.

Interactions

There are several implications arising from the interrelationships between spatial and territorial dimensions discussed above. In the following, they will be analysed in terms of social, economic and ecological interrelations, ending with the most systemic and encompassing set of interrelations, that also addresses more-than-human relations.

The informants were asked to define a sustainable practice, but not sustainability itself. After being asked to elaborate on or deepen their first answer, informants would describe what dimensions were significant in their sustainability conception and what areas would need to be invested in to achieve sustainability in Argentinean beef production. Most informants operationalized sustainability as a multi-dimensional concept encompassing economic, ecological, and social aspects, which were differently weighted according to a person's values. Social sustainability in the context of rural development was the most consistently mentioned aspect and most elaborately explained. Ecological aspects were also frequently mentioned, but sometimes more as a form of justification for the informants' own production and decisions, less as an individually elaborated answer. Economic sustainability was not neglected by the informants per se. It was, however, mostly fleetingly mentioned or not further explained, as it was perceived as the most commonly understandable.

Social

For most of my informants, except for PMC, sustainability in the livestock sector was essentially focused on the social dimension of sustainability, in detriment of other aspects, notably ecologism. Many interviewees, especially if they were sceptical about the livestock sector's impact on global warming, mentioned the importance of attractive employment and social cohesion in the countryside. Most of the producers seemed concerned about rural-urban migration and the

decadence of rural infrastructure and social organization. Informants interested in agroecology also talked about preserving livelihoods and resources for further generations (of rural populations). Those informants who owned land and/or cattle mostly had a trans-generational outlook on beef production and perceived their work as a family business, that had passed to them and their siblings through their fathers (with the notable exception of PBAC2) and which they could eventually pass on to their children.

Producers organized as family business, both big (PBAC2) and small (all others minus PMC), stressed the importance of family and a multi-generational organization. This encompassed both their view of the past and their outlook to the future. By defining their business as a family activity, they stressed tradition and continuity but also emphasized social and resource sustainability aspects. Talking about how the farm would be passed on to children was used to stress the need for responsible use of natural resources and accord with the environment. Referencing previous generations of farmers was employed to call for greater connectivity with the land and the rural way of life, at the same time stressing the need to return to a more natural, less dependent way of raising cattle and a more integrated rural life. The definition of past never went beyond an evocation of the grandparents' and the way they farmed, highlighting a sense of rural community that gives purpose to work in cattle rearing. The identity of a family business proposes a sense of purpose, where daily tasks build a sense of continuity and stability across time in communities that have been uprooted over time.

Perception of gender

The significance of social relations in the informants' businesses cannot be underestimated. As explained before, direct sales on local level are important for most producers, as is direct marketing and mouth-to-mouth recommendation. However, since most informants are heads of family businesses, social relations also lie at the heart of production. Except in the case of PMC's enterprise, which represents the biggest farm of the sample, and in the case of PSFE2, who does not own land herself, a family business structure also implicated spouses, siblings and adult children of the interviewees in the production process. The interviewees are the designated owners and head of the farms, which appears to follow a patriarchal structure. Although the spouses of the ranchers also work for the farm, the contact for publicity normally is the man, with the notable exception of PCOE2. Being organized as family businesses, where family members collaborate for a common cause, allows smaller producers to diversify and brand themselves individually by dividing tasks according to availability and drawing from different individual expertise of family members. There is a traditionalist, gendered component to this, where reproductive and unpaid work ends up being women's responsibility, but it goes beyond that. PSFE1 for instance profits

from his spouse's experience with marketing, while PBAC2's partner oversees the practical day-to-day functioning of their livestock business. Yet, at the end of the day, the women's contributions remain marginalized because they are not remunerated, visible and esteemed the same way as the men's.

Informants' opinion over the gendered facets of Argentinean livestock production are mixed. Some of the women interviewed, such as PBAE2, E/PSFE2, or PBAC2's spouse, were aware that male ranchers are the expected norm in Argentina. At the same time, EBAE1 and E/PSFE2, who are academically educated technical experts working for a well-reputed national institution, expressed to be well respected as professionals in their activities, without their gender having been an issue. E/PSFE2 remarked that she had not been treated differently because she was a woman in a rural professional context. However, although comfortable as a female agricultural professional, E/PSFE2 related that her father did not have any male children and thus had always included her sisters and her in farm activities.

Gender equality remains underachieved in a rural Argentinean context. Certainly, advances were made over generations. While PBAC2's spouse abandoned her university studies when she became pregnant in the 1960s and performed reproductive and unpaid work subsequently, younger female informants overwhelmingly completed their university studies and specialized further. Many of them raise children besides their professional activities. This is not self-evident. PBAE2 who works in education relates that given limited rural infrastructure and an increasing reduction of public service in the countryside, school options are limited and distances to educational institutions large. Patriarchal family relations continue to be significant when it comes to women's participation in livestock farming, and women face restrictions depending on what encouragement, support and tasks they receive from their male family members.

Labour relations

The farm owners interviewed often professed that they saw their production as a mean of generating secure employment in the countryside and thus permitting their employees to live a dignified and meaningful life with their families. Even when they did not have employees, farm owners related how they meant their work to be an economically viable and socially attractive alternative to rural emigration.

There are many issues about socio-economic relations in cattle ranching to be raised, which go beyond the scope of this research. As this study overwhelmingly interviewed people who oversee a farm or business, or who work as researchers, limited conclusions can be drawn about employment and labour relations. It is therefore hard to say if the intention of creating good jobs and dignified living conditions set by informants are truly fulfilled, or what farm workers' outlook

on sustainability is. Topics such as land redistribution or pensions can also not be addressed, as the landowner perspective is almost exclusively represented.

Economic

Although social components of rural development were highly valued, informants would not draw on Gaucho culture to sustain their arguments. Rather, they would resort to wider social theory and demographics to explain why rural development was important. Most producers and technicians would integrate their work into the national, in selected cases regional, socioeconomic context of agriculture-based exports and rural emigration. While some saw Argentina's reliance on agricultural exports as an opportunity that was not being fully seized, others mentioned international dependencies that were reflected in national inequalities. In this context, historical facts were used to illustrate economic interpretations rather than creating a tradition-based argument. At the same time, the historical centrality of beef in the Argentinean diet was interpreted as an opportunity and justification for cattle ranching as an economic activity. Cattle ranching was acknowledged as a historical activity, not as a tradition, which answers a demand tradition, namely a meat-rich diet. Gaucho traditions were, therefore, not seen as important. More value was given to the consumption-driven, more urbanely rooted traditions, rather than rural culture.

The interest in the expansion of Argentinean beef production is natural if informants want their businesses to prosper. However, it fits into a wider economic context of a struggling economy with high inflation rates and dwindling purchasing power. Although beef is seen as a staple of the Argentinean diet, its share of meat sales has been declining in recent years as it is an expensive product compared to other meats, mainly poultry and pork (Bifaretti, Brusca, & Jairala, 2014). While PMC hopes that beef will recapture lost domestic market shares, for niche producers it is increasingly interesting to look for more profitable markets. These include niche markets of more environmentally or health-conscious consumers, but especially international markets where consumers have higher purchasing power, notably Europe. To some extent, international markets fulfil a role of niche markets, where cattle ranchers can sell products that would not be sold domestically. PCOE1 explained that China, for instance, would buy older animals that would not be consumed domestically. Meanwhile, PCOE2 related, grassfed beef could be sold to Europe, where more conscious consumers would value the product as premium while domestic consumers were not as accustomed with this type of meat. She and PCO1 stressed how meat from animals that had not been raised in a feedlot and had thus exclusively been fed grass was visibly, textually, and olfactorily different from conventional meat. Meanwhile, some classic Argentinean meat cuts, including the iconic Asado de Tira, are not known or sold to producers outside South America, and would be considered less premium in Europe.

Although preferences in meat products are of cultural origine, there is economic reasoning behind this as well (Bifaretti, Brusca, & Jairala, 2014). Comparatively wealthy European consumers can choose more freely which parts and which animals they want to consume, while consumers in emerging countries are more restricted in their choices by budget. For producers such as PCOE1, the Chinese market is not attractive because consumers are especially well-endowed, but because it represents a complementary market to Argentina which allows them to achieve extra incomes and reduce costs by disposing of parts and animals for which they cannot find a domestic market. There is an additional macroeconomic importance of international markets for Argentinean producers. As Argentina faces hyperinflation, it is attractive for businesses and producers to draw foreign currency and access markets that are relatively stable. There is also the idea that Argentina, out of natural and historic disposition, could establish and profile itself as a global player of high-quality beef, as PMC expressed. Reassuming a reputation of a first-class, reliable, and sustainable meat exporter could permit Argentina to carve out a niche for herself in the global economy as well as attract foreign investment, of which both (bigger) agroecological, for instance PCOE2, and conventional producers, such as PMC are aware. For cattle ranchers, their mission is to physically be the bread winner of the nation, and also to fulfil this role on a macroeconomic level, by attracting much needed money on a global scale.

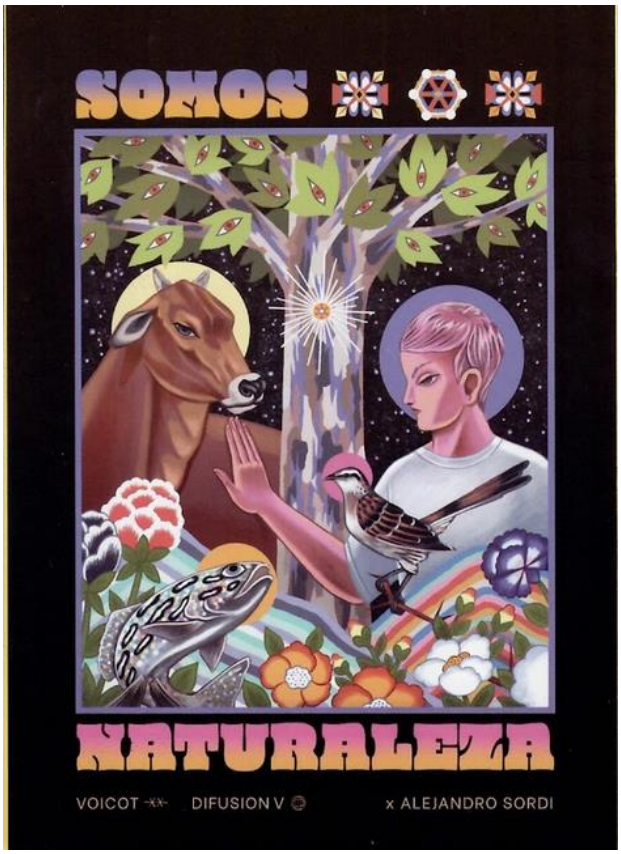
Ecological

From the informants' assertions, as analysed in previous sections, different conclusions can be drawn about their relation to nature and how they integrate themselves into the wider ecosystem of the Humid Pampa, about which participants were explicitly asked. As explained, there are differences in how much value and priority is given to environmental concerns. Furthermore, this section will also try to evaluate human-animal and more-than human relationships underlying this thesis.

Overall, all informants were conscious that, especially in Europe, the livestock sector has been discussed for its negative impact on the environment. However, all people interviewed, possibly except for PMC, whose conviction to sustainability was uncommitted, saw their production as part of the solution rather than part of the problem. All producers, including conventional cattle ranchers, mentioned their pastures' ability to capture CO_2 in the soil and thus positively impact climate change.

Some producers confessed how they hoped that their participation in this research would contribute to portray a less biased picture of South American beef production to European and/or academic audiences, with access to a profitable market in mind. This is a direct consequence of the above-mentioned consciousness of the negative image that the livestock sector enjoys in

environmentalist discourse. More export-oriented producers, both traditional and strictly grassfed, mentioned that they want to be perceived as good actors and model producers abroad. PSFE1 also stressed how he hoped that environmentally conscious people, notably young urban well-educated individuals, would realize that the problem is not meat itself but its production system. Echoing opinions from institutional promoters of agroecology, notably ESFE1, PSFE1 stressed how he was part of a wider solution for sustainability issues in agricultural production in Argentina. Like all other family farmers interviewed, he took great pride in his work and wanted to distance himself from unsustainable, agrochemical-intensive, corporate-run beef production.



An excursion on veganism

There is an interesting overlap between agroecological and vegan discourse. Agroecological livestock farmers, such as PCOE1 and PCOE2, stress how their production not only emulates nature but also integrates in the surrounding ecosystem. They say they produce according to and with nature, which in turn promises a more natural life. Argentinean vegan activist group Voicot, based in Buenos Aires, meanwhile, promotes a similar message of humans being nature in their propaganda (see fig. 11).

Fig. 11: Propaganda sticker "We are nature" designed by Alejandro Sordi with the Argentinean vegan activism group Voicot.

Besides the overlap in the evocation of nature as an argument for a certain style of nutrition, both vegans and agroecologists use this nature vocabulary to advocate against the feedlot and other styles of industrial livestock production. Namely, the argument is that cows should not be enclosed and (force) fed grains, as it goes against nature. The conclusion drawn from this is fundamentally different. Vegan activists are opposed to humans making use of animals and enclosing them for their own benefit, putting themselves and their welfare over other non-human species. For agroecologists, meanwhile, nature is still a tool to be used and emulated in human food systems. Although both sides might attribute intrinsic value to nature and non-human species, the question of species superiority has much higher saliency for vegans than for agroecologists.

PSFE1 is aware of this moral debate, in which he separates the strive to save the planet from animal ethics:

> *"I don't want to eat meat because I don't want to kill the animal", that's one thing; now "I don't want to eat meat because I'm going to destroy the world", that's something else, something else that is a misconception.*

Essentially, veganism and agroecology propose two different, but not mutually exclusive, solutions to transform Argentinean food systems, both calling for a reconsideration of human-nature relationships. However, the stumbling block that remains is that veganism fundamentally excludes seeing animals as products for human consumption, while in agroecology this is an optional individual choice and no moral prerogative. Rather, herbivores are seen as part of a wider solution to return food production to nature, and human supremacy over other species is not questioned.

Human-made environments

There is another reflection to be had on agroecology's relation to nature when considering livestock production in the Pampa. Cattle is not a primal species of the Pampa. It was introduced by humans to the American continent during European colonization. Perception of the Pampa as a natural habitat from an agriculturalist perspective often obscures that the ecosystem has undergone fundamental changes and modifications with its exploration for the benefit of the nation of Argentina, and some perceptions of naturality and indigeneity in the Pampas are steeped in colonial precedent. Human-made and natural sometimes figure as antagonists rather than as collaborators.

Farmers can have a strong impact on the ecosystems of the land that they cultivate, as they can influence what species grown and live there. The most obvious example are herbicides and pesticides, which were discussed above, because they can eliminate species considered unwanted. Furthermore, by selecting seeds to plant on their fields, both for seasonal and perennial plants, farmers can also make a positive selection of species, favouring some at the detriment of others. In some cases, this means cultivating domestic, local species. In other cases, new, foreign species are introduced to the Pampas.

Fig. 12: Eucalyptus forests on PBAC2's lands.

There are different concepts of the rigidity of a nature-agricultural land. On one end, there are agroecological one-with-nature concepts. There are also conventional and agroecological producers that promote carbon-offsetting by planting trees. Yet, there is also some doubt around such managerial environmental forestation projects, as PCOE1 writes (Dutra Keiran & Vasquetto, 2022, p. 158f). The issue is that tree planting projects, especially when not done for an environmental purpose, often resort to exotic species, mostly eucalyptus, which grow fast and have popular commercial uses. PBAC2, for instance, has planted several small eucalyptus forests across his lands, because he thinks they look pleasant and also provide a long-term value-adding strategy for more dire times. Ironically, there is some intention to emulate nature in this, though more an old-world/northern temperate climate landscape, rather than the cow-free plain grasslands of the Pampa. Nonetheless, having acquired the land, proprietor PBAC2, who drives around with a gun in his truck to shoot pests on his fields, has the command over which species get to populate his property.

For farmers, it is important that the plants they select will develop properly in the available soils and environment. Among agroecological producers, there is a preference to resort to domestic plants that naturally occur in the Humid Pampa for their pastures, because they are well-adapted

to the local environment. PBAE3 explained that she resorted to a mix of plants for her perennial pastures that includes plants with different characteristics so that she gets full soil coverage in very dry as well as in very wet years. The idea is to optimize yields by species selection. However, she is aware that there is no formula behind the right mix and that creating a working perennial poliphytic pasture is done by trial and error. PBAE3 as well as PBAE1 and PBAE2 who farm in the same area have experienced that nature is capriciously hard to emulate. Good intentions alone do not guarantee success, and plants sowed one year might only sprout the year after if meteorological conditions do not cooperate.

Fig. 13: PBAE3's cattle await to be changed into a fresh parcel of perennial poliphytic pasture.

There are other limitations to emulating nature, besides meteorological and mineralogical caprice. PCOE1 notes that it has been a struggle to get seeds of local plants to start perennial poliphytic pastures. Compared to researched and cultivated cultigens, finding seeds and seedlings for local plants that are less commonly commercially used because they are considered less high-yielding on their own is complicated. Furthermore, PBAE2 and PBAE3 who have participated in projects of the INTA to reintroduce native trees as windbreak to arable land in the Pampa noted that due to the industrialization of agriculture and the rural exodus, local knowledge had been lost regarding the use of native species. The project they described involved the distribution of seeds of different trees from the Southern Cone to local farmers who were encouraged to inoculate them and then

plant them on their land, to see which species were the most adequate for silviculture, windbreak or anti-erosion projects. PBAE2 who is quite enthusiastic about the project and hopes to use the trees for shade and shelter for her cattle admitted that due to the draught, the almost two-year-old project had not reaped success. Good intentions alone do not guarantee the sustainability of a sustainability project.

Conclusion

Given the range of different practices in cattle rearing, it is complicated to decide if sustainability concerns are driving a return to older, traditional production methods. Although there are individual and institutional initiatives that draw on traditional knowledge and historic farming practices in the Pampa, such initiatives remain small dots in a waster, industrially farmed region. The social, economic and technological transformations of the last 30 to 40 years were profound and are very noticeable. Yet, there is individual resistance and some perception that the Argentinean livestock sector needs to evolve towards more sustainable methods.

Personal experiences and family belonging are important inspirations for adepts to alternative methods in cattle ranching. However, although they feel that the Pampa and rural life is not what it used to be, they draw very little inspiration from Gaucho traditions when implementing greater sustainability in cattle rearing. While nationalistic-coloured arguments are used to stress the relevance of the livestock sector for Argentina, the idea promotes more a vision of a natural predisposition of the country to be a major beef producer, rather than a need to preserve a typical popular culture. Indeed, many informants saw the Gauchos as more of an obstacle rather than a pioneer to sustainability.

Although family farmers were at the centre of this thesis, it is necessary to stress that their testimonies also confirm that the cattle rearing in the Pampa has been thoroughly transformed and that family farmers no longer represent the backbone of Argentinean livestock production. With traditional extensive estancia ranches are also disappearing, corporate-controlled farms are gaining importance in beef production. Extensive cattle rearing is still very wide-spread and visible and coexists with factory farms. Yet, it is understood among most informants that the way forward for livestock production is intensification, leaving behind less managed extensive systems for better planned methods such as VRG or feedlot production.

For the Argentinean context, agroecology is championed as the way to sustainable livestock production. Its proponents estimate that agroecological methods not only better respect the environment than conventional methods, but also promote more social development in the countryside and addresses the economic challenges posed by hyperinflation through cost reduction. The actual situation is experienced as unsustainable enough by producers and experts, that they are motivated to implement changes despite limited institutional assistance. Even for agribusiness companies, such as PMC's company, the contemporary economic situation and climatic extremes stimulate adaptions in production methods. However, for big agribusiness, the current neoliberal, industrialized rurality is the optimal solution, and they see no need for systemic change. Given that other agribusiness companies, especially those operating feedlots, felt no need

to participate in this thesis shows that the sector has little interest in a green economy or traditional cattle ranching, since they have found a profitable business strategy already.

There is no doubt about how neoliberal rationality has infused every link of food systems in Argentina. This is perhaps best expressed in agroecological producers' question of why their products are not more supported and valued than industrial agriculture, although they provide additional value to society. The fact that sustainability and "greenness" are advanced as diversifying selling points rather than the basic standards of food systems bears witness to a neoliberal rationality of self-optimization and self-promotion to get ahead of competition. Within a capitalist system, sustainable products, and the connected soil regeneration and health benefits, are commodities to be acquired by consumers willing to pay the price, making ecology a selectable commodity rather than a binding condition.

Similarly, cattle ranching traditions are more of a selling point or marketing strategy than concepts that are actually believed in by producers or experts, as they are perceived as antiquated expressions of a national identity. Noone wants to go back to large estancias where gauchos and cattle roam free. Rather, the future of livestock production is articulated as either the continuation of Green Revolution style industrialized agriculture or alternative agroecology projects that build on a separate tradition. Gauchos and horses remain as window-dressing to be engaged with in the free time, a hindrance to modern production rather than a pillar of Argentine cattle rearing.

In true neoliberal fashion, a managerial approach to food production prevails. Whatever their opinion on or approach to sustainability, stakeholders agreed that producers had to manage their land and resources in an optimal way. Producers in the Pampa have different means and strategies of production, which they should employ in a way that best suits the goals and priorities they have set.

Many of my informants have questioned existing and past national policies and what neoliberal economic development has done for the Argentinean countryside. What they were reluctant to criticise is the concept of free market capitalism. Instead, the future visions and sustainability approaches they proposed generally did not break with historic developments and current relations of production. The question for them is to optimize the country's food systems in a way that re-creates sustainable development in the countryside for its inhabitants, putting the economy again at the service of humans rather than the humans at the service of the economy. Social aspects to sustainability are deemed the most salient, defining sustainability in a way that constructs it around humans. More than human relations meanwhile, remain encased in an economic framework. Sustainability is not an isogonic triangle in Argentina.

Technological developments and scientific discoveries are an ongoing process and given the political changes underway in Argentina since late 2023, modifications to what has been discussed here are expected. Further investigations could trace the development of sustainability initiatives and alternate projections of rural life under an ultra-liberal national government, as well as address the national picture in greater detail. It would also be relevant to compare the Argentinean case to other cases from the region to inquire what role national traditions really play in shaping sustainability discourse.

In a time of multiple crises, the multilateral agenda and international discourse are continuously evolving, and the framing of sustainability is bound to change as backlash on climate protection measures is deployed. As the sustainable development agenda has evolved over time, priorities in the debate can shift. Therefore, it would be relevant to trace shifts in discourse and developments in strategies over time. Furthermore, as this research has shown that interpretations of the past and projections into the future are important for how sustainability strategies are constructed in the present, studying sustainability in food production over long periods of time could be significant.

Additionally, although initial assumptions of links between references to traditions and sustainability discourse did not prove correct, the analysis has also shown that adopting a multi-dimensional approach to sustainability can account for a variety of motivations and perspectives to food systems. While possibly more expansive and less detail-focussed, multi-disciplinary approaches to sustainable development focus on interplays and highlight connections between different phenomena from different areas. This is significant when studying food production, because the topic has an intrinsic value to humanity beyond its purely economic one.

Indeed, while it is clear from this thesis, that economic considerations cannot be underestimated when studying production methods in Argentinean cattle rearing, enquiring about the underlying ethical and personal choices behind farmers' work apports interesting insights into the livestock sector's societal role and perception beyond nationalistic or romanticised clichés. Arguably, maintaining a cultural analysis approach and listening to alternate voices also contributes to shifting the approach of national development away from the grasp of neoliberalism by challenging perceptions that every aspect of life can be reduced to economic interactions to produce value. Especially when dealing with topics that involve the more than human, which is essentially not included in any conceptions of *homo oeconomicus,* adopting frameworks that transcend value-attributing in economic terms can reduce dangers of oversimplification.

Although the importance of personal choices and individual reasoning has been expressed throughout this work, the issue of sustainability in food production is urgent, especially regarding

resource-intensive livestock production. Long-term studies, as suggested above, would be beneficial to track developments over time, but highlighting that there are developments happening currently and that there is willingness and readiness to tackle the climate crisis would also contribute to address the issue's urgency. As inequalities in nutrient distribution persist in a growing world population, finding ways to feed humanity while maintaining resources and habitats for future beings has not lost any saliency with technological developments. Arguing for and against certain technologies has notable ideologic tendencies, but there is an arguable moral imperative to feed those alive and stimulate access to health. Focusing on political discourse is a way to track political decisions, but studying public policies is equally fundamental when addressing sustainable development.

There are many marginalized voices that have not been included here. Reaching every stakeholder for this study had structural limitations given available infrastructure. Nonetheless, narrowing down the scope in a similar study could permit to highlight opinions and approaches by actors that remain outside of institutionalized sustainability discourse. Such an approach could also favour the inclusion of alternative knowledges and permit to leave frameworks of colonial knowledge acquisition, transcending established hierarchies. Such approaches could also feature a quest to approach socio-environmental issues in more popularized terms than those used in and by opaque multilateral organizations and internationalized discourse.

How the livestock sector and neoliberalism develop in Argentina has gained salience with recent political developments. As political economists and governments in the region observe Argentina and its experience with ultraliberal capitalism, the performance of one of its most important economic sectors is a topic of great relevance. Given global changes in political orientation and shifts in policy priorities, sustainability as conceptualized in this thesis could take a backseat in economic policymaking. Nonetheless, while world population continues to grow and climate change continues to multiply extreme weather events, questions around food security and alimentary production remain undiminished in priority.

Bibliography

Altieri, M. A. (2015). Breve reseña sobre los orígenes y evolución de la Agroecología en América Latina. *Agroecología, 10*(2), 7-8.

Arsel, M., Pellegrini, L., & Mena, C. F. (2019). Maria's Paradox: Oil Extraction and the Misery of Missing Development Alternatives in the Ecuadorian Amazon. In R. Kanbur, R. Sandbrook, & P. Shaffer, *Immiserizing Growth: When Growth Fails the Poor* (pp. 203-225). Oxford: Oxford University Press.

Asamblea General. (2015, October 21). *Agenda 2030.* Retrieved May 15, 2023, from Naciones Unidas: https://documents-dds-ny.un.org/doc/UNDOC/GEN/N15/291/93/PDF/N1529193.pdf?OpenElement

Asociación Grassfed Argentina. (2022, November 22). *Certificación.* Retrieved from Asociación Grassfed Argentina: https://www.asociaciongrassfed.ar/asociación-grassfed-argentina/certificación

Belk, K. E., Woerner, D. R., Delmore, R. J., Tatum, J. D., Yang, H., & Sofos, J. N. (2014). The meat industry: Do we think and behave globally or locally? *Meat Science, 98*(3), 556-560.

Bifaretti, A. E., Brusca, E. A., & Jairala, M. (2014). *Cambios socioeconómicos y demanda de carnes: ¿Cómo se construye el mapa del consumo de proteínas cárnicas en el mercado argentino?* Buenos Aires: Asociación Argentina de Economía Agraria.

Brown, W. (2015). Undoing Democracy: Neoliberalism's Remaking of State and Subject. In W. Brown, *Undoing the Demos: Neoliberalism's Stealth Revolution* (pp. 17-46). New York, New York, United States of America: Zone Books.

Cáceres, D. M. (2014). Accumulation by Dispossession and Socio-Environmental Conflicts Caused by the Expansion of Agribusiness in Argentina. *Journal of Agrarian Change, 15*(1), 116-147.

Comerci, M. E. (2014). Conflictividad y resistencias en los márgenes de La Pampa (1990-2012). *Mundo agrario, 15*(30), 1-26.

Cuéllar Padilla, M., & Sevilla Guzmán, E. (2018). La agroecología como investigación militante y feminista. *Agroecología, 13*(1), 11-20.

De Rito, M., Auer, A., Arnaiz Schmitz, C., Maceira, N., & Herrera, L. (2020). Linking farmers' management decision, demographic characteristics and perceptions of ecosystem services in the Southern Pampa of Argentina. *Journal of Rural Studies, 76*, 202-212.

Dobson, A. (2007). *Green Political Thought* (fourth edition ed.). New York, USA: Routledge.

Dutagupta, R., & Pazarbasioglu, C. (2021, Summer). *Emerging markets must balance overcoming the pandemic, returning to more normal policies, and rebuilding their economies.* (International Monetary Fund) Retrieved June 29, 2024, from IMF: https://www.imf.org/external/pubs/ft/fandd/2021/06/the-future-of-emerging-markets-duttagupta-and-pazarbasioglu.htm

Dutra Keiran, J., & Vasquetto, B. (2022). *La Madurez Biológica.* Córdoba, Argentina: Es Muss Sein Producciones.

Elgert, L. (2012). Certified discourse? The politics of developing soy certification standards. *Geoforum, 43*(2), 295-304.

Faggi, A. M., Krellenberg, K., Castro, R., Arriaga, M., & Endlicher, W. (2008). Biodiversity in the Argentinean Rolling Pampa Ecoregion: Changes Caused by Agriculture and Urbanisation. *Erdkunde*, 127-138.

Food and Agriculture Organization of the United Nations. (2016). *Produccion Agroecologica de cereales y carne Bovina en un Establecimiento Agropecuario Extensivo (650 Has) en el sudeste de la Provincia de Buenos Aires de la Republica Argentina. El caso de "La Aurora" una experiencia de 25 años.* Retrieved October 30, 2023, from Organización de las Naciones Unidas para la Alimentación y la Agricultura: https://openknowledge.fao.org/server/api/core/bitstreams/286266a0-415f-476f-a4bd-0e763d8688e4/content

Foucault, M. (1968), 'Politics and the Study of Discourse', repr. in Burchell *et al.* (1991), 53–72.

Giroud, T. (2019, May 10). Swiss start-ups hope to slow climate change with cow burps. *Swissinfo.ch*, https://www.swissinfo.ch/eng/sci-tech/methane-emissions_swiss-start-ups-hope-to-slow-climate-change-with-cow-burps/44938760.

Gonzalez Fischer , C., & Bilenca, D. (2020). Can we produce more beef without increasing its environmental impact? Argentina as a case study. *Perspectives in Ecology and Conservation, 18*(1), 1-11.

Goodman, J., & Salleh, A. (2013). The 'Green Economy': Class Hegemony and Counter-Hegemony. *Globalizations, 10*(3), 411-424.

Gras, C. (2009). Changing Patterns in Family Farming: The Case of the Pampa Region, Argentina. *Journal of Agrarian Change, 9*(3), 345-364.

Hajer, M. A. (1997; online edn, 2003). Discourse Analysis. In M. A. Hajer, *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process* (pp. 42-72). Oxford: Oxford Academic.

Holt-Giménez, E., Shattuck, A., & Van Lammeren, I. (2021). Thresholds of resistance: agroecology, resilience and the agrarian question. *The Journal of Peasant Studies, 48*(4), 715-733.

INTA. (2022, March 23). *Sitios Red de Agroecología – INTA*. Retrieved May 02, 2024, from Google My Maps: https://www.google.com/maps/d/viewer?mid=1JZbnf1SvETI233hXvz7QuuS83jhAOTb0&ll=-34.98228999999996%2C-57.99684999999999&z=8

INTA. (2022, October 10). *Sedes del INTA*. Retrieved May 2024, from Instituto Nacional de Tecnología Agropecuaria: https://www.argentina.gob.ar/inta/sedes

INTA. (2023, June 13). *Agenda*. Retrieved May 02, 2024, from Instituto Nacional de Tecnología Agropecuaria: https://www.argentina.gob.ar/inta/agendaLalander, R., & Merimaa, M. (2018). The Discursive Paradox of Environmental Conflict: Between Ecologism and Economism in Ecuador. *Forum for Development Studies, 45*(3), 485-551.

Lapenga, P. (2017). The political economy of the agro-export boom under the Kirchners: Hegemony and passive revolution in Argentina. *Jornal of Agrarian Change, 17*(2), 313-329.

Litre , G., Tourrand, J.-F., Morales, H., & Arbeletche, P. (2007). Ganaderos Familiares Gauchos: ¿Una opción hacia la producción sustentable? *Asian Journal of Latin American Studies*, 105-147.

Loewy, T. (2019). Modelos agrarios y sostenibilidad: un análisis cualitativo. *Revibec: revista iberoamericana de economía ecológica, 29*(1), 104-113.

Mendoza, M. (2018). The Patagonian Sublime: The Green Economy and Post-Neoliberal Politics. New Brunswick: Rutgers University Press.

Pais, M. (2008). *Volver a la Tierra: Guía básica para vivier en el Campo (en el siglo XXI).* Buenos Aires, Argentina: Ediciones Pausa.

Richardson, N. P. (2008). Export-Oriented Populism: Commodities and Coalitions in Argentina. *Studies in Comparative International Development, 44*, 228–255.

Saidel, M. (2016). La fábrica de la subjetividad neoliberal: Del empresario de sí al hombre endeudado. *Pléyade: Revista de humanidades y ciencias sociales*(17), 131-154.

Sarandón, S. J., & Marasas, M. E. (2015). Breve historia de la agroecología en la Argentina: Orígenes, evolución y perspectivas futuras. *Agroecología, 10*(2), 93-102.

Schneider, M. (2014). Developing the Meat Grab. *The Journal of Peasant Studies, 41*(4), 613-633.

Seawright , J., & Gerring, J. (2008). Case Selection Techniques in Case Study Research. *Political Research Quarterly, 61*(2), 294-308.

Teubal, M., & Rodrígues, J. (2001). Globalización y sistemas agroalimentarios en la Argentina. *Ciclos, 11*(22), 203-222.

Vasquetto, R. (2024) "**Agrodiversity** (@agrodiversity_) • Instagram-Fotos y -Videos." Social Media. Instagram. Accessed February 12, 2024. https://www.instagram.com/agrodiversity_/.

Vergara-Camus, L., & Kay, C. (2017). The agrarian political economy of left-wing governments in Latin America: Agribusiness, peasants, and the limits of neo-developmentalism. *Journal of Agrarian Change, 17*, 415-437.

Weis, T. (2013). The meat of the global food crisis. *Journal of Peasant Studies, 40*(1), 65-85.

Wezel, A., & Soldat, V. (2009). A quantitative and qualitative historical analysis of the scientific discipline of agroecology. *International Journal of Agricultural Sustainability, 7*(1), 3-18.