Transmodern transitions to buen vivir in early 21st century Andean seed systems

by Juan Garzón

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under the supervision of Prof. Chris Riedy and Prof. Cameron Tonkinwise

University of Technology Sydney
Institute for Sustainable Futures

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CERTIFICATE OF ORIGINAL AUTHORSHIP

I, Juan Garzón, declare that this thesis is submitted in fulfilment of the requirements for the award of PhD in Sustainable Futures, in the Institute for Sustainable Futures at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

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Signature: Production Note: Signature removed prior to publication.

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The following is a conventional thesis structured as a series of chapters.

“Une civilisation qui s'avère incapable de résoudre les problèmes que suscite son fonctionnement est une civilisation décadente.

Une civilisation qui choisit de fermer les yeux à ses problèmes les plus cruciaux est une civilisation atteinte.

Une civilisation qui ruse avec ses principes est une civilisation moribonde.”

Aimé Césaire
Discours sur le colonialisme
1955

“…

Creyeron que te
enterraban.

Y lo que hacían
era enterrar una semilla.”

Ernesto Cardenal
Epitafio para la tumba de Adolfo Báez Bone
1961

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Abstract

Our planet is facing an environmental crisis produced by modern human ways of being. Although there are multiple interpretations of its causes and solutions, there is a clear need for pathways towards more sustainable futures. This thesis frames the current crises humanity faces as resulting from the continuation of colonial power structures, and proposes visions of eco-centricity, plurality, and transculturality as a path towards more just and sustainable futures.

The research set out to understand how sustainability transformations happened in poor nations with a focus on civil society and social movements with alternative visions. It positioned seeds as technology to reflect on issues of colonialism, power, justice, and the interactions between two worldviews: the modern and non-modern. The research used a qualitative methodology to approach three case studies of seed system transformations in the Andean region. Its purpose was to study 'seed guardian networks', their transformative actions to protect native seeds and associated care practices, and their interactions with incumbent actors.

The thesis positions Latin American seed guardian networks as innovative transmodern spaces that have destabilised current ways of doing to ultimately change national seed system rules. It tells the story of inter-epistemic translational contact zones emerging between civil society and the state. To better understand this process, an integrative transdisciplinary approach and multiple theories are mobilised (new institutionalism, sustainability transitions, narrative transformation, and social practice theory).

The intended contribution of this work is twofold: To offer ways to operationalise sustainability transformations guided by alternative visions to Western development, and to decolonise sustainability transitions, a prominent theory studying long-term socio-technical change. The thesis ultimately argues that transmodern transitions to buen vivir are emerging through inter-epistemic agonism. It evidences the importance of alternative visions, transmodern practices, broad discourse coalitions, and epistemic justice in such processes.

Introduction

This document elaborates a thesis for the attainment of a PhD in sustainable futures. It presents research on Latin American seed system transformation dynamics with a decolonial perspective and attempts to integrate established theories of change with non-Western visions of sustainable futures. The thesis frames current environmental and social crises as products of ongoing colonial structures and proposes non-colonial alternatives as a response. It is written from a Global South position that elevates the voices of historically marginalised actors to challenge established theories.

The research emerged from realising that the material intensity of Western(ised) civilisation exceeds planetary boundaries, impeding its extension over time and space. Accordingly, it ascribes to the decolonial position that there are no modern solutions to modern problems, as modernity itself *is* the problem. As such, the thesis focuses on sustainability transformations since they are urgently needed to transcend modernity and bring forth other ways-of-being to allow the continuation of life on earth.

The intention to transcend modernity directs attention to peripheral cultures, values, practices, and narratives. Those living in the borders of the modern world-system have been on the frontlines of environmental stewardship, are generally most affected by the Anthropocene, and hold valuable knowledge to bring forth more just and sustainable futures. Their transformation efforts are the focus of this study. However, this research also recognises that these processes should keep the best of modernity even in the pursuit of radical alternatives.

These postures are deeply informed by the body-politics and geo-politics of the researcher. As such, this thesis rejects any claim of neutrality instead recognising personal positionality. The researcher's experiences growing up and working in Colombia have directly influenced the ideas presented here.

Throughout his work, the same issues surfaced again and again. Organisations would not have the resources to commit to long-term transformation processes and were more interested in turning marginalised populations into entrepreneurs or well-behaved citizens than critically engaging with structural issues or historical trajectories. On the other hand, rural and peri-urban peoples often chose not to participate in development projects or gave up halfway due to lack of terms to enable productive dialogues. This inability to produce deep change led the researcher to pursue a PhD at the Institute for Sustainable Futures, University of Technology Sydney. This would hopefully allow deeper engagements with the structures that shape our world and expand his knowledge on theories of change geared towards materialising more just and sustainable futures.

The research began by asking: How can peripheral innovative spaces open transition pathways to alternative ways of being in postcolonial settings? Answers to this question would be acquired by exploring emerging innovative spaces that enabled onto-epistemic interactions between modern and non-modern ways of being. The research set out to i) engage critically with modernity to uncover the persistence of coloniality, ii) explore alternatives to modernity/coloniality emerging in Latin America, iii) describe the internal and external dynamics of alternative innovative spaces, iv) describe the transformation processes in the region, and v) contrast these processes with existing theories of change.

Seeds offered an ideal space to direct these enquiries. Agricultural seeds are fluid to the point of being puzzling. They resist any single definition as narratives about them are varied and often contradictory. Multiple practices revolve around them, and they traverse multiple scales in time and space. What are seeds? Are they national strategic resources, or free beings with agency? Are they genes to be improved, or kin to be loved and nurtured? Are they standardised commodities subjected to planned obsolescence, or worthy of spiritual reverence as the origin of life? They seem to be all of these and more. And where is agrobiodiversity located? Is it in seeds themselves? Is it in government, academic or private seed banks? Is it in distant places where humans have little reach? Is it in Indigenous and peasant bodies, or in the minds of scientists? Is it in spoken words or in spreadsheets? It appears to be in all of these and more.

What can be said with absolute certainty, is that seeds are intersected by many of the key issues of our epoch. In the smallest of seeds worldviews collide and futures are contested. Seeds bring modern and non-modern tensions to the fore, they are an axis where governments, industry, and civil society revolve to unknowingly tackle historical asymmetries of knowledge and power. Issues that ultimately demand multi-actor inter-epistemic contact to co-produce sustainable futures.

Seeds were seen as an ideal vehicle to explore the intersections between colonialism and transitions to more sustainable futures. This document will tell the story of Latin American seed guardian networks (SGNs) and their role in seed system transitions over the last two decades. SGNs defend the rights of peoples to produce, store, improve, exchange, and trade seeds according to Indigenous, Afro-descendant, peasant, family,[1] agroecological and organic agricultural narratives and

[1] Family farming has been defined by the FAO as 'a way of organizing agriculture, livestock, forestry, fishing, aquaculture, and pastoralism, which is managed and operated by a family, and above all, depends predominantly on family labour

practices. They can be described as diverse, decentralised, place-based, trans-local coalitions of people and organisations committed to safeguarding care practices of native seeds.

Narratively, seed guardians understand seeds as the starting point of nourishment, but also as free, living entities that embody the origin and regeneration of existence. For them, humans and seeds have a deep relationship of nurturing and care, a connection that mobilises stories of seeds as part of family and community. Participants understand seeds as an intergenerational commons beyond government and corporate control, sometimes going as far as speaking of seeds as entities with agency and rights of their own.

Seed guardians are widely diverse but engage in two common practices: Guardianship and exchange. Seed guardianship relates to the conservation of seeds that are viable in a specific territory. Guardians may gift seeds to people interested in growing different crops, or they may exchange them by bartering with other guardians or farmers in specialised events. Seed guardians also meet virtually and physically to share knowledge about seeds, discuss the current state of seed systems, organise, and engage in collective action.

SGNs started as a response to the intensification of neoliberal policies that opened more spaces for transnational corporations while curtailing possibilities for traditional agricultural practices. Initially, the activities of the networks were directed towards resisting legislative changes and getting their voices heard. Over time, SGNs have been able to consolidate, effectively creating protected spaces for innovation and eventually transforming system rules.

by both women and men. Family and farm are linked, co-evolve, and combine economic, environmental, social, and cultural functions' (Salcedo & Guzmán, 2014, p. 26).

SGNs have connected otherwise isolated outliers to simultaneously resist hegemonic narratives and practices and propose alternatives. These networks have been able to open small cracks in hegemonic spaces despite a pervasive industrialist bias that excludes them. The last seven years have led to important developments that show a renewed recognition of traditional knowledge and practices in Andean seed systems implemented in novel legal frameworks and institutions.

This document analyses processes of seed system transformation in Colombia, Ecuador, and Venezuela. Colombia is currently co-creating an emerging national seed system that purposefully includes Indigenous actors and SGNs. This comes after more than a decade of tensions due to the signing of international trade partnership agreements and encroaching neoliberal policies. In 2017, Ecuador developed a new seed law that recognises and encourages non-modern practices and is geared towards the attainment of food sovereignty and buen vivir (a conceptual alternative to Western development). In 2015 Venezuela approved what may be the most comprehensive seed law in the region. Informed by a top-down eco-socialist framing, the law recognises and validates two seed systems (Industrial and AfroIndopeasant), it acknowledges place-based community knowledge-holders, and ordains the creation of a scientific-peasant alliance to promote horizontal knowledge exchanges.

Though each change process is different, implementation of the laws is usually disappointing, and industrialist capitalism is always trying to undermine this change, these cases signal a move towards transmodern transitions to sustainability. These processes are analysed here using decolonial theories, and several theories of change to better understand how transformation occurred.

This document is heavily inspired by Anna Tsing's book 'The Mushroom at the End of the World' and writings of science and technology studies. As such, it attempts to be more narrative and

performative in its content. The document is not structured like a traditional PhD thesis, it mixes literature reviews, research data, and researcher commentary to produce a narrative 'golden thread' that hopefully communicates the need for, and inner workings of transmodern sustainability transitions.

The thesis is elaborated in eight chapters which will attempt to tell this story from general to specific:

Chapter 1 introduces the concepts of modernity/coloniality and the abyssal line as the preeminent structures to be transformed. Modernity and colonialism are a single entity producing a heterarchical matrix of power that establishes core–periphery dynamics. This power matrix produces an abyssal line dividing the modern core from its non-modern peripheries. The non-modern is thus made invisible and unpronounceable since there is no possibility of modern learning in non-colonial terms.

The chapter argues that these structures are evident in contemporary seed systems and perpetuate multiple injustices. It introduces transformative alternatives such as Transmodernity, buen vivir, and translational contact zones. Transmodernity refers to a minority worldview which aims to become a future culture that assumes the best of the pre-modern, modern, and post-modern to produce a pluriversal[2] utopia through horizontal intercultural dialogue. It is a retelling of human history from those who have been marginalised by the colonial matrix of power.

Buen vivir is a transmodern Latin American proposal of wellbeing focused on living in harmony with oneself, community, and nature. This concept with Amazonian Indigenous origins has been mainstreamed and

[2] As opposed to universal. This concept positions plurality as a necessary condition for the future. It comes from the Indigenous Zapatista dictum of 'a world where many worlds fit'.

now informs transformations at national scale. Transmodernity and buen vivir can be enacted through the opening of translational contact zones, spaces where translation occurs between the modern and non-modern. It is a recognition of reciprocal incompleteness that allows the expansion of parameters that define authorship, intelligibility, and purposefulness.

Chapters 2 to 6 introduce the research design and provide thick narrative descriptions of empirical data. Chapter three focuses on narratives and practices of seed guardian networks. Subsequently, three cases of seed system transformations are described: i) the co-creation of an emerging national seed system in Colombia; ii) SGNs and eco-socialist state interactions in Venezuela; and iii) SGNs and buen vivir state interactions in Ecuador.

Chapter 7 analyses the emergence of translational contact zones through different conceptual lenses exploring narratives, practices, and rules as the preeminent sites where change occurred. It uses the lens of narrative transformation to define ideational elements mobilised throughout the process and to explain the formation of discourse coalitions. Social practice theory aids framings of this transformation process as a result of SGN practice governance and state practice shifts. Finally, seed system rules are seen through the lens of new institutionalism as inextricably connected to changing narratives, and practices.

Chapter 8 deploys sustainability transitions theory and its multi-level perspective model with a heavy emphasis on power and justice. Seed system transformations are analysed as long-term, non-linear processes of socio-technical change that lasted more than 25 years resulting in irreversible patterns of change. Transformation is described as resulting from interactions between processes at micro- (niche), meso- (regime) and macro- (landscape) levels.

Power is analysed as the capacity or incapacity of actors to mobilise resources and institutions to achieve a goal. Multiple power relations, types, dimensions, and resources are described with an emphasis on SGNs as wielders of power. Additionally, multiple conceptualisations of justice are considered to reflect on this issue: Environmental, climate, ecological, intergenerational, distributional, procedural, recognitive, restorative, and especially, epistemic justice. This leads to conceptualisations of seed system transitions as just transitions where historically marginalised actors mobilise power to transform the unjust structures of coloniality.

The document **concludes** with an overview of fulfilled research objectives, the expected contributions to knowledge, and a future research agenda. It affirms that transmodern transitions to buen(os) vivir(es) are occurring in Andean seed systems and beyond. These transitions begin with diverse actors converging around narratives of pluriversal biocentric futures and enacting them through shared practices. These articulations produce transmodern innovative spaces strong enough to challenge stablished ways of doing things. Eventually, they open translational contact zones that enable inter-epistemic dialogue with incumbent actors. These zones are premised on epistemic justice, expanding parameters of purposefulness and intelligibility of knowledge. As such, they allow for transformations in transmodern terms, closing the abyssal line, and allowing modern and non-modern worldviews to further integrate through transmodern institutions.

Ultimately, this document tells the story of civil society organisations overcoming coloniality to become influential players in Andean seed system transitions. In this story, native seeds open translational contact zones that render visible that which has been made invisible by the colonial power matrix. These change processes evidence contemporary decolonial struggles and provide templates for transmodern pluriversal futures to emerge.

1
Modernity/Coloniality

This chapter serves as a broad conceptual foundation for the thesis establishing modernity/coloniality as the pre-eminent force behind our current environmental and social crises. It frames this onto-epistemic and material space as that which needs to be transformed.

Modernity/coloniality is now a globalised behemoth so naturalised that it is effectively invisible. This chapter draws from Latin American decolonial theories, post-development, and other related fields to make visible the continuing colonial systems of power enforced since 1492.[3] The chapter defines coloniality and focuses on three interrelated aspects: (i) Coloniality as inextricably intertwined with the Anthropocene event; (ii) the climate crisis as a product of the material intensity of modern/Western(ised) civilisation; and (iii) modernity/coloniality as an epistemic paradigm and heterarchical system of power.

Modernity/coloniality effectively rendered most of the world invisible and unpronounceable, creating an Anthropocene and an Anthropo-not-seen (Cadena, 2015). This research is an attempt to see the invisible side of modernity, exploring peripheral spaces and their proposed futures. Probing deeper into the epistemic dimensions of coloniality, the chapter mobilises the concept of the abyssal line to better understand the epistemic invention of colonial difference between a superior subspecies and the dispossessed — a dynamic that has framed multiple non-Western plural ways of being as obstacles to human progress. This again plays to visible/invisible dynamics, which are central to this work.

[3] 1492 marks the invasion of the continent now named America.

Engaging fully with the category of modernity/coloniality might be an impossible undertaking. Its contours have been delineated by extraordinary scholars from all over the world, but there are still many questions on how to decolonise or operationalise alternatives. The ultimate purpose of this research is to reflect on peripheral transformation pathways capable of influencing hegemonic institutions towards new modes of being. To fulfill its purpose, this research uses seeds as a vehicle to *see* the tensions between the core of modernity/coloniality and its peripheries.

This chapter will show that the abyssal line dividing the modern and non-modern persists in contemporary seed systems. Therefore, it engages with global seed systems and the interactions between formal and informal(ised) sub-systems as a mirror of coloniality's larger dynamics.[4]

Beyond this exploration of coloniality and its manifestations in seed systems, one question remains: What are the alternatives? Humanity needs to kickstart processes of deep change at massive scale to preserve the planet's capacity to carry life. However, there are multiple narratives about what the crisis is and what sustainable futures entails. This research *sees* Transmodernity as the path towards more just and sustainable futures, a cosmovision that emerges from the realisation of our interconnectedness to nature and each other in a globalised networked society.

Novel sustainable futures may emerge by acknowledging that humanity is simultaneously pre-modern, modern and post-modern; and moving towards a future culture that assumes the best of these worldviews to produce a pluriversal utopia. There are multiple converging efforts of transmodern social transformation underway; in

[4] The next section of this document goes deep into three cases of seed system transformations in Latin America, expanding on the issues presented here.

Latin America, the movement of buen vivir has opened spaces for such alternatives. This chapter sets the stage to eventually draw the contours of transmodern transitions to buen(os) vivir(es), a type of deep transition where the non-modern destabilises modern institutions to produce novel hybrid assemblages that promote more horizontal relations with nature and each other.

Coloniality: The invisible side of modernity

For Latin American decolonial scholars, modernity is mainly a 'set of self-serving narratives' (Mignolo & Walsh, 2020, p. 110). These stories have told us that humans are superior to nature, that endless accumulation is possible through its subjugation, and that material growth equals progress (Figueroa Helland & Lindgren, 2015). This overarching myth of a standard civilisation originated in Europe some 500 years ago, when Iberian peoples invaded the land now called the Americas.

This event inaugurated modernity as the first known fully global world-system, which (despite constant attempts to conceal it) was colonial from the start (Quijano, 2014). Three interrelated aspects of modernity as colonialism are especially relevant to sustainability transformations. First, colonialism can be considered as inextricably intertwined with the Anthropocene, a '…time-transgressive geological event: the aggregated effects of human activities that are trans-forming the Earth system and altering biodiversity, producing a substantial record in sedimentary strata and in human-modified ground' (Gibbard et al., 2022, p. 350).

Some scholars propose the colonial invasions as interconnected to the Anthropocene due to two phenomena: The Columbian exchange (mixture of previously separate biotas), and the Orbis spike (a dip in atmospheric CO2 due to human population decline in the Americas

resulting from European diseases, war, enslavement, and famine). Although an event framing of the Anthropocene aims to free the concept from alignment with stablished time units (Gibbard et al., 2022), the Orbis spike in 1610 is important to engagements with the Anthropocene from the social sciences because it connects to issues of inequality in power relations between peoples, nations, and global economic growth, among other contemporary phenomena (Lewis & Maslin, 2015).

Second, inequality in economic growth is inextricably tied to the colonial process. It is not coincidental that past imperial powers are rich and most past colonies are poor, as colonialism produced a global division of labour that continues to this day (Grosfoguel, 2011). Additionally, there is an increasing body of work pointing to the material intensity of rich nations as a direct cause of the environmental crisis humanity faces. For instance, a recent study on national responsibility for ecological breakdown and fair share use of global resources, shows that 'high-income countries, which represent only 16 per cent of the world population, are responsible for 74 per cent of resource use in excess of fair shares and are therefore the primary drivers of global environmental degradation, representing a process of ecological colonisation' (Hickel et al., 2022, p. 346). Furthermore, the top 10 per cent of earners in the USA appear to produce around 40 per cent of greenhouse gas emissions in the country, evidencing marked environmental impact inequality (Starr et al., 2023).

Doing a full review of the literature framing rich nations as producers of planetary ecological breakdown exceeds the purpose of this document. The main point to be made is that colonial inequality persists to this day, and it is not only racial, epistemic, economic, or material, but multidimensional. Additionally, this evidences that the Western civilisatory model itself is in crisis and Western solutions might not be viable. As Viola Recasens so aptly puts it: 'The collective hallucination that allowed people to believe for decades that the "American way of life"

(with its brutal patterns of consumption and per capita pollution) could one day become universal seems to have dissipated, forcing us to accept an unavoidable reality: the development model of the richest countries is not generalisable in space, it's not even extendable in time' (Viola Recasens, 2014, p. 56).

The third aspect of modernity and colonialism to be explored relates to its power and epistemic dimensions. This exploration will be mobilised through the concept of modernity/coloniality,[5] which refers to the realisation of modernity and colonialism as indivisible. 15th-century colonialism ordered the world from a conception of European superiority, establishing first and foremost a racist and patriarchal heterarchical system. For Quijano (2014), there are two foundational ideas to the story of Euro-centred modernity: i) human civilisation has a linear trajectory from the natural/primitive to Europe, making all non-Europeans pre-European and thus inferior; and ii) differences between Europe and non-Europe are of (racial) nature and not the result of a history of power.

Modernity is the continuation of these, and other systems of power, management, and control constituted by colonialism (Figueroa Helland & Lindgren, 2015; Mignolo & Walsh, 2020). Institutions that were produced by the interaction with, domination and exploitation of, non-Europeans (Grosfoguel, 2011). This was achieved through extraction of non-European cultural discoveries useful to the core, repression of knowledge production, and forcing the colonised to partially learn the dominant culture to reproduce domination (Quijano, 2014).

This process led to a duality-based otherisation that framed multiple peoples as an absolute deviant Other. Throughout history, multiple attempts have been made to save these inferiors, whether by being

[5] 'Coloniality' was initially conceptualised by Aníbal Quijano (2014) and is used interchangeably with 'coloniality of power' and the 'colonial matrix of power'.

forced to convert to Christianity, correcting their backwardness via a civilising mission, aligning with the developmentalist project, or being further homogenised by the globalisation of neoliberalism (Grosfoguel, 2008b, 2011; Mignolo, 2015; Sachs, 2010).

No matter the strategy used, modernity has always been a project of Europeanisation (Quijano, 2014). Western Europe was understood as the protagonist and sole producer of modernity until the 20th century, when the United States positioned itself as the endpoint of linear history (Mignolo & Walsh, 2020). Whichever country is seen as the beacon of progress, this Western cultural expansion was never solely 'economic and political but fundamentally epistemic' (Mignolo & Walsh, 2020, p. 137). It positioned 'all other cultures as primitive, pre-modern, traditional and underdeveloped' (Dussel, 2012, p. 39); as living in an infantile stage of history.

This civilising project is described by decolonial scholars as the 'layered intersection of anthropocentric, androcentric, heterosexist, rationalist, Euro/Western-centric, modern/colonial, racialised, industrialist/developmentalist, capitalist and ableist systems of power' (Figueroa Helland & Lindgren, 2015, p. 438). Western knowledge created these systems by concealing its own bodily and geographical epistemic location, assuming a 'universalistic, neutral, [and] objective point of view' (Grosfoguel, 2011, para. 7).

This resulted in multiple asymmetrical core-periphery arrangements that have marginalised all those on the borders of these overlapping systems of power (Figueroa Helland & Lindgren, 2015; Mignolo, 2015). These peripheral Others are the Global South(s), a concept that signals onto-epistemic rather than geographical difference.

Modern/colonial systems of power did not stop with the end of colonial rule (Grosfoguel, 2008b; Mignolo & Walsh, 2020), and are still

perpetuated not only by the core but by the Westernised elites of postcolonial countries (Figueroa Helland & Lindgren, 2015). This is tied to the reinvigoration of modernity/coloniality as development, a discourse which defined most of humanity as 'underdeveloped'.

Development discourse emerged after World War II as Western Europe and its colonial administrations were in crisis. It was at this moment that the United States positioned itself and other industrialised nations at the apex of civilisation (Ceci Misoczky, 2011; Sachs, 2010). Post-development scholars describe the ideology of development as a way of keeping postcolonial countries from joining the communist system, affiliating them to the capitalist logic of market privileging and perpetual accumulation. This move maintained the international division of labour borne by modernity/coloniality (i.e., poor nations producing petty commodities for industrial production in rich nations) (Ziai, 2017).

Development discourse perpetuated a unilinear understanding of history with industrialism as its inevitable destiny, while excluding all other forms of social life (Sachs, 2010). Development is now understood as a scientific form of knowledge (Grosfoguel, 2011), and has become so diluted and naturalised as a force of social change that seems to be unquestionable (Ziai, 2017). This technocratic and managerialist intervention in the lives of the planet's majority also perpetuates the hierarchisation of knowledge initiated by colonialism (Ceci Misoczky, 2011; Ziai, 2017). Development discourse sustains the idea of deviance from a universal Eurocentric norm (Ziai, 2017) and the globalisation of Westernisation (Sachs, 2010). As such, the development model can also be understood as a 'mental, cultural and historical construct that has colonised the ... world' (Beling et al., 2018, p. 305).

Even postmodernity has been unable to transcend coloniality, as it continues the universalising mission of Western being by ignoring the

metanarratives of the non-modern[6] (Mignolo & Walsh, 2020). Interculturality as truly horizontal dialogue may be impossible in postmodernity, since relations of difference are still asymmetrical, and otherness is only allowed access or is integrated to *the* hegemonic frame of reference (Añazco, 2019). However, there are other options, since even after five centuries of modern/colonial hegemony, this has been an insufficient timeframe to eliminate or fundamentally transform all othered cultures which have survived in the peripheries (Dussel, 2012).

The colonial matrix of power (the invisible side of modernity) can be framed as the origin of the multiple global crises we presently face (Figueroa Helland & Lindgren, 2015). The ecological impacts, inequality and cultural homogenisation produced by the developed way of life cannot be ignored (Sachs, 2010; Ziai, 2017).

The abyssal line[7]

Santos (2016) developed the concept of the abyssal line to illustrate the exclusion produced by modernity/coloniality, which effectively rendered all otherised beings invisible or non-existent. Santos refers to this invisibility as produced by an epistemology of blindness and calls for an epistemology of seeing that allows for a constellation of knowledge(s) to exist. This section will deal with Santos' critical theory, expanding on the concept of the abyssal line and abyssal thinking.

For Santos, colonialism produced an epistemic invention of difference that divided the world between a superior subspecies (Western man) and masses of dispossessed (the Global Souths). Through centuries of disqualification of Global South agents as ignorant, inferior, local,

[6] Non-modern denotes the 'coexistence of temporalities and modes of living and thinking that are neither premodern nor postmodern' (Mignolo & Walsh, 2020).

[7] This section draws solely from the work of Boaventura de Sousa Santos and his rearguard theory developed in 'Epistemologies of the South' (Santos, 2016).

particular, backward, unproductive, and lazy, they have become invisible, inaudible and illegible to the core of modern/colonial power. This disqualification has effectively resulted in an epistemicide,[8] through violent tactics like the destruction of social practices, epistemic control,[9] appropriation (incorporation, co-optation, assimilation), and violence (physical, material, cultural, human destruction).

For Santos (2016), an 'abyssal line' was produced and is maintained by modernity/coloniality. This line divides colonial societies from metropolitan ones even decades after the end of colonialism. Furthermore, it divides social reality itself in such a way that 'whatever lies on the other side of the line remains invisible or utterly irrelevant' (Santos, 2016, Chapter 2). The author thus understands modern Western thinking as abyssal thinking, a 'system of visible and invisible distinctions, [where] the invisible ones [are] the foundation of the visible ones' (Santos, 2016, Chapter 4). Abyssal thinking makes the co-presence of both sides of the abyssal line impossible, effectively eliminating whatever realities are on the other side.

One of the key consequences of this Global North/Global South divide is that the Global North seems unable to learn in non-colonial terms. This is critical, because there appears to be an exhaustion of Western thought and its critical theories facing the multiple challenges of the Anthropocene. This does not mean that the Global Souths hold the answer, as evidenced by myriad failed decolonial and post-capitalist political projects. It is for this reason that horizontal dialogues between the Global North and Global South are essential.

The abyssal line is the product of epistemological monopolisation, a process that rendered some knowledges incommensurable and incomprehensible to the modern/colonial core. Modern institutions like

[8] Epistemicide is the systematic murder of knowledge(s).

[9] For example, coercively limiting the use of Indigenous languages.

capitalism, law and scientific knowledge consolidated through this process and now have a monopoly determining what is true and false. Accordingly, the abyssal line manifests in multiple social spaces, leading to a conceptualisation of multiple lines. Of special interest to this research are the main lines identified by Santos (2016): An abyssal epistemological line, and lines in the 'two great domains' of law and science.

These lines intersect with contemporary seed systems in complex ways, as elaborated in the next section. Epistemologically, modern and non-modern seed knowledge(s) are different and constantly engage in dialogic, agonistic and antagonistic dynamics. The legal abyssal line leaves vast spaces of social reality as lawless, by keeping them in a non-legal space. Finally, the scientific line makes invisible all non-scientific technological development, while Global South social movements understand scientific knowledge as just one knowledge amongst many.

Coloniality in seed systems

This section aims to show that the centuries-long process of agricultural industrialisation mirrors the dynamics of coloniality. It argues that it is ultimately an effort to Westernise and homogenise plural food practices and narratives, going as far as homogenising seeds as stable commodities. The abyssal line borne by colonialism, modernisation and development is patently clear in seed systems. At the core of these systems there is a formal way of doing things and relating to seeds where technoscience, capitalism and corporations play a central role. On the peripheries of seed systems, there are plural ways of relating to food and doing agriculture that respond to otherised knowledge(s). This 'informal seed system' is seen by hegemonic system actors as an obstacle to progress, since the peripheries have been rendered invisible along epistemic, scientific, and legal abyssal lines.

A brief history of modern seed systems

Since the late 19th century, seeds have transitioned from being a deeply rooted commons and a public good to an increasingly privatised commodity. This has been mainly enabled by advances in plant breeding and genetics (Gutiérrez Escobar & Fitting, 2016; Senini, 2018; Wattnem, 2016), as well as an encroachment of intellectual property rights (IPR) over germplasm (Luby & Goldman, 2016). An important moment of acceleration came after World War II, when European agriculture fully industrialised to achieve food security in a time of high uncertainty (Gevers et al., 2019). The green revolution that soon followed established a global design of agricultural development for Third World nations based on extensive monocultures that needed improved seeds, sophisticated machinery, and large amounts of agrichemicals (Felicien, 2016; Hernández Vidal & Gutiérrez Escobar, 2019). Through these programs, developing countries were discouraged from investing in their local agricultural systems, privileging food aid over Indigenous agriculture as a solution to famine and malnutrition (Gilson & Kenehan, 2021).

The global industrialisation of agriculture has certainly increased yield and quality for the few crops subject to scientific intervention (Senini, 2018). However, there has been a simultaneous decay of genetic diversity, leading to increased crop homogeneity and reduced resilience (Gevers et al., 2019; Volkening, 2018). Furthermore, the increase in production promised by the green revolution appears to have stagnated and has led to soil degradation and other environmental issues (Felicien, 2016).

Adding to these unforeseen impacts, the last 30 years have seen increased financialisation of food via agricultural derivatives (Gevers et al., 2019), and alarming levels of concentration in the seed industry (Kloppenburg, 2014; Pérez et al., 2016; Senini, 2018). According to some accounts, ten companies control around two-thirds of global proprietary

seed (Wattnem, 2016). In recent years, the global seed market went from being dominated by six companies[10] (Volkening, 2018) to three: Bayer, Dow, and ChemChina (Hernández Vidal & Gutiérrez Escobar, 2019).

This concentration is enabled by legislative framings of seeds as private property, privileging private breeder rights over other system actors (Felicien et al., 2020), disregarding smallholder farmers, public and small private plant breeders (Kloppenburg, 2014). Global seed regulation responds more to a collection of legislative packages than to any individual source (Gevers et al., 2019). These laws include Intellectual property rights (IPR) on plant material, plant breeder rights (PBR), phytosanitary and biosecurity norms, commercialisation and quality standards, and registration and certification schemes (Gevers et al., 2019; Pérez et al., 2016; Hernández Vidal & Gutiérrez Escobar, 2019; Wattnem, 2016).

Regarding IPR, the International Union for the Protection of New Varieties of Plants (UPOV) plays a pivotal role. This intergovernmental organisation was established by the International Convention for the Protection of New Varieties of Plants in 1961, with revisions in 1972, 1978, and 1991. Further reinforcing control over plant material, the World Trade Organisation's Trade-Related Intellectual Property Rights agreement (TRIPS) expanded IP protection for plant varieties in 1994 (Senini, 2018).

In the later scheme of UPOV, breeders can obtain IPR over plants in the form of plant variety rights (PVR) by fulfilling criteria of distinctiveness, uniformity, and stability (known as the DUS criteria). UPOV standardisation led to innovation in the sector but further marginalised non-industrial seeds (Gevers et al., 2019), also excluding many farmer-bred or organic cultivars (Kloppenburg, 2014). Past

[10] Monsanto, DuPont, Syngenta, Bayer, Dow and BASF.

versions of the UPOV convention allow some freedom to multiply and use proprietary seeds.[11] However, the 1991 convention grants breeders exclusive rights to protected varieties, effectively prohibiting customary seed exchanges amongst farmers (Senini, 2018; Wattnem, 2016). UPOV now has 77 members: 17 states bound to the 1978 act, and 58 states and 2 organisations affiliated to the 1991 act.[12]

These supranational agreements inform seed policy at a national level, generally promoting the standardisation of seeds (García López et al., 2019). However, the multi-level nature of seed regulation leads to contradictions at the national level when responding to supranational agreements.[13] One dimension of this issue is the tension between national sovereignty over genetic resources and supranational pressures to conform life forms to IPR standards (Wattnem, 2016). Additionally, legislations clash with traditional community-based seed systems (Senini, 2018), eroding their capacity to save seeds for resowing and effectively diminishing farmer sovereignty over seeds (Kloppenburg, 2014; Wattnem, 2016). This has not only affected smallholder farmers but also public sector breeders, aiding the process of concentration by large-scale transnational corporations (Kloppenburg, 2014).

These legislative pressures over seed systems are deeply impactful in Latin America, as family, AfroIndopeasant and small-scale agricultural practices have always been an important part of food systems. In fact, over half of food in the region is produced by smallholders participating in non-industrial practices (Pérez et al., 2016; Wattnem, 2016). However, this sub-system has been constantly marginalised and perceived as an

[11] The 1978 version allows the use of protected varieties by breeders and seed saving (the practice of keeping reproductive material to resow in future seasons) by farmers.

[12] For a specific list, visit: www.upov.int/edocs/pubdocs/en/upov_pub_437.pdf

[13] For example, in the case of Ecuador see Gevers et al. (2019), and for Colombia see Gutiérrez Escobar and Fitting (2016), Hernández Vidal and Gutiérrez Escobar (2019), and Silva Garzón and Gutiérrez Escobar (2020).

obstacle on the road to modernisation. Indigenous, small-scale, peasant and family agriculture actors are generally excluded from decision-making in the region, while relevant governance spaces are almost exclusively composed of incumbents with an industrialist bias (be they representatives from government, academia, or industry).

This governance model has produced divisions and deep mistrust between two seed sub-systems generally referred to as the 'formal' and 'informal' seed systems. Informal system actors generally feel policies benefit big transnational producers without thinking of wider impacts, while formal system actors see the informal system as stagnant and unwilling to modernise.

The intensification of pro-industry seed legislation in Latin America, which undermined existing non-industrial practices, ultimately led to the emergence and consolidation of seed guardian networks (SGNs) over the last 25 years. These networks defend the rights of peoples to produce, store, improve, exchange, and trade their seeds according to Indigenous, Afro-descendant, peasant, agroecological and organic agricultural narratives and practices. They can be described as decentralised, place-based, trans-local coalitions of people and organisations committed to safeguarding landrace, native, and creole seeds, and associated care practices.

SGNs understand seeds as the starting point of nourishment, but also as free, living entities that embody the origin and regeneration of existence. For them, humans have a deep relationship of nurturing and care with seeds, a connection that mobilises narratives of seeds as being part of family and community. In this space, plural nurturing practices have led to a wide diversity of agricultural seeds influenced by generations of localised knowledge(s), experiences, cultures, and traditions. Seeds are also understood as an intergenerational commons

beyond government and corporate control, sometimes going as far as framing seeds as entities with agency and rights of their own.

SGNs are acutely aware of the appropriation of landrace, native, and creole seeds by corporate actors to use in private breeding programs. They refer to this as biopiracy, the appropriation of native seeds and associated Indigenous/traditional knowledge without the consent of peoples involved in their development (Senini, 2018; Shiva, 2001, 2005; Hernández Vidal & Gutiérrez Escobar, 2019).

SGNs have become influential players in Latin American seed systems as they simultaneously resist hegemony and propose alternatives. They emerged as a response to the intensification of neoliberal policies that opened spaces for transnational corporations while curtailing possibilities for non-industrial practices. Initially, the activities of SGNs were mostly directed towards resisting legislative changes and getting their voices heard. Over time, they have been able to consolidate, effectively creating protected spaces for non-hegemonic seed practices (see chapter 3). SGNs can be considered champions of the non-modern side of seed systems. They promote amalgamations of family and AfroIndopeasant practices with agroecology and organic agriculture, revitalising non-modern narratives connected to local agrobiodiversity.

Seeing the abyssal line in seed systems

This section deepens the exploration of the formal and informal seed sub-systems and their relation to modernity/coloniality. Scholars tend to distinguish between two seed systems that are defined in different ways but share similar contours (see Table 1). These systems intertwine, often overlap, and constantly adapt to each other's pressures. These pressures are asymmetrical for two main reasons: i) growth of transnational corporations depends on the erosion of informal seed systems to expand their markets; and ii) there is a state-level agro-

industrial bias, product of a perceived superiority of the formal system, supported by the aforementioned seed laws that curtail possibilities for informal systems (Felicien et al., 2020; Pérez et al., 2016; Wattnem, 2016).

Despite the overlaps between these two sub-systems, there are distinct seed types in each camp: i) certified or improved seeds in the formal system; and ii) native, creole, landrace, heirloom, or local seeds in the informal system.

Improved seeds are hybridised to acquire desirable traits and must be purchased seasonally to produce the same variety (Volkening, 2018). Farmers license the use of these seeds as part of a rental agreement of sorts that prohibits the saving and reuse of germplasm (Kloppenburg, 2014; Luby & Goldman, 2016). These seeds respond to DUS criteria (distinctiveness, uniformity, and stability), and are certified by national food authorities.

Regarding the informal system, native seeds originate from the same place where they are sown. Creole seeds may not come from the same place but have been adapted by farmers to local conditions[14] (Hernández Vidal & Gutiérrez Escobar, 2019). A landrace or peasant variety has not been subject to formal improvement but has been transformed by the traditional knowledge of peoples directly involved in growing it (Gevers et al., 2019). And heirloom varieties have been historically saved and maintained over long periods of time by people (Volkening, 2018).

[14] Creole seeds also include adapted certified seeds.

Table 1.1 Different denominations of seed systems

Author	Name	Description
Felicien et al. (2016)	Modern	
	Traditional	
Wattnem (2016)	Formal	Regulated scientific plant breeding with public and private participation.
	Informal	Farmer-led unregulated or loosely regulated.
García López et al. (2019)	Industrial	'large-scale production and supply of commercial seed varieties … [subject to] … strict quality control based on standard physical and physiological criteria' (García López et al., 2019, p. 829).
	Local	Dependent on seed saving practices and trust-based community exchanges sustained by peasant, Indigenous communities and small or medium-scale farmers.
Bernstein (2014)	Global capitalist agriculture	Large-scale industrial farming.
	Peasant mode of production	Small-scale customary farming.

A narrative has consolidated framing industrial or transgenic seeds as unique or improved, while all others are understood as basic, conventional, or simply as raw genetic material (Shiva, 2001; Silva Garzon, 2019). Furthermore, seeds in the informal system are considered uncertifiable, since they are associated with low quality and productivity, as well as spreading disease (Hernández Vidal & Gutiérrez Escobar, 2019). These imaginaries seem to negate the fact that collectively produced informal seeds have been necessary throughout history for all genetic improvement programs (Pérez et al., 2016). The formal system has always been enabled by informal system germplasm (Wattnem, 2016), often through biopiracy, while farmers are simultaneously persecuted by national authorities for breaching corporate seed packet licenses (Kloppenburg, 2014).

The two seed sub-systems respond to more than distinct seed types, technologies, knowledge(s), or production practices. In the case of India,

Shiva sees two paradigms of biodiversity at play - one, a destructive genetic extractivism that disregards the needs of poor farmers, the other, a recognition of life's interdependence in its role supporting farmers' livelihoods (Shiva, 2001). In the case of Colombia, Hernández Vidal and Gutiérrez Escobar see conflicts between two forms of understanding seeds: one where seeds become the capital of the agribiotech industry and knowledge associated with their cultivation and preservation is privatised, and another where seed, territory and knowledge are interwoven to conceive and use seeds as a common good (Hernández Vidal & Gutiérrez Escobar, 2019). Effectively, Colombian SGNs reject the notion of seeds as commodity or property, rather understanding them as 'living beings intimately related to humans and [belonging] … to specific agricultural systems' (Gutiérrez Escobar & Fitting, 2016, p. 718).

This document sets out to explore these contrasting systems as inextricably tied to modernity/coloniality. The often-opposing narratives and practices in global seed systems emerge from profound differences in worldviews or *what is* our reality (ontology) and *how we know or understand what is* (epistemology).

Analysing Andean seed system transformations evidences the tensions between the modern and non-modern, and their diverging concepts of progress or what it means to live a good life. Furthermore, this analysis raises questions about power, justice, and what constitutes valid knowledge. It begs to move beyond formal and informal categories by exploring the profound differences of the Global South(s) and the deep-seated assumptions naturalised by coloniality, the

> complex and multidimensional legacy of divisive, exploitative, stratifying and hierarchical forms of power (e.g. Eurocentric/Western-centric hegemony), forms of knowledge (e.g. technoscientific instrumental rationality),

> forms of (inter)subjectivity (e.g. possessive individualism), forms of human interrelations (e.g. racism, classism, heteropatriarchalism, etc.), and forms of human dominion over land and mastery of "nature" (e.g. anthropocentric property/dominion/sovereignty) that have become entrenched and continue to be reproduced throughout the world as an ongoing consequence of colonisation (Figueroa Helland & Lindgren, 2015, p. 432).

It can be argued that divisions between formal and informal seed systems are the product of the abyssal line. modern institutions like science, law, and capitalism reinforce the formal system while ignoring (thus informalising) other seed narratives, practices, rules, and technologies. Contemporary seeds appear to be valuable only when large agricultural corporations subject them to technoscientific intervention to commodify them. By contrast, all the knowledge necessary to maintain native agrobiodiversity is made invisible, as governments, corporations, universities, and other powerful actors see native seeds as raw, naturally occurring materials. Consequently, seeds appear to be only considered a technology when they are modified in a lab by scientists, and not when they are modified in the field by Indigenous or peasant farmers.

An abyssal legal line is also evident in seed systems, as there is a detailed legislative scaffolding for the formal system, but none for the informal. Formal system rules have transnational, national and local effects, protecting the IPR of commodified seeds while conveniently ignoring the biopiracy of native seeds and their associated knowledge. By contrast, this robust set of rules effectively disregards the informal seed system, keeping it in an a-legal space where it is simultaneously policed and controlled without being fully recognised. As Ana Felicien (2021) puts it, these are not informal but informalised systems.

Throughout this document, three cases of Latin American seed system transformations will be explored. These cases evidence the presence of several abyssal lines and show how historically marginalised food system actors have been able to transcend them. The unique transformation processes of Colombian, Ecuadorian, and Venezuelan seed systems also show signs of a new kind of future emerging. In these processes, SGNs play a central role in making visible non-modern seed practices and narratives. Through their efforts, state-society relations shift, opening spaces for hybrid non-modern and modern institutions.

The philosophical underpinnings of these emerging (non-modern ∩ modern) hybrids will be explored next in the emerging intellectual projects of Transmodernity and buen vivir.

non-Modern
Anthropo-not-seen

Modern/Colonial
Anthropocene

the abyssal line

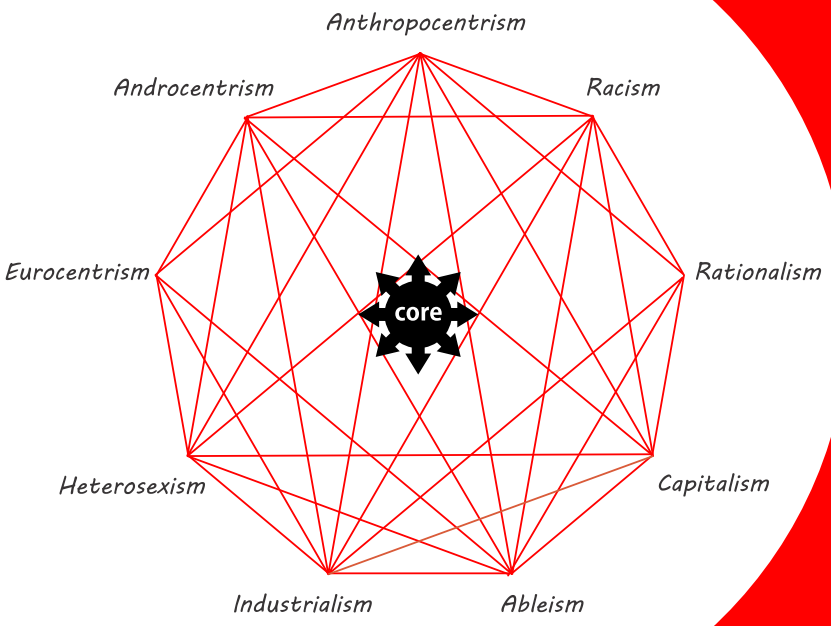


Figure 1.1. The heterarchical system of power of modernity/coloniality producing the abyssal line

Transmodernity

Transmodern(ity) is an umbrella term encompassing similar emerging intellectual projects around the world, including the work of Barfield, Dussel, Eisler, Grossberg, Luyckx Ghisi, Rodriguez Magda, Venn, Wilber, and others (Ateljevic, 2013; Blaser, 2009). Rodriguez Magda (who appears to be the first to use the term in the literature) has also compared her work to Bauman's Liquid modernity, Beck's Second modernity, Jameson's Late Capitalism, Lipovetsky's Hypermodernity, and Žižek's Desert of the Real (Rodríguez Magda, 2011).

Ateljevic finds commonalities in most of these proposals as they 'point to the same intuitive aspirations for inclusivity, diversity, partnership, sacredness and quality of life, deep play, sustainability, universal human rights, the rights of nature, and peace on Earth' (Ateljevic, 2013, p. 46). Some defining contours of Transmodernity are that it:

- Emerges from the realisation of the interconnected nature of planetary existence.
- Emerges from globalisation and information technology.
- Is the starting point of a new era of human consciousness, a new shared story of humanity.
- Is inherently decolonial, as it contests Eurocentricity.
- Contests Eurocentric truth claims but seeks to keep the best of modernity.
- Is an integration/synthesis of the pre-modern, modern, and post-modern.
- Is post-secular, reengaging with spirituality but rejecting absolutist dogma.
- Is dialogically universal.
- Moves from geopolitics to biopolitics.

For Rodriguez Magda, Transmodernity is 'firstly, a description of a globalised, rhizomatic and technological society, gestated from the First World faced to its others, penetrating and assuming them. Secondly, it is the effort to transcend this enveloping, hyperreal and relativist closure' (Rodríguez Magda, 2011, p. 3). In her work, Transmodernity is not a dialogue of civilisations, but a totalising chaotic whole in the new grand narrative (grand fact) of globalisation.

In its multiple dimensions, this reality is characterised by transnational organisations, problems, events, communities, and structures. Globalisation substitutes territoriality for cyberspace, where the local and the global coexist as the glocal. Transmodernity thus 'imposes a transcultural trans-ethnicity that is yet to build its own cosmopolitics' (Rodríguez Magda, 2011, p. 10).

Rodríguez Magda excludes non-modern worldviews in her work, framing Transmodernity as a synthesis between modernity and post-modernity. However, there are other conceptions where Transmodernity also affirms 'the essential components of modernity's excluded cultures in order to develop a new civilisation for the twenty-first century' (Dussel, 2002, p. 224). That is, the peripheral othered reifying their existence, enabling the re-emergence of deprecated cultures, and establishing critical dialogues between hegemony and alterity (Ceci Misoczky, 2011). For Dussel, the hegemony of Europe has only lasted two centuries, and in that time, it has been unable to transform ancient cultures radically (Dussel, 2012). These surviving cultures are simultaneously pre-modern, modern and post-modern, despite countless onto-epistemic colonising efforts.

Dussel defines Transmodernity as a future culture that assumes the best of modernity to produce a pluriversal utopia through authentic intercultural dialogue. However, engaging in such symmetrical multiculturalism is extremely difficult and might even be impossible

(Dussel, 2012). Borderline thinking (the space between one's own peripheral culture and modernity) is proposed as the loci of critical engagement. For Dussel, Transmodernity is: i) an affirmation of devalued cultural moments that are exterior to modernity; ii) an internal critique of peripheral cultures from traditional values, done by people living in the biculturality of the borders; and iii) a long period of resistance and maturation, developing cultural traditions on the path towards a transmodern utopia (Dussel, 2012).

Dussel's work has been criticised for not escaping modernity, as it insists on producing macro-identities and meta-narratives (Martín Alcoff, 2012). However, Martín Alcoff states that Transmodernity emerges from a retelling of world history from the perspectives of the Others that Europe rendered invisible (Martín Alcoff, 2012). As a result, a perpetually decentred interconnected history arises. In this sense, the author interprets Transmodernity as allowing inclusivity of multiple modernities[15] without their totalisation. For Martín Alcoff, 'the transmodern meta-narrative suggests a recipe for moving forward … via an analysis of how and where cultural dialogues can occur most productively given the way in which the current global discursive regimes have been affected by colonialism' (Martín Alcoff, 2012, p. 65).

In a similar vein, Grosfoguel (2008a) sees Transmodernity as the possibility of transcending the Theo-politics and consequent Ego-politics of Eurocentric thought, an epistemology that excluded and marginalised through epistemological racism. Transmodernity then can be a 'strategy or epistemic mechanism towards a decolonised transmodern world that moves us beyond Eurocentric-First-World and Eurocentric-Third-World fundamentalisms' (Grosfoguel, 2008b, p. 211).

[15] 'Multiple modernities' may be interpreted as different articulations of pre-modern, modern and post-modern worldviews.

Martín Alcoff, Rodríguez Magda, and Ceci Misoczky warn of the risk of fetishising the local and hyper-dimensioning community. Rodríguez Magda specifically criticises proposals for a return to an identitarian pre-modernity (Rodríguez Magda, 2011). However, it is important to understand that contemporary Indigenous and peasant movements (the non-modern) are not struggling only for an affirmation of identities. They are engaging in a transmodern dialogue that also wants the best of modernity (Ceci Misoczky, 2011). Rodríguez Magda might be falling for the old Western assumption that these peri-modern sites are 'dead or epistemically barren, [when in actuality] they are alive with a distinct difference barely legible to the [modern/colonial core]' (Martín Alcoff, 2012, p. 66).

For Cubillo-Guevara and Hidalgo-Capitán (2015), there are four cosmovisions coexisting in the 21st century: Premodernity, modernity, post-modernity and transmodernity. These cosmovisions coexist as competitive cultural paradigms, related by an evolutive alterity instead of a paradigmatic overcoming. The authors state that Transmodernity

> emerges as a reaction and negation to the evolutive alterity of Pre-modernity, Modernity and Postmodernity. It pursues a synthetical triangulation between these cosmovisions, assuming and integrating precepts from them … The prefix "trans-" denotes an intent to overcome these cosmovisions, going "beyond" them while integrating them, taking elements from each by traversing them (Cubillo-Guevara & Hidalgo-Capitán, 2015, p. 153).

Transmodernity is a

> worldview based on intersubjective consensus [looking] for consensual truths which can be apprehended by second-order research. This cosmovision … interprets all aspects of

> life from the emotionally intelligent combination of postulates based on faith, reason, and imagination. It pursues the realization of individual expectations through the participative construction of consensual projects that are socially and environmentally harmonic (Cubillo-Guevara & Hidalgo-Capitán, 2015, p. 136).

In Transmodernity, communities (both territorialised and virtual) construct their own meta-narratives of social transformation. Cubillo-Guevara and Hidalgo-Capitán (2015) propose Transdevelopment as a new wellness paradigm, triangulating pre-modern, modern, and post-modern worldviews. Its intention is to build an alternative that goes beyond subsistence, development, and post-development. It pursues the satisfaction of the material and immaterial needs of society, through participatory processes, where needs and means to satisfy them are decided under principles of social equity and environmental sustainability. This implies that each community can define their own understanding of wellness, keeping nature and society at the centre of individual concerns. In transdevelopment, individuals feel part of different communities and of nature, which they might consider as a living entity, even attributing to it qualities of consciousness or divinity (Cubillo-Guevara & Hidalgo-Capitán, 2015).

Transdevelopment has at least two converging efforts of social transformation, that can be considered a complementary dyad: Degrowth (Global North/urban) and buen vivir (Global South/rural).

The term degrowth emerged at the turn of the century[16] as a 'provocative slogan, to denounce the mystification of the ideology of sustainable development' (Latouche, 2015, p. 1). Degrowth focuses on the

[16] See S!lence N°280 *'La décroissance La décroissance Décroissance soutenable et conviviale'* https://www.revuesilence.net/numeros/280-La-decroissance/?vue=telecharger

reduction of production, consumption, and accumulation to enhance wellness (Cubillo-Guevara & Hidalgo-Capitán, 2015), since growth is seen as increasingly toxic and happening at the expense of nature, future generations, and the peoples of poor nations (Latouche, 2010).

Degrowth can be defined as 'a socially sustainable and equitable reduction (and eventually stabilisation) of society's throughput"[17] (Kallis, 2011). In their analysis of limits to growth literature, Beling et al. (2018) mobilise three arguments for degrowth: i) the unsustainability of Western standards of affluence; ii) the historical unfeasibility of achieving them; and iii) the general unhappiness found in most affluent countries. Degrowth thus aims to rupture stablished ways of being through a virtuous cycle of reassessing, reconceptualising, restructuring, relocating, redistributing, reducing, reusing, and recycling (Latouche, 2010).

It seeks to transform the current system to promote balance between material and non-material prosperity through 'time prosperity, "relational goods" (friendship, neighbourliness, etc.), non-capitalistic, community-based forms of production, exchange, and consumption, [among others]' (Beling et al., 2018, p. 307). Degrowth can be framed as a nature-inclusive socialism. It is a transformative political vision (Kallis, 2011) that is considered left-wing since it criticises consumer societies and liberalism while having utopian aspirations (Latouche, 2009). However, it is different from left-wing traditions like the '…social-democratic, communist, Trotskyist, and others which have fallen into the trap of the Keynesian-Fordist compromise … seduced by the myth of the pie that grows indefinitely' (Latouche, 2010, p. 55).

This exploration of degrowth is by no means exhaustive. Research on degrowth is vast as it involves history, economics, anthropology and

[17] The materials and energy extracted, processed, transported, and distributed to consume and eventually become waste.

social sciences, ecological economics, political science, and technology studies (Kallis et al., 2018). Since this research is about Andean transformations, it will focus and expand on the transformative project of buen vivir.

Buen vivir

Buen vivir (BV) is an emerging Latin American concept of wellness that can be translated as living well, living the good life, plentiful life, knowing how to live, or good living. It is still a concept under construction, with several interpretations (Chassagne, 2019), but in its most basic form, it refers to living in harmony with oneself, community, and nature (Cubillo-Guevara & Hidalgo-Capitán, 2015; Gudynas, 2011). Buen vivir can be considered transmodern as it is inclusive and eco-centric, advocating for rights of nature, intercultural dialogue, and social and environmental harmony, while challenging Eurocentricity.

The concept is a contemporary interpretation of ancient Amazonian Indigenous understandings of wellness, crystallised in the Quichua neologism 'Sumak Kawsay' (Hidalgo-Capitán & Cubillo-Guevara, 2017). The main proposals of living well are the Ecuadorian 'buen vivir' (from the Quichua 'Sumaq Kawsay') and the Bolivian 'Vivir Bien' (from the Aymara 'Suma Qumaña').

BV's focus on identity, equity and sustainability can be expanded by defining some of its principles (Solón, 2018):

- Co-existing in multipolarity - the whole is multipolar, this includes understanding how to live in communities of difference, in nature, and that inequalities will always exist.
- Dynamic equilibrium - despite not being egalitarian, there is a constant search for balance of the whole. Humans play the role of intermediaries in the quest for equilibrium by

connecting with nature, but also trying to balance the spiritual with the material, knowledge and wisdom, different cultures, etc.

- Complementarity - recognition of 'the possibilities diversity provides for balancing and integrating the contradictions of the whole' (Solón, 2018, p. 4). A constant effort to learn from difference, leading to the existence of buenos vivires,[18] or plural futures from diverse wisdom(s), knowledge(s) and practices.
- Decolonisation - a constant effort to dismantle the continuing domination of the Eurocentric worldview, leading to self-management and self-determination of communities and territories.

Adding to these attempts to define the concept, Beling et al. (2018) identify four constitutive elements of BV: i) the idea of harmony with nature (including its abiotic components); ii) vindication of the principles and values of marginalised/subordinated peoples; iii) the state as guarantor of the satisfaction of basic needs, social justice, and equality; and iv) democracy. While this perspective gives a central role to states, Solón (2018) puts greater emphasis on communities, social movements and organisations, as state implementations of BV have until now been more reformist than transformative (Weld, 2020).

BV has always been developed from the base, leading to the empowerment of social movements to be more creative, resilient, and self-organised. In this understanding of BV, direct democracies are preferred, and the state plays the role of a facilitator. Its mission is the socially conscious deployment of technological advances while

[18] 'Buenos vivires' is the plural form of the phrase 'living well' in Spanish.

coordinating local networks of production, exchange, credit, traditional knowledge, and innovation (Solón, 2018).

These diverse interpretations of BV are a sign of the wide range of perspectives present in Latin America. This has led some authors to map the field, seeking commonalities (Chassagne, 2019; Hidalgo-Capitán & Cubillo-Guevara, 2017), and to identify different strands of BV in the region. For Chassagne (2019), they are: Extractivist (governments using extractivism to fund/achieve BV), and Ecological (informed by Indigenous communities and post-development literature). For Hidalgo-Capitán & Cubillo-Guevara (2017), these are:

- Indigenist and Pachamamist (from Pachamama, the Andean goddess of nature) — Intellectuals in this camp want to recreate the harmonious past living conditions of Indigenous communities in present day Latin America, prioritising Indigenous identities.
- Socialist and statist — Intellectuals in this camp seek the implementation of 'Twenty-first century socialism … with modern development in its neo-Marxist form' (Hidalgo-Capitán & Cubillo-Guevara, 2017, p. 28), prioritising equity to achieve some form of post-capitalism with the state as its main agent.
- Ecologist and post-developmentalist — Intellectuals in this camp see communities as the main unit of change. Each territory/community defines its own concept of good living, with nature at the centre of their concerns. It prioritises sustainability as understood by deep ecology.

Transcending the many definitions of BV and their diverging intellectual influences, authors call for a synthesised concept of BV. This definition 'would contribute to transforming Latin American societies into pluri-national, post-capitalist and biocentric societies under a

trans-modern and transdevelopment conception that transcends … paradigms of well-being, such as pre-modern subsistence, modern … and postmodern development' (Hidalgo-Capitán & Cubillo-Guevara, 2017, p. 26).

From this framing, BV could then be considered as a 'practical tool or resource for endogenous, community-led change' (Chassagne, 2019, p. 484). Instead of an ideological alternative to dominant paradigms, BV could be a platform for plural alternative visions and ways of collaborating to develop effective solutions.

After 30 years of development of the BV concept, and despite still being highly heterogeneous, it has effectively influenced national-level policy and more in Latin America. However, there are still challenges for its implementation (Chassagne, 2019):

- The contested nature of the concept.
- The need for multiple perspectives to come together in practice (institutions and communities, macro and micro levels).
- Political attribution of the concept.
- The existence of BV in extractive economies.
- The need to develop indicators to inform debate, support implementation and measurement.
- The need to understand the core principles of BV in practice.

The buen vivir concept, its evolution and transformative potential will be explored further in subsequent chapters. For some, BV is so broad that it lacks any real meaning; for others, it is an impossible to attain utopia. Its nature-centric approach and inclusion of personhood or rights of nature has been condemned by both right- and left-wing politicians, framing it as an infantile strategy of indigenist politics (Cadena, 2010;

Tola, 2018; Weld, 2020). However, for many more in Latin America (mainly historically marginalised peoples), buen vivir has opened new transformation possibilities, producing real impacts at multiple levels.

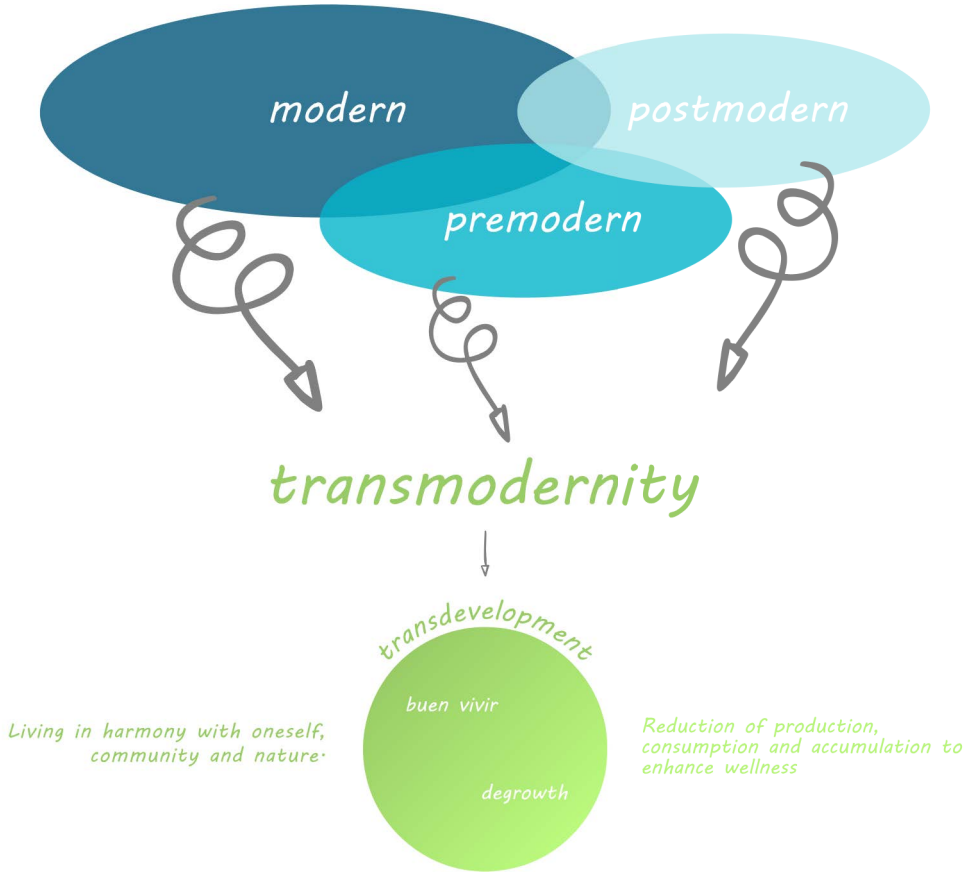


Figure 1.2. Transmodernity and the trans-development dyad

Transcending the abyssal line

An essential part of the transmodern and buen vivir intellectual projects is to provincialise the Eurocentric tradition to transcend the abyssal line. For Santos (2016), this process begins by recognising our own blindness, so that we can move towards an epistemology of seeing. This epistemology calls for recognition and connection to the absent knowledge(s) and absent agents who were pushed to the peripheries by modernity/coloniality. It is also about understanding social practices as

knowledge practices, so that non-scientific practices can be understood as alternative rival knowledge(s).

An epistemology of seeing is ultimately about enriching 'the parameters that define authorship, intelligibility and purposefulness … [while submitting] narrowly defined technological applications of knowledge to political and ethical contestations' (Santos, 2016, Chapter 5). This epistemological transformation from blindness to seeing requires new relations between epistemology and politics to produce a new epistemological stance that embraces a plurality of knowledge(s) and practices.

This transformation is not about a more equal distribution of scientific knowledge, but rather the production and sustainment of contextualised knowledge(s) that become trans-scalar through subaltern linkages at global scale (thus becoming glocal). It is also not about discrediting scientific knowledge, but rather its mobilisation in a counterhegemonic manner.

For Santos (2016), the stance of epistemologies of the south is achieved through two procedures - ecologies of knowledge(s) and intercultural translation.

Ecologies of knowledge(s), knowledge constellations, or interknowledge aim to create new meaning articulations through sfumato, mestizaje, bricolage, or transculturation. These are integrative hybridising processes that blur lines to enrich parameters of intelligibility and purposefulness. An ecology of knowledge(s) is premised on radical co-presence, the recognition of the contemporaneity of agents and practices on both sides of the abyssal line, requiring a transmodern decolonial rejection of any conception of linear time.

Interknowledge can be considered a utopia of constant learning where people engage with less familiar knowledge(s) without forgetting

their own knowledge or older ones. It also mobilises knowledge-as-emancipation, where the purpose of knowing is solidarity, or the 'recognition of the other as an equal and as an equal producer of knowledge' (Santos, 2016, Chapter 5). This solidarity has a caveat, people should be recognised as 'equal, whenever difference makes [them] inferior, and as different, whenever equality jeopardises [their] identity' (Santos, 2016, Chapter 5).

The second procedure of epistemologies of the south is intercultural translation. A 'living process of complex interactions among heterogeneous artifacts, both linguistic and non-linguistic, combined with exchanges that by far exceed logocentric or discourse-centric frameworks' (Santos, 2016, Chapter 8). This process emerges from a recognition of plurality of knowledge(s), conceptions of the world and human dignity which align with the transmodern project and buen vivir values of reciprocal incompleteness.

The practice of translation would allow for 'mutual intelligibility among culturally diverse social experiences of the world' (Santos, 2016, Chapter 8). Translation work mobilises epistemological and democratic imagination with the objective of creating new constellations of knowledge(s) and practices able to challenge current ways of doing and provide viable alternatives. Santos conceives translators as 'good subaltern cosmopolitan intellectuals' that are 'deeply embedded in the practices and knowledges they represent, having both a profound and critical understanding [of them]' (Santos, 2016, Chapter 8).

Ultimately, translational contact zones are time-spaces of mediation and negotiation where relational inequality is reduced. These contact zones are

> social fields in which different cultural life worlds meet, mediate, negotiate and clash … In which rival normative

> ideas, knowledges, power forms, symbolic universes and agencies meet in usually unequal conditions and resist, reject, assimilate, imitate, translate and subvert each other, thus giving rise to hybrid cultural constellations in which the inequality of exchanges may be either reinforced or reduced (Santos, 2016, Chapter 8).

This research argues that translational contact zones have opened in three national seed systems (Colombia, Ecuador, and Venezuela). In these cases, seed guardian networks, social movements, and state actors have served as translators that expand the parameters that define authorship, intelligibility, and purposefulness of seed related knowledge(s) and practices. This has created an interesting and still ongoing dynamic, where new knowledge constellations open transition pathways to transmodern alternatives.

Conclusion

This chapter presented the philosophical underpinnings of this research and broadly answered two basic transition questions: What needs to be transformed? modernity/coloniality, and transitions to what? Transmodernity and buen vivir. In doing so, it has established its decolonial posturing and expected contribution to opening coexistence spaces of epistemic and ontological pluriversality (Mignolo & Walsh, 2020).

Western onto-epistemologies appear to be in crisis, and it is becoming increasingly clear that the material intensity of life in rich nations is impossible to sustain and expand. Accordingly, this research aligns with the position that to bring forth another world, different tools are needed than those passed down from the Enlightenment. The research also aligns with the idea that decolonial transformations are not about

dismantling Western thought, but rather about transcending it (Mignolo & Walsh, 2020).

It is important to recognise that this intellectual project is not exclusively an effort of the Global Souths, but also occurs in the peripheries of Global North academia and activism. This is evident in the fields of degrowth, post-development, epistemic justice, and as part of transformations and transition scholarship used in this work (Anguelovski et al., 2019; Arora & Stirling, 2023; Ateljevic, 2013; Beling et al., 2018; Byskov, 2021; Celermajer et al., 2020; Celermajer et al., 2021; Doyon et al., 2021; Eckersley, 2021; Sachs, 2010; Feola et al., 2021; Fricker, 2027; Ghosh et al, 2021; Gilson & Kenehan, 2021; Hickel et al, 2022; Hookway, 2010; Hopkins et al., 2020; Kallis, 2011; Kallis et al., 2018; Kloppenburg, 2014; Latouche, 2009; Elzen et al., 2017; Morena et al., 2019; Pohlhaus, 2017; Rodríguez Magda, 2011; Sargisson, 2013; Schlosberg, 2019; Widenhorn, 2013).

This work assumes a transmodern posture, making visible othered positionalities and putting them in dialogue with Western thought. This thesis is about the opening of translational contact zones in seed systems but is in itself an exercise of intercultural translation. It aims to contribute to the decolonisation of existing Western theories of change by raising marginalised voices to speak to the core of knowledge production. Accordingly, this document is framed as a device of epistemological direct action, taking over theories and disciplines to (Santos, 2016, Chapter 3):

- Show that they lose their composure and serenity when they are interpellated by questions that they did not ask themselves.
- Identify complementarities and complicities where they see rivalries and contradictions.

- Show that their efficaciousness lies as much in what they show as in what they conceal, as much in the reality they produce as existent as in the reality they produce as non-existent.

This research also aligns with the position that there cannot be global social justice without global cognitive justice (Santos, 2016). As such, it concerns itself with epistemic injustices,[19] a particular kind of harm related to people's capacity as knowers.

[19] This concept is expanded in chapter 8.

2
Research design

This chapter deals with the research journey in a reflexive manner, attempting to describe the main beats of the process from researcher positionality to data analysis. The chapter begins by recognising the subjective position of the researcher and acknowledging its influence in the research design, process, and results. This is a personal rejection of neutrality and objectivity as a researcher, positioning this document as an exercise of epistemic direct action. The chapter continues with the research philosophy, its theoretical perspective, and generalities such as the motivation, initial questions, hypothesis, and objectives. Subsequent sections deal with the methodology, including reflexive descriptions of the methods, techniques, and procedures used.

As elaborated in the previous chapter, this research is decolonial and attempts to uncover transmodern transformative possibilities. It sits within a particular story that establishes the colonial invasion of America as inextricably bound to the Anthropocene event, understands the colonial pillaging of resources and exploitation of peoples of colour as the main engines of European development, and frames coloniality (the continuation of modern/colonial epistemes) as the main structure to overcome for the emergence of more sustainable and just futures.

The research presented here was approved by the Human Research Ethics Committee (HREC) of the University of Technology Sydney in 2020. Reference number for the initial proposal is ETH20-4745, later amended by ETH21-6078 to expand data collection. It is aligned with the 2018 Australian Code for the Responsible Conduct of Research, the

Supplementary Guidance to Support the Code, and the 2007 National statement on Ethical Conduct in Human Research.

As will be elaborated below, the research began with an ambition to better understand transformations in large systems. Decolonial theoretical framings allowed the researcher to *see* the abyssal line and seek cases where people were able to transcend it through the opening of translational contact zones. This eventually led to the study of seed guardian networks and their efforts to transform national seed systems in Latin America.

Reflexivity statement

This chapter begins with a reflexivity statement where I will describe the parts of my identity that situate me in the systems of power of coloniality. My personal history led me to have power and a specific social position that at times enables or hinders access, producing different degrees of privilege and marginalisation. I recognise that this position is intersectional as it shifts depending on the specific system of power being observed (e.g. race[20], gender, class…etc.).

The main purpose of this activity is intellectual decolonisation as I attempt to see myself and my conceptual universe in relation to the problem, its assessment, and depiction (Duarte, 2017). Hamby (2018) recommends reflecting on three areas when writing a positionality statement: i) personal characteristics; ii) the settings where we grew up and relevant family information; and iii) the frame offered by our disciplines or institutions.

[20] The author rejects any attempt to classify peoples based on racial criteria, recognising that racialisation has been mobilised as a strategy to (re)produce social hierarchies and political domination. In this chapter, the word race is substituted with 'biological phenotype'. However, in other sections the word race still appears as it is a constitutive part of modernity/coloniality.

The reflexivity statement presented here frames the colonial matrix of power as the space where identities are positioned. That is the 'layered intersection of anthropocentric, androcentric, heterosexist, rationalist, Euro/Western-centric, modern/colonial, racialised, industrialist, developmentalist, capitalist, and ableist systems of power' (Figueroa Helland & Lindgren, 2015, p. 438).

I acknowledge the personal characteristics that define my social position. I am a 39-year-old non-disabled heterosexual cisgender male born in Colombia to an upper middle-class family. Regarding my biological phenotype, I understand myself as mestizo, a mixed biological phenotype between Indigenous peoples of America, European colonisers, and other settlers. There is no easy way to trace the origins of my biological phenotype and ethnic traits as many Indigenous nations were eradicated and my family's historical records are difficult to access.

I recognise that the mixing of biological phenotype (mestizaje) was weaponised by Iberian invaders to whiten and civilise Indigenous populations. However, I also frame my mestizo identity as a non-white positionality that opens a space to reconnect to unknown Indigenous heritages (Cervantes, 2010; Chaves Chamorro & Zambrano Escobar, 2006; Cadena, 2005; Pérez-Brignoli, 2017). I recognise that my exteriority (physiognomy and skin colour) allows me to appear non-threatening to white Westerners which is advantageous. My mestizo identity also informs the research as it moved me to engage with coloniality and encourages an integrative approach and hybridising impulse.

I grew up in Bogota, the capital city of Colombia, a country located in the north-western tip of South America. The story of Colombia is too convoluted to include in this text, but it is important to point out that it is a postcolonial republic that gained independence from the Spanish Crown in 1810. The country has been impoverished throughout its history and only recently has been categorised as a middle-income country. The

poverty of Colombia is a consequence of overexploitation by imperial powers but also results from weak institutions and widespread corruption by political elites.

The immense inequality experienced by most of the population led to the emergence of Marxist revolutionary armed forces throughout the 20th century, which led to the establishment of a multi-actor armed conflict that has lasted more than 70 years. Adding to this, Colombian mafias have played a key role in global drug trafficking since the 1970s and right-wing paramilitary forces emerged in the 1990s to oppose Marxist guerrillas (often operating in tandem with corporate interests). Engaging intellectually and emotionally with this vicious cycle of imperialism, violence, and corruption is maddening; suffice to say, all social bonds have eroded in the country, impacting the whole territory multidimensionally.

This research emerges from the frustration of engaging with these wicked problems and the apparent incapacity of multiple actors to transform the Colombian context. Throughout my work in design for social innovation I encountered persistent obstacles to achieve more just and sustainable futures. This led me to pursue a PhD to open a space of deep reflection on alternatives and potential strategies to materialise them over time. Rurality and food systems were seen as a fertile ground to explore Latin American alternatives like buen vivir (see the section on case selection). Not only from an intellectual standpoint but from an affective space since my grandparents grew up as peasant farmers.

Research rationale

The initial intention of this research was to explore the idea of buen vivir and the change initiatives operating in that space. During the first year, a literature review was developed focused on decolonial theories (mainly Latin American decolonial thinking) and mainstream theories of

change. Concepts reviewed included modernity/coloniality, transmodernity, post-development, degrowth, and buen vivir. Theories of change included narrative transformation, large systems change, social practice governance, new institutionalism, and sustainability transitions (which later became the focus).

Sustainability transitions is a prominent Global North framework, which in recent years has faced increased calls for decolonisation. This was considered from the beginning as a fertile space for exploration as the intention was to better understand BV-focused socio-technical system change.

This research recognises that our planet is facing a climate emergency caused by human activity exceeding biophysical planetary limits (Ripple et al., 2019), but also, that not all humans have produced the same impacts. Despite the difficulties of pinpointing specific responsibilities in such a complex problem space (Gilson & Kenehan, 2021), this research argues that the production of the climate crisis has to do with the material intensity of Western civilisation, or the lifestyles and business practices of rich nations (Hickel et al., 2022). Consequently, current trajectories towards climate collapse are not the responsibility of Andean Indigenous peoples, Nigerian artisanal fishermen, or peasant families of Southeast Asia. These communities, and millions of others around the world living low-impact lifestyles, have not produced our current ecological breakdown, but tragically are and will continue to be disproportionally affected by it.

The research mobilises decolonial theories to understand the contemporary division between rich and poor nations, positioning the invasion of America by Iberian peoples in 1492 as a critical component of the Anthropocene (Lewis & Maslin, 2015). 500 years later, the way of life of rich nations is increasingly being recognised as literally impossible to sustain over time, evidencing that sustainability and social justice cannot

be achieved if all peoples live the developed existence of the first world (Figueroa Helland & Lindgren, 2015).

Consequently, many social movements call for alternatives to development instead of alternative development (Escobar, 2015; Hidalgo-Capitán & Cubillo-Guevara, 2017; Walsh, 2010). If our future is to be truly sustainable, it must be just, and to be just it must include the Global South. This research argues that transitions to more just and sustainable futures can be achieved by empowering peoples living in the peripheries of coloniality.

In the ruins left by coloniality/development, surviving non-modern regimes articulate with Western modernity in complex hybrids. Pulsing with transformative potential, these transcultural hybrids (Walsh, 2009) are thinking from the borders, engaging in practices, aesthetics, discourses, etc. that show us other ways of being (Mignolo, 2015; Walsh, 2003).

The necessity and urgency of transformations to more sustainable futures are increasingly palpable. However, most established visions of sustainable futures and strategies to materialise them are produced in rich nations. These tend to perpetuate modern/colonial structures and exclude other plural visions and practices of marginalised communities worldwide. Consequently, there is a need to explore transmodern transformations to sustainable futures.

The research set out to explore the integration of established theories of change and border thinking or epistemologies from the south (Santos, 2016; Mignolo & Walsh, 2020). This meant engaging with peripheral communities whose alternative visions are advancing transformation processes while interacting with modern institutions. Situated in this space, the research sought to explore emerging trans-local networks (Avelino, Dumitru, et al., 2019; Loorbach et al., 2020) of border practices

that engaged in onto-epistemic agonism with modern/colonial institutions.

Theoretical perspective

In this section, the theoretical perspective is elaborated through short definitions of ten relevant concepts. The intention here is not to provide a full literature review since it will be spread out throughout the document. Instead, this concept list is intended as a glossary that can be used by the reader to navigate the document.

Coloniality – Recognition that modernity and colonialism should be understood as a single entity. A continuation of colonialism founded in two myths: i) human history begins in nature and finishes in Europe; ii) the colonised are in the past and thus inferior. These myths have been naturalised historically instead of being understood as the consequence of power relations. The colonial matrix of power speaks of the core–periphery arrangement that resulted from colonialism. European racism and patriarchalism are at the core of this matrix, which othered and concealed all non-Europeans, pushing them to the peripheries of a heterarchy of power composed of industrialism, capitalism, anthropocentrism, rationalism, heteronormativity, ableism, etc. (Figueroa Helland & Lindgren, 2015; Grosfoguel, 2011; Mignolo, 2010, 2015; Mignolo & Walsh, 2020; Quijano, 2007, 2014).

Abyssal line – A conceptual line produced by modernity/coloniality dividing the modern and non-modern. The overlapping systems of power of coloniality are considered as an epistemic paradigm that established a superior subspecies (white European bourgeoise male) inventing colonial difference over all other (non)humans. These Others are understood as ignorant, inferior, local, backward, unproductive, lazy, etc. The universalisation of this totality produces the phenomenon of abyssal thinking, the impossibility of co-presence of both sides of the abyssal

line. The non-modern becomes invisible and unpronounceable since there is no possibility of modern learning in non-colonial terms. This leads to the complementary pair that some have named Anthropocene and Anthropo-not-seen (Cadena, 2015; Santos, 2016).

Transmodern(ity) – A minority worldview present in the peripheries of modernity/coloniality that aims to become a future culture incorporating the best of the pre-modern, modern, and post-modern to produce a pluriversal utopia through horizontal intercultural dialogue. The concept groups similar emerging intellectual projects from realisations of interconnectedness to nature and each other through a globalised networked internet society. It is a recognition of simultaneity of the pre-modern, modern, and post-modern conditions, and that these cosmovisions are related by an evolutive alterity instead of a paradigmatic overcoming, coexisting today as competitive cultural paradigms. Transmodernity is also a retelling of human history from those who have been othered by the colonial matrix of power. Here, communities (both territorialised and virtual) construct their own visions of the future and meta-narratives of social transformation (Acosta, 2019; Añazco, 2019; Ateljevic, 2013; Cubillo-Guevara & Hidalgo-Capitán, 2015; Dussel, 2002, 2012; Grosfoguel, 2008b; Hidalgo-Capitán & Cubillo-Guevara, 2020; Martín Alcoff, 2012; Ceci Misoczky, 2011; Rodríguez Magda, 2011).

Translational contact zone – A space where translation can occur between both sides of the abyssal line. Translation is understood as a polycentric living process prone to equivocations between the modern and non-modern as agents, knowledges, and practices interact on both sides. It is a recognition of reciprocal incompleteness that allows the expansion of the parameters that define authorship, intelligibility, and purposefulness. This concept connects with others like horizontal intercultural dialogue, or inter-epistemic dialogue, present in decolonial

theories (Acosta, 2019; Añazco, 2019; Santos, 2016; Dussel, 2012; Restrepo, 2014; Walsh, 2009).

Social practices – The source and carrier of meaning, language, and normativity. Practices are articulations between meanings (ideas, aspirations, values, symbolic meanings), competences (shared know-hows, practical intelligibility), and materials (technologies, objects, infrastructure). These elements travel constantly, while practices are localised instances of integration. As such, elements are generally stable, while practices are always in the process of formation, re-formation, and de-formation. Change can be produced through the governance of practices. This may: i) affect the circulation of materials, know-hows, and meanings; ii) undermine support to undesirable practices; iii) facilitate actors' enlistment or defection from (un)desirable practices; iv) shape networks through which desirable practices propagate or undesirables are kept in check; and, v) create conditions to develop and disseminate desirable practices (Kersten & Meyer, 2016; Knorr-Cetina et al., 2001; Maller & Strengers, 2015; Shove et al., 2012).

Discourse coalition – Ensembles of actors attracted to specific storylines and reproducing them through practices. Discourses are shared ways of looking at the world, a specific ensemble of ideas, concepts, and categorisations that are produced, reproduced, and transformed in a particular set of practices and through which meaning is given to physical and social realities. Discourses construct meanings and relationships, helping to define common sense and legitimate knowledge. Each discourse rests on assumptions, judgements, and contentions that provide the basic terms for analysis, debates, agreements, and disagreements. They are important because they inform problem description, define what is imaginable and possible, and condition the way in which actors perceive the rationale and scope of action. Narratives of change, transition discourses, or discourses of

transformation are of interest to this research. (Dryzek, 2013; Jernnäs & Linnér, 2019; Riedy, 2020; Wittmayer et al., 2019).

Sustainability transitions – Long-term, non-linear processes of socio-technical change that last between 25-50 years, where interactions between societal subsystems influence the dynamics of individual subsystems leading to irreversible patterns of change. These are multi-actor, multi-phase, multi-level processes guided by targets/visions where sustainability is understood as a moving target. Also characterised by collaborative design and learning. Transitions in time are a sequence of four alternating phases: i) the status-quo of the system changes invisibly in the background; ii) point of ignition, where the process of structural change picks up momentum; iii) structural changes become visible; and finally iv) a new dynamic state of equilibrium is achieved (Grin et al., 2010; Hölscher et al., 2018; Köhler et al., 2018, 2019).

Multi-level perspective – A component of sustainability transitions theory, the multi-level perspective is a process theory modelling socio-technical transitions as resulting from interactions between processes at different levels: micro (niche), meso (regime), and macro (landscape). For a transition to happen, niches at the periphery of the regime articulate with landscape pressures to destabilise and transform the regime. Niches refer to technologies, practices, and actors that are peripheral to the regime, and thus are sites for radical innovation. The regime refers to dominant structures, culture, and practices, as well as existing actors and networks that want to maintain the status quo. Landscape refers to global trends, cultural paradigms, transnational actors, and agreements. Timing and nature of interactions between levels produce transition pathways, or 'unfolding socio-technical patterns of change within societal systems as they move to meet human needs in a low-carbon fashion' (Rosenbloom, 2017, p. 39). Four types of pathways can emerge: Transformation, technological substitution, reconfiguration, and de-

alignment/re-alignment (Geels, 2020; Geels & Schot, 2007; Grin et al., 2010; Jørgensen, 2012; Köhler et al., 2019).

Power – Power is understood as the capacity or incapacity of actors to mobilise resources and institutions to achieve a goal. Power is seen as something that is always exercised rather than possessed. (Dis)empowerment is defined as the process through which actors gain the (in)capacity to mobilise resources and institutions to achieve a goal. These resources can be mental, human, artifactual, natural, or monetary. There are three types of power in sustainability transitions: Reinforcive, the capacity of actors to reinforce and reproduce existing structures and institutions; innovative, the capacity of actors to create new resources; and transformative, the capacity of actors to develop new structures and institutions (Ahlborg, 2017; Avelino, 2017, 2021; Avelino & Rotmans, 2009, 2011; Avelino & Wittmayer, 2016).

Justice – The research understands justice as multidimensional. The differential impacts of industry on marginalised communities and their exclusion from decision-making (environmental). The unequal distribution of impacts from climate change and related policies (climate). Power and equity in the broader relationships between humans and non-humans (ecological). The ethical implications of our situatedness within transgenerational relations to allow a flourishing existence for future generations (intergenerational). Fairness of the distribution of material and immaterial resources, harms, and benefits (distributional). Fairness and participation in decision-making and policy processes, as well as differences in capacities and procedural skills of different groups to participate in decision-making on an equal basis (procedural). Socio-cultural inclusion and equality reflected in institutional and public discourse value patterns (recognitive). Restoration or compensation of the harms and burdens caused by transitions (restorative). This research focusses specially on epistemic justice. That means acknowledging coloniality as a structuring force and

interculturality as a strategy for the recognition, validation, and inclusion of alternative historically marginalised onto-epistemes. Moving from concealing, ignoring, and eroding the non-modern, to a transmodern solidarity-based epistemology where mutual education and critique between knowledge(s) is emphasised while prioritising those least advantaged (Celermajer et al., 2020, 2021; Santos, 2016; Gilson & Kenehan, 2021; Moore et al., 2019; Morena et al., 2019; Reiter, 2018; Restrepo, 2014; Ryder et al., 2021; Widenhorn, 2013).

Research philosophy

This research is ontologically positioned as idealist, understanding reality as a social construct dependent on culture and shared meanings (Blaikie, 2011). This shared social reality informs views of different and/or overlapping social realities in different places. Accordingly, it is also epistemologically subjective and social constructivist (Stone, 2012). Understandings of phenomena are acquired through social interactions and observing complexity in the social construction of meaning. As mentioned previously, the research rejects absolutisms (truth, objectivity), recognising that the researcher is not independent of reality. Axiologically, the research is framed as interpretivist (Lincoln, 2013), reporting on the values of participants, and hopefully attesting to the complexity of the basic set of beliefs that guide their actions.

Research questions

The philosophical posturing and exploration of the aforementioned theoretical strands led to the formulation of an initial research question, research aim, and five related objectives:

- **Research question:** How can transmodern niches open transition pathways to buen(os) vivir(es) in postcolonial hybrid[21] regime configurations?

- **Research aim:** Explore emerging transmodern niches that enable onto-epistemic agonism between non-modern and modern/colonial regimes.

- **Research objectives:**

  i) Map actors and relations in the transmodern niche, as well as niche relations with regime actors.
  ii) Understand the historical evolution of the transmodern niche.
  iii) Identify the points of tension and agreement between the two poles of the hybrid as they engage(d) in onto-epistemic interactions.
  iv) Observe the reproduction of colonial epistemic asymmetries or novel decolonial hybridisations throughout the process.
  v) Assess the potential of the transmodern niche for transitions to a pluriversal[22] bio-centric future.

Case selection

Researcher positionality along with the research rationale, theoretical perspectives, and philosophy, led to a focus on border practices of the

[21] Hybrid here references both modern and non-modern hybrids.

[22] The neologism pluriverse is a rejection of a homogeneous and monolithic world and refers to the possibility of a world where many worlds fit. This goes beyond multiculturalism, emphasising plurality and horizontal intercultural dialogue (Escobar, 2015, 2018; Reiter, 2018).

Global South. Particularly where these alternative ways-of-being linked in trans-local networks to become influential sub-systems able to transform hegemonic structures. Case selection was difficult as it aligned with the start of the COVID-19 pandemic in early 2020. Additionally, the researcher was based in Australia and did not have a complete understanding of the territory, history, and culture as it relates to the colonial process and subsequent power structures.

Cases explored included networks of agroecological farmers, Aboriginal Australian-led businesses (e.g. a native plant rooftop garden in Sydney), intercultural Indigenous universities in Latin America, and an Australian non-profit that was integrating Ngangkari healing practices to the health system in South Australia. All these cases were examples of non-modern values, narratives, and practices interacting with established modern institutions with the aim to transform them. Networks of seed exchange were included after an exploration of agroecological food practices and were seen as an optimal case since they are glocal, networked, and were attempting to destabilise power structures in global seed systems.

Ultimately, Latin American seed guardian networks (SGNs) were selected as the space to answer the research question and fulfil research objectives. These networks group Indigenous, Afro-Latino, peasant, and other actors to safeguard and expand ancestral practices of native seed production and exchange. Over the last 20 years, seed guardian networks have become important players in national seed systems, ultimately being able to transform the rules of food provision in the region.

Selection of this case responded to several factors: i) Seed exchange networks in rich nations are generally not concerned with Indigenous and other non-modern seed care practices. ii) The researcher was more attuned culturally and historically to the Latin American context. And iii) the COVID-19 pandemic brought some uncertainty on sources of funding

and visa issues in Australia which led the researcher to move back to Colombia in case a leave of absence was needed.

Latin American SGNs were also an ideal case because they engage in border practices (i.e. seed care integrating AfroIndopeasant and agroecological knowledge). Their purpose is not to preserve these practices as they are but to transform them through deeper dialogues with science. They are not looking to remain peripheral to stablished ways of doing things but are very active advocating for system change towards more inclusion and protection of their practices.

Connecting to the theoretical framings of this research, SGNs can be framed as transmodern innovative spaces (niches) that empowered marginalised actors and their border practices to transform Latin American seed system legislation (regime). Niche-state interactions build bridges across the abyssal line allowing the expansion of parameters that define authorship, intelligibility, and purposefulness. As such, the process of change led by SGNs was akin to the opening of translational contact zones.

An initial review of documents produced by SGNs provided evidence of their transmodern qualities and transformative ambitions. Initially, Colombian SGNs were proposed as a case study but after months of unsuccessful contacts with network actors, it was decided to expand the research to other nations. Six countries were selected as the base sample: Colombia, Ecuador, Guatemala, Mexico, Peru, and Venezuela.

In each case, SGNs operated within their borders and there was existing or proposed legislation inclusive of their agendas. Participants from these countries were contacted, but willingness to participate was scant, leading to data collection occurring only in four countries: Colombia, Ecuador, Mexico, and Venezuela.

In the end, the cases presented in this document are the process of seed system change in Colombia, Ecuador, and Venezuela. These three cases were selected as they were the best examples of translational contact zones opening up transmodern transition pathways. Mexico was excluded since there was insufficient evidence of transmodern hybridity emerging from hegemonic seed system actors. However, data from Mexican networks was used to better understand narratives and practices of SGNs in the region.

With clarity on the case study and theoretical framings, the research question and objectives were updated.

- **Research question:** How did seed system transformations occur in Colombia, Ecuador, and Venezuela in the early 21st century across the abyssal line?

- **Hypothesis**: Andean seed system transformations in the early 21st century are transmodern and open pathways towards good living(s) as modern regime elements are destabilised by transmodern innovative spaces (niches) and macro-level pressures like the ecological crisis and decoloniality.

- **Research aim:** Describe the process of seed system transformation in Colombia, Ecuador, and Venezuela in the early 21st century and analyse it using a transmodern lens contrasting it to existing theories of change.

- **Research objectives:**
  i) Engage critically with modernity to uncover the persistence of coloniality.
  ii) Explore alternatives to modernity/coloniality emerging in Latin America.

iii) Describe the internal dynamics of seed guardian networks and their interactions with other seed system actors in the region.
iv) Describe the processes of seed system transformations in Colombia, Ecuador, and Venezuela.
v) Contrast processes of Andean seed system change with existing theories of change.

Research approach

Transdiciplinarity and integration

Framing the study as transmodern required a transdisciplinary and highly integrative approach inclusive of academic and non-academic participants (Tress et al., 2005). An approach that calls for awareness and inclusion of different disciplines, perspectives and interests, systems, cultures, and modes of thought (Scholz & Steiner, 2015).

As a researcher, I attempted to approach these cases from the strengths of my own design discipline, and my experience applying it to facilitate co-creation processes for social innovation and socio-spatial change. It is my view that design is a highly relational discipline, as it is both pliable and transversal (Prior et al., 2018). Participatory design can move between universality and particularity, abstraction and concreteness; it is also constantly called upon to operate across disciplinary boundaries. It can hold different views of phenomena as it facilitates multi-perspective dialogues.

This research set out to weave knowledge systems by: i) translating or adapting knowledge products into appropriate forms to enable multi-actor understandings; ii) mobilising past knowledge and experience in the system; iii) negotiating between different knowledge systems to develop mutually respectful and useful representations of knowledge

conflicts; iv) synthesising to develop a systems-based understanding of phenomena; and v) applying common knowledge to feedback into existing knowledge systems (Tengö et al., 2017).

Transdisciplinary integration was also attempted making use of knowledge ecologies (Sofoulis, 2015). This framework encourages researchers to direct attention to knowledge, power, and resources mobilised by multiple knowers with different knowledge practices converging in policy settings, and to map how boundaries were transgressed for the emergence of translation or brokering spaces.

The knowledge ecologies framework directs attention to: i) Biotic factors (Knowers and actors, knowledge modalities); ii) abiotic factors (Policy settings and resources); iii) interaction of biotic with abiotic factors (Knowledge/Power/Resources); iv) interaction among biotic factors (Relations between knowers, knowledges, models of collaboration); v) inside & outside system boundaries (Boundaries, translation, sources); and vi) evolution of new or improved knowledge ecologies (Sofoulis, 2015).

Reflecting on this approach after writing this thesis, leads me to recognise the incredible difficulty in properly implementing a transdisciplinary approach. Ultimately, this research might be considered more an exercise of intellectual promiscuity than anything else. That is, the mobilisation of 'dissident … undisciplined, [and] undisciplinary thinking' (Barry, 2016, p. 235) in the service of epistemic direct action to achieve more just and sustainable futures.

Research philosophy and the case study

The foci of this research are clashing social realities separated by coloniality and brought together by Transmodernity. Seed systems in poor nations demonstrate that despite operating in the same country or

region, there are still profound differences between non-modern and modern realities. An idealist ontology allows the invisible side of modernity (coloniality) to become visible and recognise/validate the social realities of marginalised actors historically framed as archaic.

Understandings of social action as processes of meaning-making and meaning-giving instead of mere behaviour, also validate the practices of non-hegemonic, peripheral, or othered subjects as futural (that is, capable of producing a future). An ontological position that understands social reality not as a thing to be interpreted, but as the interpretations themselves, is important for decolonial approaches. It allows for Eurocentric absolutisms to be deconstructed and for alternatives to be revalued; it enables acquiring knowledge about and integrating knowledge across the abyssal line.

Phenomena studied are understood as created by groups of people through their narratives and practices. As such, these are two of the main categories being explored in seed systems. Special emphasis is given to linguistic use, as language is where complexity in meaning appears; this informs all enquiry methods and techniques. A social constructivist epistemology is critical for this research, as one of its core intentions is to understand power dynamics. It attempts to simultaneously hold meanings mobilised on both sides of the abyssal line, as they enable or hinder transmodern transformations.

My wish is to report on the ontological claims of others, a complex task due to the diversity of participants and the distance of their life experiences from my own. However, I have tried to pay close attention to what participants value, reporting on their narratives and practices as described by them. Here it is difficult to distinguish between facts and value judgements, so participant voices are mostly left unmodified, while trying to translate their stories as accurately as possible. Multiple

perspectives are then brought together to find commonalities on value judgements to paint an accurate picture of stakeholders.

I recognise that my own ontological claims infiltrate the research, inevitably transferring my positionality and perspectives as a westernised Latin American mestizo. I attempt to write a balanced account, but I am clearly advocating for the inclusion of non-modern perspectives and resistance to coloniality. Hopefully the reflexivity statement and my voice throughout the text is sufficiently clear in exposing what I value, as I attempt to be aware of my own value judgements. Important beliefs that inform my worldview, actions, and logic while making claims about knowledge are:

- Eurocentric modernity has been established as the standard of well-being and personal realisation around the world.
- Europe must be provincialised as one way of being, not the only or correct way.
- Coloniality persists as an ongoing process of otherisation that undermines the emergence of more sustainable and just futures.
- Other ways of being are alive in the peripheries of coloniality, albeit struggling to have their voices heard.
- The plural hybrid onto-epistemes provincialised by Eurocentricity are of extreme value to achieve a more sustainable and just world.
- Transmodernity could offer avenues to raise the voices of those marginalised by modernity/coloniality.
- Humanity needs to move urgently to a bio-centric paradigm of wellness. This planet-centric future seems utopian, but it is possible.
- Transitions to that future must be inclusive of Global South ways of being.

- Multidimensional justice is essential for a sustainable future and special attention must be given to those historically marginalised. This means that epistemic justice plays a crucial role.

This research is also informed by a critical theory paradigm, advocating for more equity and justice (Guba & Lincoln, 2005). Themes of social institutions and their transformation, domination, alienation, and social struggles are ever-present. It is also a critique of society and a pursuit of alternative visions and possibilities (Creswell, 2012). As such, the emergent knowledge and research products (including this thesis) are understood as vehicles to produce social transformation. In sum, this is an exercise of epistemic direct action raising the voice of non-modern actors to make them visible to established theories of change and visions of desirable futures.

Research methodology

The research uses a qualitative methodology, as it is an emergent process of enquiry into the meaning individuals ascribe to phenomena (Creswell, 2007). The researcher engaged with multiple sources of data to analyse through inductive reasoning, being sensitive to the people involved. Themes emerged from the bottom-up to be woven in increasing levels of abstraction. However, there is an explicit theoretical lens guiding the enquiry. The hope here is to provide a holistic account of transmodern seed system transition processes, considering their social, political, and historical context.

The focus of the next chapters will be to provide accounts of complex interactions in seed systems, without prescribing cause-effect relationships. The research uses a multi-method approach to explore three case studies of Andean seed system transformations. Data was collected from February 2021 to January 2022, focusing the enquiry on

the past two decades of seed system interactions. Data collection methods used were semi-structured interviews and document analysis.

The emergent nature of qualitative research allowed for the fulfilment of research objectives, but it was inevitably impacted by COVID-19 measures like lockdowns, lack of mobility, and of access to participants.

Methods, techniques, and procedures

This section presents the data collection methods, sampling strategies, data preparation, and analysis techniques. The research mobilised semi-structured interviews and document analysis as methods to gain an understanding of the transformation of Latin American seed systems. Data gathered through these methods was triangulated to corroborate and complement participant accounts, as well as make sense of emergent transition pathways.

The intention of this research was to interview people that were deeply involved in seed system change processes. That is, actors who are prominent in SGNs (leaders, conveners, facilitators), state actors who participate in seed systems, and especially those who were part of legislative change. More marginally, actors like industry representatives and formal seed system actors were also of interest.

The proposed research plan was to engage with a maximum of 20 participants that played a key role in seed system transformations in Latin America over the last two decades. This was considered as a sufficient sample to gather multidimensional accounts of the process of legislative change in the region. The sample would include the few people that have been in the frontlines of change-making and had a broad understanding of system interactions during the process of change.

This data was complemented with documents produced by both SGNs and governments which give accounts of the process and results of

change. A wide variety of documents were reviewed and evaluated (e.g. virtual publications, YouTube videos, laws, news items…etc.). These texts and images recorded by seed system actors outside of researcher intervention were of interest as they constitute social facts (Bowen, 2009) providing much needed nuance and a multidimensional understanding of studied phenomena.

Methods

Semi-structured interviews

Semi-structured interviews were used as an exploratory tool to find out relevant themes for the research (Crouch & McKenzie, 2006). This method enabled access to participant's perceptions, meanings, and definitions of situations, becoming a powerful way to understand them (Báez y Pérez de Tudela, 2009; Punch, 2005). Semi-structured interviews also allowed for non-standardised, open-ended, and in-depth enquiry, which aligns with research aim and objectives.

An interview guide was developed to allow for: i) a multi-actor understanding of seed system history; ii) identification of relevant narratives and practices; and iii) multi-actor descriptions of the transformation process. Each interview included an introduction to the project, ethics, data use, and consent (≈20 minutes), questions to construct a brief biography of the participant, including their role in the system (≈15 minutes), and questions regarding history, perceptions of the system, other actors, and visions of the future (≈30-45 minutes). Finally, a ≈10-minute space was allotted to participant questions and comments.

The interview guide included the following questions:

- Biography
    - Could you please provide your full name?
    - What led you to work with seeds? What interested you about this space?

    - What is your current position in the organisation/network?
    - What are your current responsibilities in the organisation/network?
- What is a seed? How would you define a seed?
- Why is it important to take care of seeds?
- History of the organisation/network
    - What kind of activities do you engage in when working with seeds?
    - Why did you join the organisation/network?
    - Could you provide a brief outline of the history of the organisation/network?
    - How does your organisation/network work?
    - How would you describe the people and organisations that you interact with?
    - Which ones would you consider allies? Which ones would you consider antagonists?
- The broader seed system
    - What is your opinion about the current seed system/sector in your country?
    - What are the main milestones of change over the last 20 years?
    - How have seed laws changed over the last two decades?
    - How do you imagine the future? What kind of future do you desire?
- Closure
    - As we have discussed, I am unfamiliar with the sector and these types of organisations. Do you feel there is something important that wasn't discussed?

- Do you have any additional questions regarding the topics discussed, this instrument or the research as a whole?

Participants were interviewed between 60 and 90 minutes to produce in-depth thick descriptions of phenomena and deep reflections of their own experiences. On limited occasions, some participants were keen to do a second interview that ranged from 30 to 60 minutes. The interviews were conducted using Zoom due to COVID-19 restrictions and were recorded in audio format. The maximum number of expected participants was 20 but due to complications related to the COVID-19 pandemic, the research ended up with 12 interviews conducted with 10 participants.[23]

Although there is a common understanding in the research community that only sizeable samples produce validity, this research aligns with advocates for small-sample research. For some, this allows for better analytic, inductive, and exploratory studies as this approach involves 'careful history-taking, cross-case comparisons, intuitive judgments, and reference to extant theoretical knowledge' (Crouch & McKenzie, 2006, p. 493).

Document, policy, and picture analysis

Selection of documents was an emergent process done in parallel with interviews as both methods enriched each other to produce new insights. Participants often mentioned documents in their interviews, and sometimes documents pointed to new system actors to be interviewed. All documents were found online and include magazine articles, blog and social media posts, video reports, podcasts, legislation, photographs, among others. These documents are outputs of SGNs, network members, government agencies, and journalists. Some

[23] Interview transcripts are available upon request.

documents are produced collaboratively by multiple system actors, and on some rare occasions are developed by network-state collaborations.

Due to COVID-19 lockdown measures, the research also uses images to understand the phenomena studied. Photos and videos of SGN practices were of particular interest, focusing on the 'represented picture producers … all the persons, beings, and social scenes which are part of the subject of the picture and are acting in front of the camera' (Bohnsack, 2008, sec. 5).

As has been pointed out by Bowen (2009), document analysis served a variety of purposes: It provided context and historical insight to the studied phenomena, it generated new questions and served to tailor interviews to country-specific conditions, it supplemented interview data (specially as it is a small-sample study), it facilitated the tracking of seed system change over time from multiple perspectives, and helped corroborate or question participant accounts.

Document analysis was advantageous as it was an efficient low-cost method to cover phenomena broadly. However, due to contextual characteristics of Latin American governments and social movements, documents often provide insufficient detail and are difficult to retrieve. Documentation dealing specifically with seed system transformation is scarce, except in Venezuela where it has been carefully registered including SGN voices. Government websites are labyrinthine and often do not hold relevant documentation. This might be due to weak institutions, or in the case of Venezuela, inability to access adequate hosting services due to international economic sanctions.

I must recognise here a risk of biased selectivity, as SGNs tend to be more prolific publishers than relevant government agencies. This is directly linked to their advocacy activities, as an essential part of their mission is to connect with other potential seed guardians and influence

society. SGNs are constantly looking for opportunities to share their knowledge and gain allies to their cause. As these documents mobilise discourses and respond to very specific agendas, I must also recognise that they are not precise records.

Sampling

The aim of the research was to explore transmodern innovative spaces and how they interact with modern institutions to produce alternative transformation pathways. To fulfil research objectives, there was a need to look for unusual transformation processes not commonly explored in sustainability transformations literature. As such, the sampling approach of this research can be considered as a critical, extreme, or deviant case (Bryman, 2012). An exploration of SGNs as change-agents was selected, as it would allow simultaneous testing of decolonial theories and existing theories of change.

The research recruited two types of participants: people who were/are involved in the creation, administration, maintenance, or facilitation of SGNs, and people that have participated in seed law change over the last 20 years. Those roles sometimes overlap, as network conveners have often engaged in advocacy to transform existing legislation and some social movement actors have gone on to work for governments. As stated previously, the research design contemplated a small sample, projecting a minimum of eight and maximum of 20 participants. The research recruited people that played a key role in seed system transformation according to the criteria presented in table 2.1.

Recruitment process

Chain referral sampling was used to fulfil research objectives, as it facilitates access to hidden at-risk transcultural populations, allowing for privacy and confidentiality (Preston et al., 2003). Other factors played a role in this decision: i) participation of people that are internally

recognised as having been involved in the creation and maintenance of the network was desired; ii) the decentralised and dispersed nature of the networks made it the most efficient strategy to connect with multiple actors; and iii) gaining access and building trust was complex due to sociocultural conditions of these contexts.

A first round of document analysis (mainly websites, social media accounts, and online publications of the network) produced a general map of actors to pursue. With this information, the following steps were followed:

i) Online scoping of networks that fit criteria of engaging in transmodern practices and influencing seed system legislation.
ii) Emailing the contact address on their websites. If this contact was unsuccessful, the researcher called a phone number, if available.
iii) If the response was positive and there was interest to participate, the researcher had an introductory meeting with the relevant actors to explain the research in detail.
iv) Exploratory meetings led to mapping other actors, kickstarting the chain referral process.
v) Contact was maintained until recorded interviews were carried out.

It is important to clarify that SGNs are generally voluntary, with no top-down monolithic decision-making structure. These are decentralised groups of people that work together for a common goal but disperse and convene at will. Gaining any form of official approval that allowed access to the whole network was impossible, as they are not constituted as legal entities and have no clear leadership. Contact was done mostly one by one to explain the research and gain individual consent from each participant.

Table 2.1. Criteria for recruitment of research participants

Inclusion	Participant is or was a member of the network or any of the organisations involved in it.
	Participant was involved in the creation of the network.
	At any point in time participant took part in the management, facilitation, or maintenance of the network.
	At any point participant was involved in the management of internal and/or external communication with other relevant actors.
	Participant is an external actor that played a key role in the creation and/or continuity of the network.
	At any point in time participant aided the network to overcome an obstacle with an external actor that threatened its continuity.
	At any point in time participant (external actor) is perceived by the network to have been an obstacle that threatened its continuity.
Exclusion	Participant refuses to give information or informed consent.
	Security, technical conditions, geography and/or weather conditions impede access to participant.

The horizontality of the networks, their trans-local nature, and the features of the loci of study (poor countries with weak institutions) proved challenging when onboarding participants. The initial research proposal consisted of a study of one seed guardian network operating in Colombia. The intention was to go deep into its history, narratives, and practices, as they configured a novel influential system over the past two decades. Three networks were contacted for this purpose: Campaña Semillas de Identidad, Red de Semillas Libres, and Red de Guardianes de Semillas de Vida.

The first point of contact was through the 'contact us' information on their websites and social media profiles. An email was sent with a short description of the research project and a brief document describing the theoretical framework that informed it. Campaña Semillas de Identidad and Red de Guardianes de Semillas de Vida responded, as they share members and often share activities. Contact continued with two exploratory meetings where six members of the central node of Red de Guardianes de Semillas de Vida posed questions about the research process. There was a positive response from the central node, but

additional meetings were required with representatives from each territorial node to gain access.

The meetings with the central node also resulted in members sending emails to other network participants introducing the research proposal. It was also suggested that a short video was developed to share with the network presenting the research in plain terms. This video was deployed by a network convener via their mailing list and social media channels so that interested members could individually express their intention of participating.

In parallel to this, external actors relevant to the Colombian seed system were also contacted via the contact us details available on their websites. Two other stakeholders were of special interest, the public authority on seed research, legislation, and control (AGROSAVIA), and the Colombian confederation of industrial seed producers (ACOSEMILLAS). Several contact attempts with ACOSEMILLAS were unfruitful, but there was a positive response from some researchers and employees at AGROSAVIA which led to chain referral within the organisation.

The researcher moved to Colombia as soon as international borders reopened (December 2020) and research began in February 2021 after gaining ethics approval. At this point, COVID-19 restrictions were still being enforced in Colombia, so interviews were held via Zoom. The need to keep contact confined to a virtual space severely impacted the trust-building process with potential participants. Additionally, some participants had no access to information technologies or were restricted by infrastructure/budgetary issues.

The near impossibility of accessing Indigenous, Afro-Latino, and peasant communities, and building trust resulted in a low number of interviews. These communities have been historically marginalised, are

subjected to extractivist research practices, and their ecological activism often makes them targets for armed actors. It was crucial to have face-to-face contact with AfroIndopeasant actors to gain their trust in such an unstable space. Adding to these issues, in late April 2021 a nationwide strike began in Colombia in response to proposed tax reform. For two and a half months people mobilised in major cities, occupying public spaces, government buildings, and blocking roads. There was a heavy militarised response to these protests, leading to high levels of violence and a rise in COVID-19 cases throughout the country.

At this point, only five interviews had been conducted. The research team decided to expand the research to other countries in Latin America where similar movements operated. This meant that an amendment had to be presented to the university ethics committee to include new countries, corresponding networks and organisations (see table 2.2). Recruitment strategy remained unchanged, but the research was redirected to founding members of the networks and government officials that played a key role in seed legislation. The expectation was that these participants would be urban, highly educated, and proficient in the use of information technologies. This would allow the research to advance in the context of the pandemic, as borders were still closed in most of the proposed countries, with COVID-19 restrictions still in force.

Listed organisations were contacted several times via email and telephone, but responses were positive only in Colombia, Ecuador, Mexico, and Venezuela. In all four countries, key players of SGNs were interviewed. However, government actors were only interviewed in Colombia. There is no clarity why there was such low participation, although the main factor might be the persistence of COVID-19 for the duration of the research. Pandemic restrictions on mobility, lockdowns, curfews, and border closures impeded access to rural communities and trust-building with participants. Additionally, weak institutions often translate into government agencies with heavy bureaucracies,

overworked public servants, and lack of efficient communication channels with the public.

Particular difficulties were experienced in Venezuela, where economic sanctions from rich nations have cut off any possibility of using global servers or email providers. Adding to this, the multidimensional crisis of the Bolivarian Revolution has resulted in critical infrastructure damage, producing power, internet, and phone service cuts. Political tensions in Colombia and Ecuador also complicated access to participants, as mass protests erupted in both countries. Ultimately, the research recruited ten participants in all four countries.

Despite these difficulties, expanding the research to other countries in Latin America also proved advantageous. The inclusion of Ecuador and Venezuela moved the research from initial framings of vulnerable social movements resisting against monolithic neo-liberal states, to open states engaging in transmodern legislation. Participant recruitment and data collection also showed the deep transnational linkages of SGNs and how their knowledge is shared beyond national borders. Ultimately, the inclusion of participants from diverse countries in different stages of the transition process, allowed for a greater understanding of change dynamics through their comparison.

Table 2.2. Networks and organisations considered for recruitment of research participants

Colombia	Mexico	Venezuela	Ecuador	Guatemala	Peru
Campaña semillas de identidad	Campaña sin maíz no hay país	Campaña Venezuela Libre de Transgénicos	Red de Guardianes de Semillas	Red de Guardianes de las Semillas	Centro internacional de la papa
Red de semillas libres	Fundación semillas de vida	Movimiento Semillas del Pueblo	Red Semillas de Libertad	Red Semillas de Libertad	La Huerta de Tipón
SWISSAID Colombia	Alianza por la Salud Alimentaria	Asociación de Productores Integrales del Páramo	Ministerio de Agricultura y Ganadería	Colectivo Social por el Derecho a la Alimentación	Sociedad Peruana de Derecho Ambiental
Ministerio de Agricultura	Alianza por nuestra tortilla	Mano a Mano Intercambio Agroecológico	Instituto Nacional de Investigaciones Agropecuarias	Instituto de Ciencia y Tecnología Agrícolas	Iniciativa Andino Amazónica para la prevención de la biopiratería
AGROSAVIA	Red Mexicana de Semillas	Ministerio del Poder Popular para la Agricultura y Tierras	Acción Ecológica Ecuador	Secretaría de Seguridad Alimentaria y Nutricional	Red semillas de libertad Perú
ACOSEMILLAS	SNICS Servicio Nacional de Inspección y Certificación de Semillas	Ministerio del Poder Popular para las Comunas y los Movimientos Sociales	Conferencia Plurinacional e Intercultural de soberanía alimentaria	Red Nacional por la Defensa de la Soberanía Alimentaria en Guatemala (REDSAG)	Red de Intercambio de Semillas – Guardianes de Semillas
Red de Guardianes de Semillas de Vida	Centro Internacional de Mejoramiento de Maíz y Trigo	Instituto Nacional de Investigaciones Agrícolas	Observatorio del Cambio Rural	Alianza Nacional para la Protección de la Biodiversidad	Ministerio de Desarrollo Agrario y Riego
	Comisión Nacional para el Conocimiento y Uso de la Biodiversidad		Colectivo Agroecológico del Ecuador	Ministerio de Agricultura Ganadería y Alimentación	Servicio Nacional de Sanidad Agraria del Perú
	Secretaría de Medio Ambiente y Recursos Naturales				Instituto Nacional de Innovación Agraria
					Asociación Andes

Data

This exploratory research collected primary and secondary data in Spanish through interviews and documents. Fulfilling research objectives required descriptions of people directly involved in the creation and management of SGNs. 85 per cent of interviews were conducted with founding members of SGNs that have participated in network–state interactions to transform legislation, and 15 per cent were conducted with government employees in Colombia.

Participants were de-identified using codes accessible only to the researcher. However, their narratives of change processes could lead to identification as they mention geographical sites, names and/or job positions/descriptions in their responses. Written and verbal consent forms and procedures were used to minimise risks. Additionally, research purpose and risks were clearly communicated to all participants. This section touches upon data coding, and foundations of analysis.

Data coding

Coding here is understood as a heuristic to uncover the essence of the research story by linking data to ideas that will allow the golden thread of the research to emerge (Saldana, 2009). Coding was used as an exploratory problem-solving technique implemented as an emergent, iterative, and cyclical process. Phrases, paragraphs, or several paragraphs were coded using single words and short sentences, using simultaneous coding on occasions to look for more codes within a single datum. Notes were taken in parallel to method implementation and coding to organise ideas and uncover the research narrative as presented in this document.

The first phase of the research was an exploration of a Colombian SGN. As interviews were scarce and far apart, network documents were

codified first, allowing for the identification of network narratives, practices, and visions for seed systems. This also uncovered the trans-local connections between different Latin American seed networks and their successes in influencing national legislation. This first round of document coding informed the expansion of the research to other countries and its focus on network-state interactions to transform seed laws.

The second phase of the research included interviews and a new round of document coding focused on seed legislation in Colombia, Ecuador, Mexico, and Venezuela. On occasion, notes taken during interviews or while reading documents became codes (e.g. food sovereignty, AfroIndopeasant, seed fair, among others). Documents and individual interviews were subjected to pen and paper precoding to highlight relevant and memorable moments aligned with the theoretical framework. This gave shape to initial ideas about power asymmetries in seed systems, the struggle of networks for recognition, and the need to include epistemic justice as a central component.

The third phase of the research began when participant interest waned, and administrative PhD timetables required a progress review. The full set of interviews and documents was codified using NVivo software. The initial approach was inductive, focusing on descriptive coding to find relevant topics. Structural coding was used afterwards to link the who, what, where, and how's. Some value coding was also used to connect values, attitudes, culture, and interpersonal experiences of participants.

This third phase consisted of several rounds of coding, leading to pattern finding by clustering codes according to similarity and regularity. Patterns were defined by similarity, frequency, sequence, correspondence, and causation (Preston et al., 2003). Subsequent rounds of line-by-line coding led to refinement and recategorization of codes,

arranging them hierarchically to better understand the data as visualised below (see Figure 2.1). Seen through the knowledge ecologies framework, actors were one of the main codes used, while their knowledge modalities were categorised as practices and narratives. Relations between knowers in the system had their own code but also appeared in the code 'dialogue, agonism, and antagonism'. Policy settings were part of codes 'narratives – law…' and 'history', while power was codified under 'relationships' and '(injustice)'.

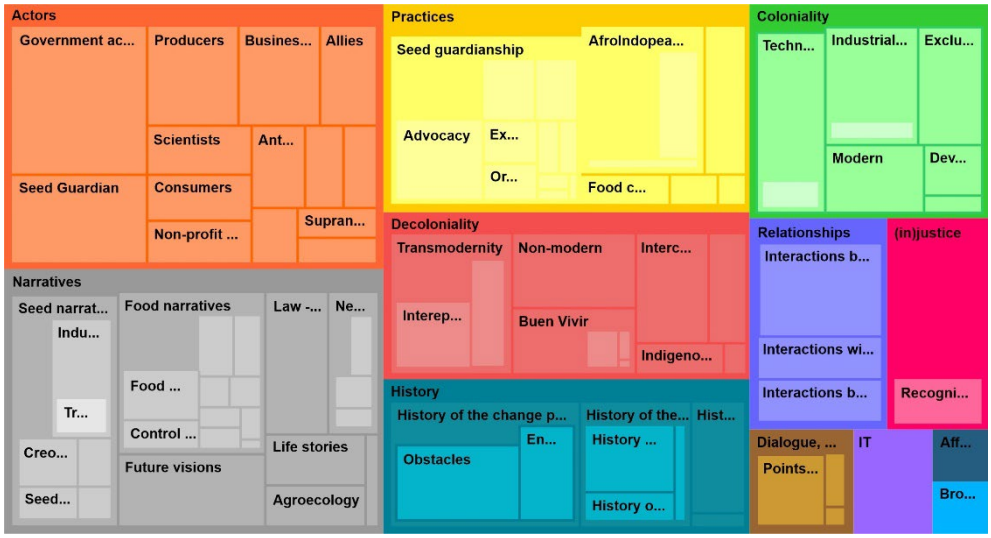


Figure 2.1. Visualisation of thematic code categorisation of interview data (Code overlap is not evident in the visualisation)

Phase four began from the systematic categorisation of codes to find emerging themes. A hybrid approach was used at this point, as deductive coding was incorporated using some concepts from the theoretical framework. Theme identification led to a greater focus on SGN-state interactions to change legislation. Understandings of these change processes also shifted to categorise them as happening in three main sites: narratives, practices, and rules. It was clear that legislation was the main point of contention between SGNs and the state as it would recognise and protect their practices. With rules as the main arena where change was pursued by SGNs, their work was now seen as a

narrative change process to reposition their knowledge(s) and practices as an important part of seed systems. That is, a process by which they made visible what was rendered invisible by the hegemonic laws, narratives, and practices of incumbents.

At this point, multidimensional conceptualisations of justice were also incorporated with epistemic justice as the focus. Knowledge and knowledge production needed to be better understood by including terms like traditional ecological knowledge and technoscience. Crucially, the philosophy of epistemologies of the south (Santos, 2016) was integrated with the concept of the abyssal line becoming central to the research. This relates to the invisible/visible dynamics present in the system, as a symptom of coloniality as was expanded in the previous chapter.

Data analysis

Data analysis was approached as an iterative process done in tandem with the coding phases described in the previous section. Multiple rounds of thematic and narrative analysis were undertaken to uncover themes and sub-themes which created the research story presented in the following chapters. Thematic analysis was used to find patterns of meaning, experiences, and views of participants regarding seed system transformations over the last two decades.

Narrative analysis was used to gauge meaning, attempting to understand political and philosophical postures of system actors and perceptions of power in the system. Themes and sub-themes also emerged in relation to the theoretical framework of this research. Theories helped organise data and ultimately led to the creation of a golden thread that weaves theory and data into a narrative of transmodern transitions to sustainable futures.

Narratives were analysed using categories proposed by Dryzek (2013) and Wittmayer et al. (2019). These are: i) recognised entities, ii) their assumed relations, iii) actors and their motives, and iv) key rhetorical devices (Dryzek, 2013). For their part, Wittmayer et al. (2019) propose analysing three aspects of narratives of change: i) content, ii) construction, and iii) the role of narrative and actor's perception of it in the process of social transformation. Practices were analysed focusing on meanings (overlapping with narratives), competences, and materials, as well as their circulation through networks (Shove, 2012). Finally, rules were analysed in terms of formal and informal sets aligned with concepts of visible and invisible dynamics.

The process of data analysis led to the production of rich pictures to conceptualise the golden thread of the research. This visual tool is part of the soft systems thinking methodology and is generally used to acquire better understandings of complex problems. In this case, it was used by the researcher to organise emerging themes and connect them to uncover new meaning patterns. Eventually, these diagrams became almost first drafts of the chapters presented in this document.

Going back to the knowledge ecologies framework, the data evidences multiple knowers mobilising diverse knowledge modalities clashing in policy settings. In the analysis, special attention was given to mobilised resources and power relations emerging from interactions between system actors. The thesis argues that new or improved knowledge ecologies have evolved from these processes and transdisciplinary analysis attempts to explain how and why.

The research story is one of transmodern transitions to sustainable futures where non-modern narratives and practices are transmodernised to transform established system rules. In these processes, peripheral individuals and communities organise in trans-local networks (SGNs) to strengthen their visions and ways of life. This

enables the simultaneous emergence of discourse coalitions and a system of interrelated practices that leads to political activation.

This innovative subsystem (niche) becomes an influential system capable of destabilising hegemonic ways of doing things (regime). Aligned with global pressures of decolonisation and the inevitability of the climate crisis (landscape), the transmodern niche challenges the regime. This process is aided by state actors who align with these views or are connected to overlapping discourse coalitions. The following chapters will present this story in detail, reviewing three cases of Andean seed system change (empirical level) and providing an analysis of these processes using multiple theories of transformation.

3
Seed guardian networks

> *I don't know if she told you the story of when she went to an [agroecology] event in Manizales. On the way back someone got off before [her] … and took her suitcase. Oh! What a tragedy that was, she called us extremely upset, almost crying. But it wasn't because she had clothes or money [in the suitcase], but because she had seeds that she had exchanged with Indigenous peoples. That's the level of appreciation [she has for seeds], thank goodness she was able to recover it* (NET001).

> *[Venezuelan Indigenous Guajiro peoples] are the ones who have really done the conservation [of porcelain cacao] … through thick and thin. Because we're talking about a dismantled jungle matrix, completely converted to cow pasture. And their orchards are little islands, groves in the middle of those cattle ranches. The passion, the authenticity with which [a Guajiro elder] spoke to me about that cacao and his work to maintain it, and his concern about what was going to happen to the grove when the head of the matriarchal line died.... And he also talked about the continuous visits he had from Japanese and American gentlemen. "These gringos*[24] *… they came to ask me to do them a little favour and give them some of those [cacao] shells. And you know I'm not selfish, I gave it to them, and they brought me a few things, they gave me a hat". In other words, he did it in reciprocity* (NET008).

These stories succinctly express the spirit of seed guardians or seed custodians, a particular type of knowledge-holder that specialises in caring for one or several seed varieties that are creole, native, or landrace (that is, local cultivars that have been improved by traditional agricultural methods).

[24] The term 'gringo' is a colloquial way of referring to foreigners, especially people from the United States of America.

The above quotes paint an initial picture of a group of people so widely diverse that complicates homogenisation. As expressed by NET006, 'we are men, women, Americans, Canadians, French, Belgians, Peruvians, Colombians who live [in Ecuador], and obviously mostly Ecuadorians. But among Ecuadorians there are Afro-descendants, peoples of various Indigenous nations, coastal people, mountain people, from the Amazon. Even ideologically, … we have people who are very Catholic, we have evangelicals, atheists, communists, we have people from the right and the left. It's a mishmash … we have a colleague who is a shaman and several colleagues who are scientists' (NET006).

When asking a peasant farmer, they will say that guardians are 'peasants but at the same time involved with biodiversity; [seeking] that ancestral and native seeds are not lost [in a food sector where] there are seeds that no longer reproduce' (NET002), referring to agro-industrial 'terminator' seeds which prohibit reproduction after one cycle. More urban-based and professional guardians, speak of themselves as defectors from the workforce, abandoning the rat race to pursue a 'post-industrial mode of life - a return to craft, autonomy, and the strengthening of communities' (NET006).

In truth, seed guardians come in all shapes and sizes, they live in diverse landscapes, and span many biological phenotypes, ethnicities, age groups, genders, and classes. Indeed, the only widespread commonality might be a 'desire to provide a positive alternative to the current system in harmony with nature and seeking social justice' (NET006).

This pursuit of alternatives makes guardians feel like outliers, not only in the modern/colonial system but also amongst non-modern peers. As NET008 expresses it, 'at first it was difficult for [guardians] to even admit that they had those seeds. Because keeping them was tied to attitudes not in line with progress, modernisation, [and] monetisation. It was

something more akin to poor, stubborn, and ignorant peasants who have useless seeds that nobody is interested in … and by nobody, I mean the market' (NET008).

Beyond this condemnation from modern/colonial perspectives, guardians are also extremely unusual in non-modern spaces. So unusual that they need to incentivise conversations with others that share similar worldviews. For instance, with neighbours who do not understand why they hold so many seeds. As NET006 explains, there are 'several things about seed management that only guardians understand', adding that [the networks] often 'have to pursue [other] peasant and Indigenous [social] movements to explain seeds because they don't understand them' (NET006).

Feelings of difference at the local level are reflected in testimonies from Ecuador like those where '[guardian] brothers and sisters have suffered attacks by neighbours for walking this alternative path, [with] many feeling deeply discouraged by being so isolated in their territories' (NET006). This sense of dislocation is further explained by mestizo neo-peasant[25] NET006 in relation to his friendship with an Indigenous seed guardian: 'both of us are black sheep in our original social environments. My wife and I, for many things, but one of the main ones is our love for the Indigenous and ancestral. While my *compadre*[26] and his wife, … they're black sheep within their Indigenous context because they quote unquote have westernised a lot' (NET006).

This sentiment is shared by a Colombian guardian, who sometimes feels uneasy engaging in guardianship practices, stating that: 'when

[25] The term neo-peasant refers to urban dwellers who decide to move to rural areas to pursue a lifestyle dedicated to food production, small community life, and subsistence.

[26] The Spanish word 'compadre' is generally used to refer to the godfather of a child, but it is also used as a term of endearment for very close, almost familial friendships.

[neighbours] come to my house for something, … sometimes they look at me like I'm weird, [like they're asking themselves] why does she grow all that?' (NET002). Indeed, NET002 is a special kind of guardian, caring for more than 50 plant varieties (proudly mentioning them one by one during the interview). Such an amount is clearly above average, giving a sense that this guardian is more akin to an obsessive collector. An uncommon behaviour, as most guardians focus only on a specific variety or a small number of viable plants in their territory.

Despite her clear particularities, NET002 links the uneasiness of her neighbours with an increasingly common attitude amongst farmers: 'what isn't sellable shouldn't be produced' (NET002). A signal that can be interpreted as a peripheral positioning of guardians in the industrialist-capitalist power system. NET002 also gives a sense that seed guardians are differently related to non-humans in their territories. She likes putting photos of her plants on social media, refers to bees under her care as 'babes', and is thankful for the help of birds in disseminating corn seeds on her farm. NET002 admits that she gets 'really sad' when she loses seeds, and when prompted to pick a favourite she is unable to do so, since 'they're all really important to [her]' (NET002). These recognitions of agency, interrelatedness, and horizontal relations in nature, further position guardians as non-modern actors peripheral to the modern/colonial world-system.

Alternative connections to nature are embodied by Indigenous, Afro-Latino, and peasant actors, but are also present in more urban and professionalised seed guardians. Being the grandson of peasant farmers myself, I was deeply impacted when *mestiza* neo-peasant guardian NET003 positioned herself as agro-descendant, adding that 'my grandparents, my family were peasants … and my grandparents were my first teachers' (NET003).

This was also highlighted by NET006 when he stated that 'like most Ecuadorians, [he] had grandparents who were peasants. In truth, almost all [Ecuadorians] are first, second, and maximum third generation peasant descendants' (NET006). Memories and family histories tied to land and food production inform much of the activism of seed guardians. They actively connect seeds to politics, framing their own guardianship practice as political, and recognising the marginalisation of AfroIndopeasant identities throughout Latin American history. To some guardians like NET006, changing these unjust structures is assumed as a responsibility.

The complexities of contemporary seed systems and the immense burden of transforming centuries-old structural injustices led these disparate actors to organise. Seed guardian networks (SGNs) emerged at the beginning of the 21st century in Latin America, responding to the intensification of neoliberal policies during the 1990s and early 2000s. These policies opened more spaces for transnational corporations while curtailing possibilities for local non-modern agricultural practices (specially as part of free trade agreements with rich nations). This neoliberal surge also coincided with i) an increased awareness of the pitfalls of the green revolution; ii) a positioning of agroecology and organic agriculture as viable responses; and iii) the global spread of resistances to increasing regulation, privatisation, and monopolisation of seeds (e.g. Seed Freedom in India).

The mission of these networks can be broadly described as the defence of people's rights to produce, store, improve, exchange, and trade their own seeds according to Indigenous, Afro-descendant, peasant, and agroecological practices. Initially, the activities of SGNs were mostly directed towards resisting detrimental legislative changes and getting their voices heard. With time, those resistances allowed the flourishing of protected spaces for non-modern seed practices. After nearly 20 years of work, the networks have consolidated as an influential

political force opening spaces for the non-modern by voicing the concerns of historically marginalised actors in policymaking. This organisational process has enabled the emergence of an influential trans-local innovative space that increasingly participates in seed system transformation.

SGNs are decentralised, place-based, trans-local coalitions of people and organisations committed to safeguarding care practices of sowing, reproduction, and exchange of landrace, native, and creole seeds. Participants are widely diverse but include peasant, Indigenous, and Afro-Latino communities, neo-peasants, foreign and national NGOs, urban academics and professionals, amongst others. Over the last two decades, and despite being under constant threat from both government and industry pressures, SGNs have connected otherwise isolated outliers to simultaneously resist modern/colonial food narratives, practices, and rules, and propose alternatives.

Due to their diversity, this chapter will focus not on developing a single definition of seed guardians, but on mapping their shared narratives and practices. Data is drawn from interviews with eight founding members of networks operating in Colombia, Ecuador, Mexico, and Venezuela, as well as document analysis from network publications across different media. Although differences across the networks and the nations in which they operate are vast, their multiple commonalities are emphasised.

The purpose of this chapter is to offer a characterisation of the forces behind the transformation processes described in subsequent chapters. It continues with a description of the narratives that imbue network practices with meaning, and then outlines their practices, moving from the individual and community level to the network level, and up to network-state interactions.

Seed guardian narratives

Our seeds vs. their seeds

Narratively, network participants understand seeds as the starting point of nourishment, but also as free, living entities that embody the origin and regeneration of existence. For them, humans and seeds have a deep relationship of nurturing and care, a connection that mobilises narratives of seeds as part of family and community. Participants understand seeds as an intergenerational commons beyond government and corporate control, sometimes going as far as speaking of seeds as entities with agency and rights of their own. They acknowledge the existence of plural nurturing practices, producing a wide diversity of agricultural seeds influenced by generations of localised knowledge(s), experiences, cultures, and traditions.

Guardians draw a clear line dividing native, creole, and landrace seeds from their industrial counterparts (especially transgenic ones). Industrial or hybrid seeds are seen as a sterile commodity that requires agro-toxics to produce food and that die without reproducing. The spread of these technological assemblages produces a deterioration of the environment and increases concentration of power in the food sector. Guardians see this as a threat to their way of life and food security in general, a threat not acknowledged by food-system institutions. The invisibilisation of risks is a product of deeply ingrained hegemonic narratives that frame industrial seeds as good, while ignoring the potential (sometimes even existence) of AfroIndopeasant seed technologies.

Seeds in AfroIndopeasant hands

Guardians start by recognising seeds as a 'living being' (NET009). Be it NET002 saying that seeds are 'where life is encased', NET003 framing seeds as 'the origin of existence', or NET005 and NET006 claiming they

are the 'beginning of' and 'regeneration of life itself.' They also mobilise narratives of seeds as having a spiritual dimension. Neo-peasant guardian NET003 evokes Indigenous worldviews when she states that 'the seed represents the creation of the divine, the beginning of everything. That's where food comes from, where water starts, because [Indigenous peoples] talk about seeds in the plural, about human seed, food seed, and water seed' (NET003). Similarly, for NET008 seeds are 'the blessing that no one is denied, because it is that wonderful life entity to which we owe physical care and spiritual reverence' (NET008). For some, this spiritual connection between humans and seeds emerges because 'deep down we're all seeds' (NET006).

There is also a recognition of seeds as multidimensional, which is a shared perception in SGNs (NET007). Indeed, when referring to peasant seeds, NET005 sees them as a 'container of knowledge, experience, and culture, … of generations, of a lot of work, of diversity'. For NET007, seeds are also 'the origin of many processes [outside of] food production; processes of [personal and family histories]'. This guardian understands seeds as the origin, not only of food or life itself, but of 'mobilisations, and struggles, connecting people and stories [to] … walk around the world arguing [for transformation]' (NET007). For NET006, seeds also have an 'unparalleled metaphorical power', adding that 'when people talk about seeds … in their heart, they're always referring to their own birth and that of their children, and to the hope that there's a future' (NET006).

The futural capacities of seeds are also echoed by NET005 when he speaks of them as 'the basis not only of our food, but … of our future'. NET009 elaborates this point further when affirming that 'without seeds it will be very difficult for humanity to continue existing'. This guardian sees practices of seed adaptation as warranting food security for centuries to come. He believes that seeds are what really guarantees our planetary dwelling, and as such, we should stop 'looking at nature over

our shoulders, [recognising] that [seeds] are also living beings *allowing us* [emphasis added] to continue to exist on this planet' (NET009).

One of the most common narrative associations with seeds is freedom. Guardians speak of 'free seeds, seeds that circulate, a seed that nobody can appropriate' (NET008). Indeed, a common motto of seed sovereignty social movements is that 'seeds should be able to walk freely' (NET002). Ownership in that space becomes a complex issue, a struggle between nature, peoples, governments, and businesses. For some guardians like NET006, seeds are the 'patrimony of peoples', and as such, they 'cannot be a strategic resource of the state because the state did not create them, nor does it maintain them' (NET006). At the same time, they should not be the property of a small number of private companies, be subjected to intellectual property rights, or scientific intervention to modify their genes.

Of course, seeds are also linked to food and agriculture. NET006 claims that 'physically they represent the possibility of continuing our crops', while NET009 is keen on reminding us that 'agriculture is born from the relationship that communities have [built] while managing seeds'. However, it is important to emphasise that guardians distinguish their agricultural practices from industrial production. Guardians seek to do agriculture 'from [their] own seeds, not from [those] that companies are creating to strengthen the green revolution model' (NET009).

This is a constant struggle since hegemonic actors in food systems frequently associate native, creole, and landrace seeds with low quality. Guardians are conscious that native, creole, and landrace seeds may carry disease or have lower yields than industrial varieties. This translates into an interest in developing and assuring good quality seeds, but 'not on the same terms that [governments] use with companies' (NET009). Indeed, this tension over definitions of quality will inform

much of the transformation processes analysed, especially as it relates to drawing a line between production and productivism.

Industrial seeds

Industrial seeds are frequently framed in opposition to native, creole, or landrace seeds in AfroIndopeasant hands. Some guardians go as far as to say that 'all those things that the native seed has, do not exist in industrial and transgenic seeds' (NET005). Most concerns about industrial seeds come from the infamous 'terminator gene', which stops seed reproduction after one sowing cycle, a technological development that is nearly incomprehensible for guardians.

As expressed by peasant NET002, 'those [seeds] that come in packets, that are already certified ... they get to a point where they die and never reproduce. I don't know why that is' (NET002). Urban and highly educated guardians like NET009 recall how companies call seeds 'merchandise, materials' (NET009). Furthermore, NET005 explains that these seeds are 'homogeneous commodities, appropriated and fetishised by capital ... concentrated in a few hands of very large companies'.

Industrial seeds are not seen as singular technologies, but as an assemblage often referred to as a 'technological package', in which agrichemicals are indivisible from the seeds that require them to grow. Some guardians coming from an agroecological perspective challenge the use of words like 'chemicals', because they see it as a veiled way to refer to poison (NET009). For guardians like NET009, these technological packages are 'degrading ecosystems, seeds, and people's health' due to the pursuit of profit by seed and agrichemical companies. This leads to an accentuating global crisis of the green revolution model, which has not been fully recognised by big corporations (NET006, NET009).

Industrial seeds and their continued use in tandem with agrichemicals are seen by guardians as a threat. For NET005, an industrialised agri-food system where power is highly concentrated is an 'example of what we do not want, it is a threat against diversity, health, [and] our culture'. Peasant guardian NET002 aligns with this position when she says that industrial agriculture 'isn't wellbeing, that's not having freedom as peasants, because we're stuck … if at some point [companies] tell us they won't sell to us anymore … we're stuck not eating more of that [food]' (NET002). Dependence on hybrid seeds and agrichemicals is also seen as a threat by NET006, but he ties this to a loss of 'people adapting [seeds] to [their territory] so that [they] can have them.… [Something] done by millions of peasants, for ten thousand years, in thousands of locations around the world' (NET006).

Threats also come in the form of technological intervention of seeds themselves. For NET009, 'there is a sector of humanity that thinks everything can be synthetic, that everything can be created … and manipulated … and transformed. [I think we] must be very careful … because seeds are the very essence of life' (NET009). Adding to this, NET005 raises the stakes even further when she affirms that 'we're talking about companies having power over life.… Basically, you could say that [this power] is the beginning of death' (NET005).

Finally, there is an awareness of asymmetrical narratives in hegemonic food system institutions differentiating industrial and native seeds. For NET009, 'institutional frameworks ignore native and creole seeds, and instead of promoting and valuing them, they degrade them and try to keep them from circulating because they say they're of poor quality, that they're not productive' (NET009). This negative image of native seeds is of course the opposite of what guardians seek. However, in a space dominated by agro-industrial visions and biases, it becomes almost impossible to circumvent established narratives.

In fact, NET008 affirms that seeds from transnational corporations circulate under a 'discourse that it is *the* [emphasis added] seed, the only one there is' (NET008). For guardians, narratives of uniqueness and superiority of hybrid seeds in the food system are unfounded. NET009 explains it in relation to racism: 'It's like saying black is bad because it's black and white is good because it's white, that's not what it's about. That's the problem with this whole issue of seeds, they simply say that [seeds] from the companies are good, and native and creole seeds are bad, because [the first] are produced by whites and the others are produced by blacks' (NET009).

Dependence vs. resilience

As mentioned in the previous section, guardians are deeply concerned with corporate control over food systems. Peasant guardian NET002 sees control manifesting at multiple levels - people's dependence on supermarkets, national dependence on hybrid seed imports, and seed regulation (especially certification schemes and patents) curtailing spaces for peasant seeds. For her, 'people have been patenting [our seeds], taking them and putting ownership over them, [they] say, these are mine, no one can have them but me, only I can sell them. And seeds must be free, they must circulate freely amongst peoples, among communities' (NET002).

NET005 shares this sentiment when she states that seed defence is essential, since competition with industrial certified seeds is a 'threat against us, our life and culture for the future' (NET005). Seed regulation is always seen as pitted against Indigenous, Afro-Latino, and peasant peoples, and almost always heavily biased towards agro-industry. NET007 visualises this as governments usually favouring elites, leading to the creation of 'anti-peasant laws' that criminalise traditional practices. Or, as peasant guardian NET002 puts it, 'what is ours, what is

traditional on the land, is supposedly illegal to do. What I do, in some way, it's not right according to the law' (NET002).

For NET002, seed guardianship is important 'to not eradicate our seeds; ours, as well as those of the country, [to have] something to leave for future generations' (NET002). Somewhat aligned with this futural position, seed guardianship is also seen as a defence of biocultural diversity against increasing homogenisation of food products. For NET005, 'if the defence and the fight for agrobiodiversity does not continue in peasant hands, we are going to lose that diversity in the future, [and that] would totally change our diet. I sometimes see agro-industrial production ... like trying to put nature in a box. And diversity you cannot put in a box, if you put it in a box it will die, it cannot breathe, it cannot continue evolving, so ... the defence of seeds is fundamental' (NET005).

This is echoed by NET002 when she speaks about the importance of joining the seed network - 'it is to save the biodiversity that we have as patrimony of the world, because with so many laws, and changes that have been made to seeds themselves that they don't reproduce ... That made me think that we cannot always depend on multinationals to maintain those seeds. You don't know what they give you, they just don't work to continue sowing again, but if you keep your native and creole seeds, those seeds do' (NET002).

Some guardians magnify this line of thought to apocalyptic levels, particularly in Ecuador where guardians feel that food systems are experiencing a major collapse. This is evident when NET006 expresses that 'we are now living in a moment in which we realise that this world is no longer possible ... This can't go on, we must produce change' (NET006). Acknowledgements of collapse do not fully translate to despair as yet another common narrative frames seed guardianship as a

hedge against climate chaos. This is deeply tied to the practice of seed exchange amongst guardians and narratives of free circulation.

As NET003 puts it, 'today I planted this seed that I got from a guardian, and tomorrow if that guardian for some reason loses their seed because of a frost, [or something else], it turns out that sharing that seed ... with me, ... guarantees they can get it back' (NET003). This narrative is reproduced by NET002 from the other's perspective - 'if at some point something happens to me, a frost comes, and I have no more seed, some of the other guardians may have it and can provide it to me' (NET002). Resilience through distributed seed ownership (a commons) and free circulation, reinforces seed guardianship's positioning as a futural practice.

Guardians understand that no transition towards a regenerative or sustainable future is possible without seeds (NET006). Guardianship of native and creole varieties thus becomes an important part of producing desirable futures. There is a widespread sentiment amongst guardians that AfroIndopeasant and family agriculture lifeworlds are under attack, and that this is mainly operationalised through technologies and laws reducing possibilities for traditional seed practices.

Seed care and exchange are framed as a resistance to corporate dependence and a way to increase resilience to multidimensional modern pressures. It is a pathway to food sovereignty beyond food security. Peasant guardian NET002 ponders about this, 'if I have seeds and not only the money to go and buy the products, rather I have them, [I'll have] ... healthy products that are clean' (NET002).

Recentring non-modern institutions

As part of their work proposing alternatives to food production and exchange, seed guardians connect narratives and values associated with

agroecology and ancestral institutions. Indeed, a common feature of seed guardians seems to be an interest in the recovery and revaluing of memory and traditional knowledge.

For NET003, there is a need to 're-educate ourselves again, claiming those traditional practices around custody of seeds, food, caring for water, caring for life, and caring for our health' (NET003). As a neo-peasant who defected from urban life, NET003 appreciates Indigenous and Afro-Colombian visions of respect towards nature and connection to the divine.

For NET009, the importance of ancestral agriculture is to advance transformations originating 'from ecosystems and ancestral production systems, … to recognise, differentiate, and define … agriculture [for particular regional conditions], and not everything being a single model' (NET009). This 'rescue of memory' has allowed AfroIndopeasant seed guardians to move from having a vision of 'being stigmatised to … [visions of] being valued, being protagonists. [To overcome] … that underestimation, self-underestimation which they [experienced]' (NET008).

Indigenous agricultural institutions

Regretfully, going deep into each of the non-modern institutions recentred by guardians is beyond the scope of this thesis. In this section, some of the institutions evoked by guardians will be mentioned and briefly defined as they were used in the context of the interviews.

Colombian neo-peasant NET003 incorporates *pagamentos* into her daily activities as a guardian. In her words, *pagamentos* are 'offerings or payments … the fact of first asking for permission … When you enter a plot of land, when you are going to sow, when you arrive somewhere, you always ask for permission, and after … you also pay in some other way for what you're going to receive. It's … reciprocity' (NET003).

Mexican guardian NET005 mentions the *milpa*, an ancestral Meso-American cyclical cultivation method involving maize, beans, and squash, but more importantly, involving a sacred mode of relation between farmers, communities, crops, land, and the universe. Ecuadorian guardian NET006 professes a 'deep love for the ancestral cultures of Ecuador' and mentions the Quichua terms *mallqui* and *sach'a* (respectively, agricultural fields cultivated by humans and 'untamed' nature), as interrelated poles of personal attraction. Finally, Venezuelan guardian NET007 frames the *conuco*, and a *conuquero* economy —a system of shifting cultivation in smallholdings typical of peasant, family, and community agriculture— as a fundamental part of food system transformation.

Guardians like NET001 and NET008 have worked to uncover the cosmovision of 'Andean Reciprocal Nurturing' (ARN).[27] For NET001, ARN distinguishes between 'old world' and 'new world' agricultural practices. It frames European plant domestication as a process of 'improvement towards greater productivity, selecting only the best plants [to reproduce] and discarding others' (NET001). Conversely, ancestral Andean agriculture 'didn't discard the least productive plants because … living beings, water, air, mountains have a spirit. But also, those … other [plants] continue to be part of the family. Just as in a human family there are brothers [that] may be more active, more hard-working, … [but] everyone is loved equally … Those cousin species, grandmothers, or aunts are important to maintain biodiversity and are resources in case of a climate event' (NET001). ARN is seen not only as a contestation of productivist values, but a recognition of interrelatedness and reciprocity, since 'just as we grow potatoes and animals, they also raise us' (NET001).

[27] I have translated this term from the Spanish phrase 'crianza mutua Andina'.

Alternatives vs. green revolution

Narratives of agroecology and other alternatives (e.g. regenerative agriculture) are also mobilised by guardians to challenge the green revolution and validate their practices. As explained by NET009, the green revolution model 'uses agrichemicals, improved seeds, [and an] expansion model', that was 'designed to solve the problems of big industrialists [and] big companies, [without] really [helping or contributing] … to the problems of small farmers [and] families [living] in marginalised rural areas' (NET009).

By contrast, agroecology, organic farming, and other alternatives pursue 'healthy agriculture … without agrochemicals' (NET009). Furthermore, they contemplate the 'entire production system … integrally. Do not focus on monocultures, [and] enable [farmers] to remain on their land, allowing them to live with dignity, making an appropriate use of … nature, [with] their own knowledge' (NET009).

For guardians, agroecological narratives are disadvantaged in relation to those of industrial food production, as the latter hold more power by being mobilised by governments, universities, and private companies (NET001). In fact, guardians go to great lengths to justify the validity of agroecology and ancestral agriculture. As NET009 puts it, 'you have to demonstrate that there are communities that have been producing in a certain way for 10,000 years or 1,000 years, … eating something for so many … years and they haven't died, they're there, they're healthy, … the ecosystems are healthy' (NET009).

Disadvantages also present themselves in unexpected ways, as consumers might prefer 'good looking' food over the diverse aesthetic of agroecological food products. Related to this matter, peasant guardian NET002 reflects on her own experiences: '[pesticide] residues remain in food [but] … the important thing [for the consumer] is that the lettuce is

larger, the broccoli fatter. In my case … they're small, so there are people who say 'no', if the potatoes are too thin [they] don't like them. I have heard … that [some] weeks before taking out the product, [farmers] put an anabolic agent on it. I don't know exactly what it is … but it makes [food] look brighter, better looking, more attractive to people' (NET002).

Despite these disadvantages and power asymmetries in food production narratives, NET009 believes that alternatives 'must be strengthened to improve the living conditions of communities and small farmers' (NET009). Specially as '[formal] education … prepares [people] … to adopt [the green revolution] model and expand it' (NET009).

Seed guardian futures

The big picture

NET009 gives a succinct account that encompasses many of the shared values and future visions of seed guardians

> We aspire to be able to develop diverse agricultural models that consider ancestral forms of production and allow life to adapt to changes taking place in ecosystems. That seeds circulate freely … considering that seeds are key to feeding people. That people continue to produce their food according to their conditions, not only environmental but also economic. That they have access to seeds regardless of their economic condition … That seeds are not monopolised by some companies to control territories and markets … That seed freedom is ensured [by] the system (NET009).

Other guardians use the broad vision of buen vivir as an organising principle for the future. NET001 and his peers in the mountains of Colombia use the term *bien vivir* to guide their work, explaining that 'the goal is to nurture life, and [that] implies us flourishing, but that others

and the territory also flourish.... [In summary] it's the highest degree of happiness and fulfillment, ... care, [and] defence of life systems' (NET001). This sentiment is echoed by peasant guardian NET002, when she hopes that 'in the future everyone becomes aware and becomes more responsible with water, [and] ... the forest, ... a problem [that is not only local, but national, and global]' (NET002).

In Ecuador, visions of a regenerative future are prevalent and position seeds as essential (NET006). This regenerative model refers to 'localised economies [and] localised production, not ... moving food from here to there. [Food] with more diversity and higher nutritional quality, with more localised forms of governance' (NET006). In this vision, guardians assume a transmodern position when they exclaim that it 'doesn't mean that we return to an isolated primitivism, we are not primitivists! We must use the tools that modernity has already given us, the global village can continue to be connected, but be a global village; a set of autonomous communities that live in harmony with the environment' (NET006).

Dignity, recognition, and networks

Guardians want a future where all farmers, and specially peasant farmers, can live a dignified life with the compensation they receive as food producers (NET005). For NET005, this might translate into new producer-consumer partnerships, where healthy food is prioritised, seeds are revalued, and both ends of the chain receive fair value. This is critical, because the peasantry is getting older and younger generations do not see this as an attractive life-path as income from farming is increasingly precarious.

This dignified future is also a space where 'traditional knowledge, [non-hegemonic] organisations and seed custodians are recognised' (NET003). As peasant guardian NET002 expresses it: 'I would hope that people become more aware that those of us who like to have a seed

collection … it's not [because] we're weird' (NET002). Beyond farmer-to-farmer relations, NET003 hopes that the future brings more horizontal relations between technicians and farmers, dialogue, and knowledge exchanges that 'create spaces where those who lead are the communities, farmers, and seed guardians; people who have been working for generations on the issue of native and creole seeds' (NET003). This is also expressed in a desire to strengthen SGNs to 'be totally autonomous … groups of people working on issues of conservation, guardianship, recovery of seeds with super clear methodologies' (NET003).

Towards food sovereignty

NET003 dreams of a future where 'people and organisations aiming at food sovereignty can be autonomous and self-sufficient' (NET003). When speaking about the future, peasant guardian NET002 refers to a recovery of peasant institutions that challenge food commodification. She actively complains about other farmers that 'have to go to town looking for a slice of onion at the supermarket because [they] don't grow them at home. [This is] unfortunate because one can have onions, coriander, parsley, everything one needs and have a clean and healthy self-nutrition' (NET002).

This guardian would like a future where 'everyone dedicates a portion of [their] land, [their] orchard, to grow their own food and keep their own seeds' (NET002). However, NET002 is sceptical of this future, as people seem to think that supermarkets will always be fully stocked, and seedlings are now easily accessible commodities eroding even artisanal seedbed-making.

Scepticism is also present in the meaning of terms and who mobilises them. Concepts like sustainability, food security, food self-sufficiency, food sovereignty, or even agroecology are interpreted differently by

hegemonic actors (NET003, NET005). NET003 is worried that '[policymakers] start using our terms, … misrepresenting concepts … created by peasant and social organisations for the benefit of large multinationals' (NET003). NET005's concerns relate to government and international cooperation agencies using these terms uncritically. Just as sustainability is used for greenwashing, phrases like 'national food security' or 'self-sufficiency' can advocate for food access without questioning who has the resources to produce it.

In this scenario, organisations working with these concepts may still exclude AfroIndopeasant practices or attempt to modernise them (i.e. industrialise, capitalise, make them more efficient, encourage use of agrichemicals, etc.). For NET005, the least eroded concept is 'food sovereignty', as it was created by peasant social movements, and for guardians, it is crucial that its origin is fully recognised in the future (NET003). Food sovereignty includes '[producer] power over seeds, … biodiversity in peasant hands, the power of peasants to produce what they want, healthy food, [and] local markets' (NET005). As such, it is 'totally against capital, and [transnational corporations] … can't just occupy it … lightly' (NET005).

Transition strategies

Although some guardians (NET006) believe a deep crisis is needed to achieve their desired transformations, most guardians agree that their current practices aid in the construction of a more just and sustainable food system. In Mexico, guardians are developing conservation, characterisation, and participatory improvement projects, while implementing community seed funds[28] and seed fairs. They are also linking producers of native corn with buyers that might be able to offer fairer prices, with an ambition to ultimately differentiate native corn

[28] The Mexican term 'seed fund' refers to germ-plasm banks, or 'seed houses', as they are described by networks in other countries.

from hybrids and achieve better pay for native varieties. Mexican networks also continue to advocate for government-enforced price guarantees and farmer subsidies (NET005).

In Venezuela, where a comprehensive seed law was passed in 2015 (see chapter 5), guardians hope to see proposed institutions being established. These will be spaces for seed improvement, exchange, participatory certification, and mutual learning, based on a 'conjunction of peasant … and technical knowledge' (NET008). Of these institutions, NET008 is most hopeful for the 'scientific-peasant alliance' which can aid in building community-managed germplasm banks.

For NET007, connecting diverse initiatives will be key for food system transformations. She expects to link old and new processes to strengthen the seed defence movement. For instance, connecting experiences of native seed guardianship with historical land struggles and consolidating government programs like 'Todas las Manos a la Siembra' (All Hands to Sowing). The Venezuelan process has been rocky since the passing of the law, due to the multidimensional crisis of the Bolivarian Revolution. However, 'things are still being done, advancing in … small victories' (NET008).

Education and knowledge exchanges are a widely shared strategies towards food system transformations. For NET007, teachers and students should be involved with seeds from primary to university education. On the other hand, NET006 proposes family-focused education using mass media, especially via the internet and social media.

Strategies of inter-epistemic dialogue, or dialogue of knowledge(s) focused on AfroIndopeasant knowledge-holders, are also emphasised. In Venezuela, community knowledge-holders have been officially named

maestres pueblo[29] (teachers or knowers of the people) who 'are now participating … as structuring figures [at the micro-level]' (NET007). NET005 believes the focus should be on supporting and improving the dialogue process, since *maestres pueblo* 'are the ones who have the knowledge [and] experience' (NET005). For NET008, the ideal would be to institutionalise these dialogues so that 'the wealth of peasant knowledge [is] enhanced with techno-scientific interventions from a commitment and a vision of open transdisciplinary [mutual] aid' (NET008).

All these strategies surely advance food system transformations. However, as NET006 so aptly puts it, 'the most direct way to speed up this process would be for the state to listen, and … apply these changes … turning [them] into legislation' (NET006). SGN-state interactions to transform system rules will be the subject of subsequent chapters, where three cases of national seed legislation change will be explored to understand the role of non-modern practices and narratives in the transmodernisation of food systems.

Guardians have dreamt of inclusive futures (often framing them as utopian) that value and enrich their practices, but also recognise obstacles for their attainment. NET005 and NET008 know the transition will be complicated, since 'the entire model needs to be rethought' (NET005) while we move towards scenarios of extreme climate change.

Potential blockages are often tied to industry and neoliberal policy pressures. For instance, NET003 believes that government policy will always seek the benefit of large multinationals. On the other hand, 'industry [has a] systemic incapacity to react to the problems the planet

[29] The Spanish phrase 'maestres pueblo' (popular teachers or knowers), refers to local knowledge-holders, particularly those community experts with experience of local seed varieties. In the legislation, they are referred to in the masculine as 'maestros pueblo', but here the author chooses to use the genderless 'maestres'.

faces today ... because for corporations, profit is the only objective' (NET006). NET006 would rather not see industry as an antagonist in this transformation process but has not seen a 'single case where … industry [has] limited itself [while] seeking general wellbeing, (NET006). Indeed, the plasticity and constant reconfiguration of big agribusiness are seen as strong challenges to overcome (NET007).

Seed guardian practices

In the previous section, the narrative space of SGNs was explored to provide a map of meaning for their practices. In this section, practices themselves will be described broadly, focusing on know-how, skills, and materials, providing an overview of seed guardianship moving from the individual and local community level to trans-local networks, and up to network-state interactions (See Figure 2.1.). This section will provide a snapshot of current SGN practices, without describing their evolution over time (a dimension that deserves more attention).

Although the focus of this document is to analyse the transformation space emerging from SGN-state interactions (see subsequent chapters), the whole assemblage of practices described here should be seen as reshaping the system. As described in previous sections, seed guardianship has strengthened and reframed historical AfroIndopeasant practices over the last 20 years. This organisational process has created a novel innovative space where non-hegemonic knowledge-holders are recognised and valued.

Starting at the individual and local community level, participants engage in seed guardianship, a practice which can be described as the conservation of native, creole, and landrace seeds that are viable in a specific territory. Seeds are stored in a dedicated space which can be part of a family home or a small community building. These seed houses or seed funds are made with locally available materials and provide shade

and cool temperatures for seed preservation. Seeds may be stored in upcycled glass jars, small plastic bags, or clay pots vacuum-sealed with wax. All containers are labelled with seed names and some guardians keep records of seed origin and other relevant data. However, seed houses do not store static collections; guardians must constantly (re)sow seeds to regenerate them and preserve their vitality.

At the local community level, but also expanding towards network interactions, seed exchange is done through gifting, barter, or commercialisation. Guardians may gift seeds to neighbours or other communities interested in growing different crops. They may also exchange seeds by bartering with other guardians or non-participant farmers that attend network events. Finally, guardians sell their seeds to other interested parties, sometimes with the aid of network databases. Contact sometimes happens via social media or messaging apps, widening the geographical scope of trade, leading guardians to ship their seeds over long distances.

Seed exchange is very active but is not without risks. Guardians mainly worry about contamination from industrialised or transgenic seeds, since there is no convenient way of determining the origin of seeds procured by strangers and crossbreeding is highly likely. Another major perceived risk is 'biopiracy', the appropriation of landrace, native, or creole seeds by corporate actors to use in private breeding programs.

At the network level, seed guardians meet virtually and physically to share knowledge about seeds, discuss the current state of seed systems, organise, and engage in collective action. SGNs are fundamentally horizontal but are coordinated by small groups of committed participants aided by volunteers. These facilitators organise working groups or workstreams that attend to different dimensions of their mission including:

- **Seed guardian encounters** – These are periodic events where participants can get together to exchange seeds and knowledge. These may be network specific or attached to other agricultural-sector or community events. Guardians may sell, exchange, or barter seeds in these spaces.
- **Internal and external communication strategies** – Includes updating participant databases, organising virtual meetings, publishing virtually and physically on related topics (e.g. seed catalogues, books, reports, pamphlets, podcasts), developing consumer awareness campaigns, and managing internet presence with special emphasis on social media.
- **Participant training** – Includes participant empowerment, gender-equality training, knowledge sharing on seed production and improvement, seed house conditioning, commercialisation, public policy, legislation, agroecology, risks of transgenics, amongst other things.
- **Research** – Includes the development of methodologies or programs related to all other workstreams. Participatory seed improvement programs and participatory guarantee systems for quality assurance are of special interest.
- **Advocacy** – Includes the development of strategies to resist legislation that undermines non-hegemonic practices, participating in lawsuits and other legal options to transform current laws, and pushing for recognition of practices by governments, such as National Corn Day (Día nacional del maíz) in Mexico or National Peasant Seed Day (Día nacional de la semilla campesina) in Venezuela.

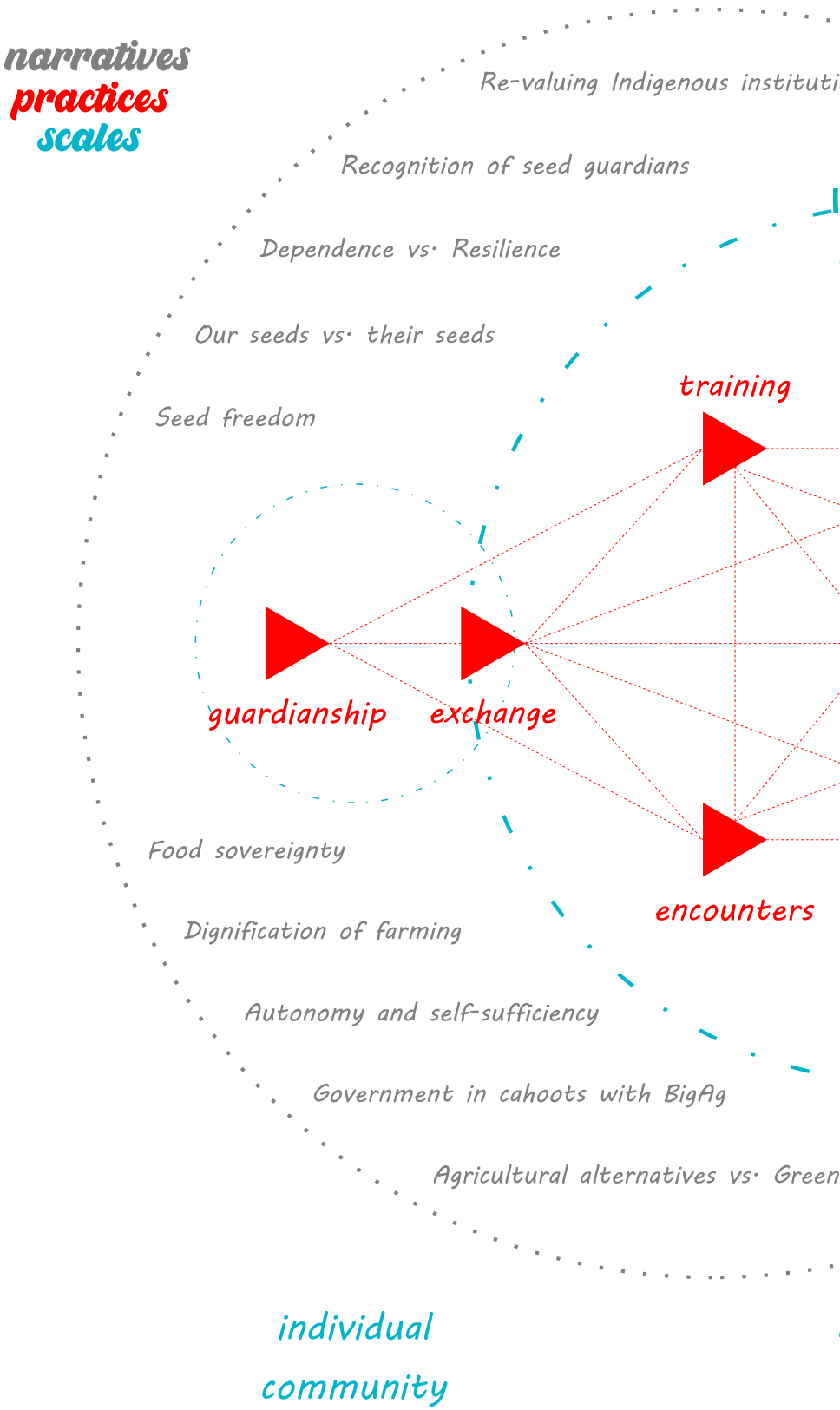
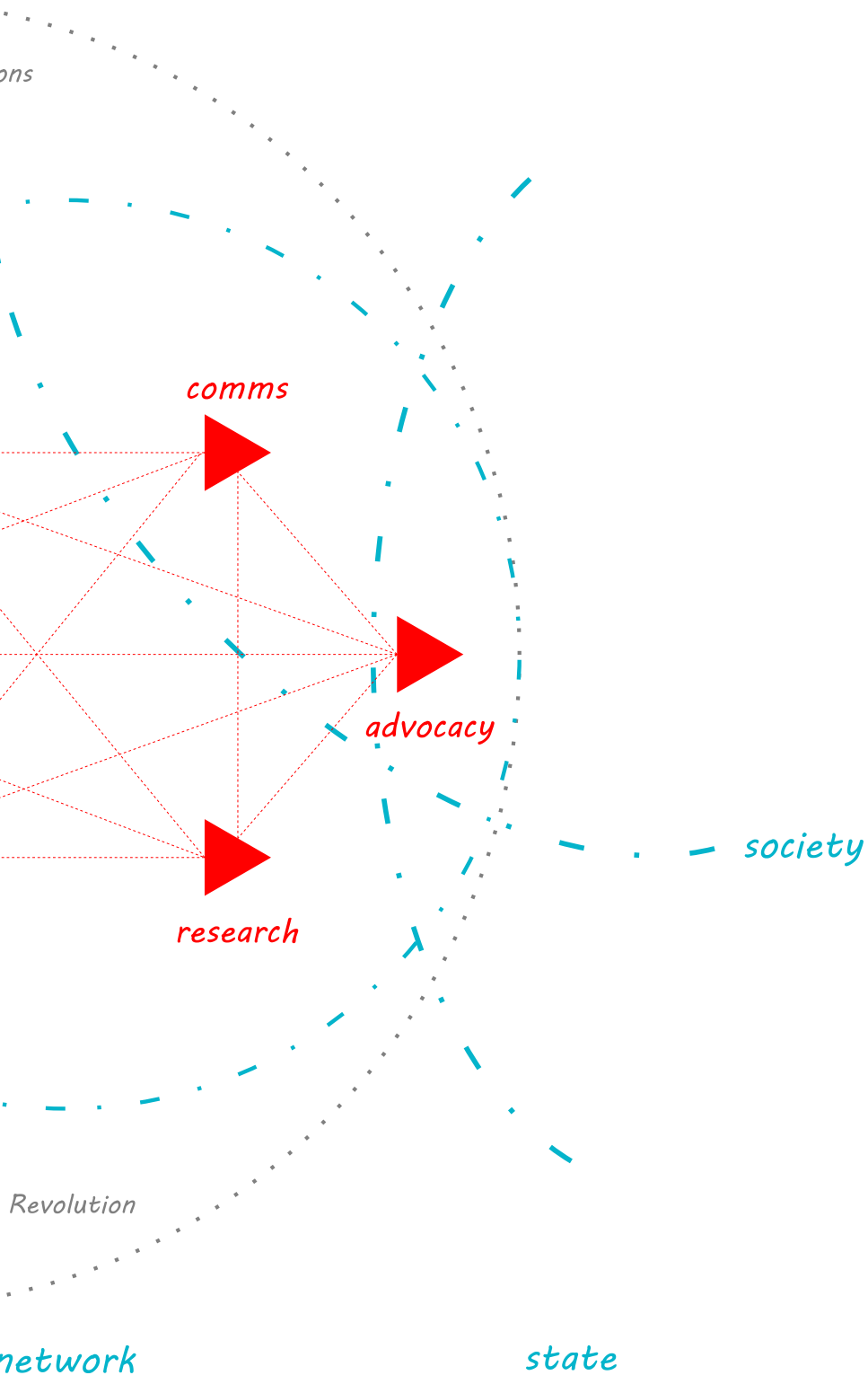


Figure 3.1. Narratives and practices of seed guardian networks across different scales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Seed guardianship

Seed guardianship is a place-based practice in which one or several individuals from a community care for native, creole, or landrace seed varieties viable in the area. Arguably, the main skill of this practice is knowing how to maintain the vitality of seeds. As NET002 puts it, 'rotating them above all, keeping them fresh, … the idea is that they go out to the field, go back and reproduce, germinate again' (NET002).

Maintaining vitality includes an embodied knowledge of place conditions that allow seeds to grow, such as soil, humidity, altitude, temperature, etc. For NET003, this is the first step of seed guardianship, to 'understand what seeds you can guard according to the conditions you have in the area' (NET003). She elaborates - 'you begin to understand that it's not about guarding many seeds, but really the ones … that grow, the ones that you can keep in the area, keep them well' (NET003).

Maintaining seeds and 'keeping them fresh' also calls for knowledge on how to store them. Materially, guardianship requires a storage space and containers to hold different types of seeds. The space can be as simple as the corner of a room already in use at the guardian's home, but also as big as a dedicated small building serving a whole community. As an example, NET002's seed house is a small windowless building outside her house that served as her old kitchen. The walls are full of soot, and she calls a section of it 'the dark hole' since there is no lightbulb. NET002 says that her more than 50 seed varieties are maintained by the climate of the building and justifies the absence of light since 'seeds like to be in the dark' (NET002).

These storage spaces have generally been dubbed by SGNs as seed houses, although in Mexico they are known as seed funds. These names are a recontextualisation of scientific seed banks, and as NET005 admits, they are named as such to 'oppose banks, [as] … in-situ seed funds

[managed by] family or community … guarantee that there are seeds [in place]' (NET005).

Containers to hold seeds are widely varied. They can be upcycled glass jars with metal lids, small sealable plastic baggies, plastic produce containers, or clay jars vacuum-sealed with wax. There can also be no containers, as is the case of NET002's house, where maize is preserved according to Indigenous and peasant traditions, hanging from a horizontal rod near the ceiling. This is highly convenient for her, since 'birds help me a lot [spreading corn seeds to reproduce them], because the neighbours don't really plant that much corn' (NET002). This may be a signal that knowledge of preserving seed vitality is distributed between humans and non-humans, with material consequences, as the space enables animal participation in seed guardianship.

Containers appear also as part of family memories. As NET003 recalls, 'I always saw jars of peach seeds in my grandparents' house.… My [peasant] grandmother, she means everything … [she] was my teacher on … recycling, storing, and saving seeds' (NET003). NET002 also uses upcycled glass jars. Her friend recently gave her a dozen, proof of community solidarity in guardianship. NET002 always tells people 'that instead of throwing away [glass jars], they give them to [her]' (NET002). She always disinfects jars with hot water before storing seeds and understands that 'if you leave [seeds] in a jar, they will lose their vitality.

Rotating them to keep their freshness is important, so that they feed [the guardian] and along the way … create new seeds to continue the process' (NET002). Some guardians will also keep physical or virtual records of their seeds. This may be on a notebook, a personal spreadsheet, or sometimes using formats provided by SGNs. This effort is tied to seed exchange and research, as SGNs build databases of seed varieties, their characteristics, guardian, and location. This allows for

more fluid seed exchanges, knowledge-sharing, and opportunities for participatory seed improvement.

Seed exchange

Guardians exchange seeds with others guided by the belief that seeds should walk freely and as a strategy to increase resilience in the face of climate events. For NET005, these exchanges are acts of resistance against seed privatisation, transnational interests, and the imposition of rules. Exchanges can occur directly between individuals or as part of organised events generally called seed fairs. Guardians often gift or barter seeds, exchanging them for other varieties of interest absent from their orchards.

As peasant guardian NET002 puts it, 'when we meet in a barter, I show my seeds, so ... [they tell me] 'I don't have this one ... which one don't you have?' Then they begin to offer me, [and I tell them] 'I don't have that one, I'm interested' (NET002). Barter plays a central role in seed exchange. However, there is an increasing interest in commercialising native seeds, as this could become a source of income to make the practice more financially sustainable.

Exchanges between individuals can occur at local level between community members but are increasingly happening at trans-local level due to SGN articulations. Social media becomes the space for barter and commercialisation, as guardians make use of apps like WhatsApp, Telegram, and Facebook. Increased use of these virtual tools correlates with widespread adoption of smart phones around the region. Using these apps, guardians will either publish their seed stock or ask other network members for a specific variety.

NET002 relays her experiences of digital exchange at the local level: 'Suddenly a neighbour tells me: 'I saw that in your [WhatsApp] status you

published some corn, and I like it. I want some when we meet ... and I'll bring you something else. [So] I bring the [corn] and we'll meet in a part of town to [exchange it]' (NET002). At the network level, NET002 also recalls one of her digital experiences - 'I ... publish in the seed group, 'Who has X variety?' Then someone answers, 'I do, and I'm located [here].' [They'll ask] how much quantity and the price [because there are people who sell them]. If I want them, ... I buy them or exchange them if that person wants another seed instead' (NET002).

In cases of individual seed exchange over long distances, guardians will send seeds by mail using courier companies. Seed exchange acquires a national dimension through social media use, phone calls, and mail trucks as guardians send each other packages, paying for shipping at their end. NET003 thinks these virtual exchanges exploded during the COVID-19 pandemic, as the social media pages of SGNs and participant organisations were bombarded with requests for native seeds.

This surge in demand provides new opportunities for commercialisation, but also evidences knowledge gaps about marketing (NET003). As NET003 describes, guardians 'prioritise ... seeds for their own consumption, [then take] some for exchange, and last is marketing'.[30] This is also one of the motivators for organising in networks, to include isolated guardians, since marketing 'is fundamental [for] self-sustainability, and it's easier to do when you are associated or in a community than when you are a lone custodian ... lost on a ... mountain' (NET003).

Exchanges also happen as part of encounters organised by SGNs or other organisations working on food systems. These seed fairs may occur in public parks, community spaces, schools, or multisport courts of towns where prefabricated exhibition stands, tents, tarps, and desks are

[30] The participant equates marketing with selling in the interview.

accommodated. Guardians may be accompanied by food producers, cooked food and crafts sellers, as well as local government authorities. For NET003, participating in these exchange meetings is an essential part of being a guardian, since 'you meet other people who are … working with your same seed varieties at other altitudes. You [encourage] an exchange of knowledge regarding … seed storage and conservation, and you … notice that seed now has many varieties' (NET003).

Seed exchanges sometimes become a source for concern, mainly of contamination from pollination with hybrid or transgenic seeds, but also exhaustion of exchange partners. For NET002 'there are … many times where there is nothing more to exchange, [all guardians] already have the same seeds' (NET002). Saturation will inevitably occur at some point, and guardians may feel uncertain about what happens when people cannot exchange varieties anymore. This is tied to the challenges of determining seed characteristics (i.e. seed quality) by people without access to laboratories, equipment, or scientific tests. At this point in time, there is no easy way for guardians to determine if two seeds of the same (or adjacent) variety are different from each other and how. Being able to test seeds and document this data (e.g. expected yields, water consumption, etc.) could better inform seed exchange in the future.

Related to this issue of unknown genetic composition, guardians are also concerned about farmers that come to events with hybrid seeds to exchange for creole and native varieties. For NET003, generally peasants intuitively sow seeds they receive, putting native and creole varieties at risk. The solution would be to ask non-guardians 'to not bring seeds, if they want to obtain seeds, [guardians] can provide them … because carrying seeds of unknown origin [is a risk]. That's an important pedagogical exercise that must be done about exchange to prevent this from happening' (NET003).

Encounters

Seed exchanges and seed fairs are not the only encounters organised by SGNs. Most networks have institutionalised at least an annual meeting of seed guardians, including multiple international meetings, and a variety of spaces for learning, research, and dialogue. Many of these meetings were paused during the COVID-19 pandemic (NET005), with some being moved to virtual spaces. However, there has been a reactivation of meetings since the loosening of pandemic restrictions in the region.

National meetings are important for guardians as they gather a who's who of people operating in the same narrative and practice space. NET006 describes these annual meetings as 'an impressive thing … a time to meet the family, … people who think in a similar way [sharing] ideas' (NET006). Some of these spaces have also been recognised by governments, as is the case of the annual National Peasant Seed Day in Venezuela (NET007, NET008)

Research

Research led by SGNs might include seed characterisation, seed improvement, and reflections on their own practices. In Mexico, networks have published a catalogue with basic seed characterisation linking existing varieties to specific producers. The Ecuadorian seed guardian network also published a catalogue in 2018 showcasing nearly 3,000 preserved varieties. In Venezuela, networks developed an open seed information system hosted online[31] so that farmers could share information about their varieties, connect with others, and exchange knowledge (NET007).

[31] The Venezuelan networks were initially hosted by the domain www.elconuco.com.ve, which has now been suspended.

These initiatives are seen as a way to protect native seeds and curve biopiracy, as there would be evidence of a history of seed ownership when a company wants to patent that seed type (NET005). Deeper characterisation (i.e. genetic) is difficult, since SGNs do not have resources to fund them, and as some argue, 'every farmer who saves and selects his seeds generation after generation has his own variety … since characteristics [shift] depending on how they choose them' (NET005). However, there are examples of genetic testing done in Colombia to identify transgenic material in Indigenous seeds using kits provided by the non-profit SWISSAID (NET003).

Participatory improvement programs are also being developed by SGNs. These are spaces where farmers and scientists select seeds together according to the characteristics farmers want. As NET005 evidences in the case of corn, peasant seed selection for improvement is faulty since 'many times they only choose the cob … that … looks very nice, big, ... how they want it. But if [the plant] was on the edge of the plot, then it doesn't have as much competition with other plants, so we don't know if it's genetically a good plant' (NET005).

Network participants may also make use of government programs to improve their seeds, though not all guardians approve of this approach (NET009). In Colombia, AGROSAVIA has been implementing a national seed plan for this purpose, and in Venezuela, the All Hands to Sowing program seeks to involve citizens at all levels in food production.

The networks also publish constantly about their positions, work, and progress in their agendas. There are countless blogs and websites where SGNs share long-format articles and other media. Colombian SGNs have a virtual magazine where participants, activists, and academics share their views on native seed conservation. In Venezuela, research has also been done from within the movements reflecting on the legislative transformation process. This was published as a virtual open-access

book titled *Semillas del pueblo* (*Seeds of the people*) (Pérez et al, 2016) in collaboration with government, non-profits, and the social movements involved (NET007).

Communications

Communication strategies are important for SGNs since they interact with multiple actors in food systems and beyond. Additionally, communication occurs at multiple levels: guardian-to-guardian, within the network (e.g. between network coordinators and allied organisations), between the network and government actors (both allies and antagonists), and with broader society. Some of the networks even started as communication strategies. For instance, in Ecuador where founders went to communities and 'talked about how seeds were being lost, … the dangers of contemporary seeds, and then asked people about seeds they had lost' (NET006).

Communication between guardians may happen over the phone, chat, or social media apps. Meetings are also generally virtual, using platforms like Zoom, Teams, Facebook, or Skype. Guardians admit that meetings were somewhat exclusionary in their first years of operation, since not all members had access to technology. However, this has improved as mobile phone adoption has increased and more tools are available (NET003).

Due to the diversity of people and organisations participating in SGNs, their interactions are inevitably intercultural. However, this is not immediately evident for research participants when prompted in interviews. As NET006 puts it, 'there was no pretence of interculturality at the beginning' (NET006). For him, guardian-to-guardian dialogues in the social process of SGNs occur under conditions of equality. Furthermore, for SGNs interculturality is not an empty category as used by other organisations pretending to embellish their processes. NET006

argues that 'in the network we do feel this intercultural dialogue causes real changes in people's lives … [from] the wealth of the other' (NET006).

Moving up a level to inter-organisational dialogues, spaces for discussion were promoted by several participating actors over the years, resulting in the current flexible horizontal structures of SGNs. One such example is the Alliance for Biodiversity in Colombia, which was critical in establishing dialogues between organisations in defence of native seeds, including government, NGOs, academia, social organisations, and seed guardians (NET009).

These spaces for dialogue also include national and regional seed guardian encounters, academic forums, and participation in food-sector events. Analysing the wider process of articulation of SGNs and seed sovereignty social movements is beyond the scope of this thesis. However, it is clear that these international connections 'strengthen the struggles and agendas of the social organisation' (NET007). International cross-pollination is seen as an important but generally unexplored aspect of seed guardianship consolidation.

This information flow manifests as success stories that inform transformation, failures that evidence risks of inaction, or international support for the agendas of national seed movements. NET007 provides examples of all three regarding the Venezuelan process. First, at a local level, bringing information about packaged Peruvian native potato chips being sold as snacks at the airport allowed native potato farmers to see 'a diverse world of possibilities, … contrary to what [the hegemon] led them to believe, [a bag of chips becomes] a wonderful thing that uncovers magic' (NET007). Second, the Colombian documentary 9.70 (Solano, 2012) dramatised the risk of inaction in the face of 'anti-peasant legislation' that was being enforced throughout the region; likewise, the experience of Paraguay with transgenics was used as a scenario to avoid.

Regarding SGN interactions with the broader public, guardians see information flows from rural areas into cities as fundamental. These can take the form of consumer awareness campaigns on the value of agrobiodiversity and cultural biodiversity (NET005), the health risks of industrial agriculture and benefits of agroecological and organic farming, or alliances with chefs to promote the flavour, colour, and nutritional quality of native food products (NET009). Some of these campaigns have been very successful, being eventually institutionalised by national governments. Such is the case of Mexico, where the 'Sin maíz no hay país' campaign turned National Corn Day into an official celebration in 2019 (NET005), or Venezuela, where the National Peasant Seed Day has also been celebrated yearly with state support (NET007, NET008).

SGNs are actively publishing their experiences to reach broader audiences. Seed catalogues, books, academic publications, websites, and virtual magazines are just some of the products advancing their cause. SGN coordinators are always on the lookout for ways to communicate with citizens and sway public opinion in their favour. A particularly successful case of audience outreach occurs in Ecuador, where the network developed the web-based educational platform Madresemilla (Mother-seed) with access to low-cost MOOCs, and the podcast Radio Semilla, where native seeds and other topics around sustainability transformations are discussed (NET006).

Since 2018, the seed guardian network of Ecuador has developed a process of information dissemination to the public via the internet. After employing a community manager, their Facebook posts have reached more than 1.4 million people per year, their podcast has more than 8,000 listeners, and a virtual festival organised during the pandemic lockdown attracted 18,000 people from all over Latin America (NET006).

As has been mentioned previously, the production of information is also asymmetrical in food systems. SGNs are actively generating 'positive

and favourable information so that public policies go towards these new alternative models … native, and creole seeds' (NET009). However, building up information showing the successes and benefits of agroecology, family agriculture, and native seeds is not easy. Neither SGNs, nor participating non-profits and grassroots organisations have the resources to fund appropriate research, while private companies spend millions developing their technologies and marketing strategies (NET009). Producing successful examples and making them visible to broader audiences is a central ambition of SGNs and this has been crucial in network-government interactions as described in subsequent chapters.

Information technologies

Many guardians emphasise the relevance of information technologies in their practices, particularly since the COVID-19 pandemic started (NET002, NET006, NET007, NET008). Of these digital spaces, the main point of encounter is the WhatsApp chat. This app allows participants to be 'permanently connected, [and] … always in communication' (NET007), especially in Venezuela, where travel is difficult due to fuel scarcity.

The chat allows for broad participation across regions, biological phenotypes, ethnicities, and age groups, even leading to surprising connections, as was the case of Venezuela, where the Minister of Urban Agriculture is connected via WhatsApp. The chat is a space for sharing information, consulting others, training, organising, exchanging seeds, connecting to international initiatives, and even holding events like the 2020 Venezuelan National Peasant Seed Day. As NET006 describes it:

> we have a chat on one of these services and … for three years it has been the most intense, most active form of bonding. Everything circulates there, always focused on topics of interest to the network. It's not a space for

> proselytising, or jokes, or talking about football, or anything like that. But hey! You're always going to see photos of mushrooms there ... that's typical. [People will ask] Which mushroom is this? We have like 4 or 5 mycologists ... every time, [they'll ask] is it edible? Photos of seeds obviously, plants ... What plant is this? Do you eat this plant or not? Photos of pests and diseases. How do I control it? Photos of wonderful insects and all these things continually flow. How do I sow this or that? How do I cook it? It's a lot of information being exchanged. Sometimes it makes me sad that we don't copy everything because these discussions ... are wonderful (NET006).

Advocacy

Seed guardianship, exchange, and networking practices were not enough to transform the wider system, this led SGNs to engage in politics to pursue the world they wanted. As neo-peasant guardian NET003 puts it - 'I began to understand that the issue of seeds was not only limited to being in one's territory guarding them, but also that ... political advocacy was very important to transform ... [the] reality of our surroundings' (NET003). This is not to say that network practices did not play a role in system transformation; in fact, the political mobilisation of guardians is deeply related to internal empowerment.

Decades of work by the networks led to the 'formation of a ... new self-esteem, gained by [their] seeds and [their] knowledge, defending and [ultimately] asking for [legislative change]' (NET008). Revaluing AfroIndopeasant practices, strengthening them, and connecting outliers that enact them, led to more assertive participation. As NET008 explains of the Venezuelan legislative process, '[guardians] participated without fear ... saying, "yes, yes, yes. The peasantry *is* the guardian of seeds! *yes*! we produce seeds, and we do it *this* way [emphasis added]'" (NET008).

As mentioned in previous sections, SGNs are deeply distrustful of the state, as they see governments colluding with corporations to create a hostile environment for native seed circulation. For some guardians, corruption at the state-level is rife and civil society generally cannot participate in decision-making. Related to this position, there are network participants who are actively anti-state, closed to dialogue with government or even state-led interventions that may favour SGN agendas (NET005).

This produces a conflicting attitude in SGNs; despite state agro-industrial biases, neoliberal leanings, and a historical invisibilisation of their practices, networks know that they must interact with national governments to preserve their way of life. These network-state interactions are always fragile, as SGNs have been generally defensive and believe they 'should never lower [their] guard' (NET003). However, in recent years the networks have shifted from a defensive position to the offensive, as they moved to building concrete proposals to transform national seed systems.

Ultimately, SGNs advocate for recognition of their seed practices and narratives and the creation of a set of rules that levels the playing field for all system actors. To achieve this, political advocacy activities mobilised by the networks include dissenting, campaigning, advising, monitoring and pressuring governments, advancing legal challenges to existing and emerging legislation, opening spaces for dialogue, and proving validity of their practices.

In most cases, network advocacy is not unidirectional, as the state also opens spaces for dialogue. Despite the generally pessimistic views SGNs hold of government, the state is not a monolithic enemy. Network participants are still aware that many government actors have been previously employed by companies like Monsanto or Syngenta, so caution persists. However, SGNs always find government allies that

sympathise with their narratives and facilitate SGN manoeuvring. State allies will leak legislative drafts to alert SGNs of upcoming changes (NET006, NET007, NET008), and even in Colombia (arguably the most recalcitrant right-wing country of those included in this research) state actors have started including SGNs in their discussions over the years.

It is important to emphasise that left-leaning governments have provided more spaces for social movement participation in decision-making. The impact of the Latin American pink tide[32] cannot be overstated. In Venezuela, framing the state as eco-socialist was crucial to the development of the 2015 seed law which recognises AfroIndopeasant practices and native seeds. In Ecuador, a buen vivir-centric state opened spaces like the Plurinational Intercultural Conference on Food Sovereignty (COPISA), where SGNs and other social organisations drafted a seed law (see subsequent chapters).

As NET005 reflects on the experience in Mexico, '[a leftist president] … created a different panorama for us, suddenly many who were in the Sin maíz no hay país campaign were in government [positions] … In 2018-19 we found ourselves in a situation where [government] began to ask us: "What do you want? How do we protect [native] corn?" … suddenly that's super difficult, right? [To] come up with grounded proposals' (NET005).

Advocacy is deeply tied to communications, so SGN and SGN-adjacent campaigns are constantly mobilised to influence legislative outcomes. These campaigns might be for or against existing or upcoming legislation. Anti-transgenic campaigns have been generally influential in all countries, with GMO-free Venezuela being arguably the most influential at the national level (NET007). Campaigns designed to protect specific food staples have also garnered support for seed guardianship,

[32] The pink tide refers to a wave of left-leaning political parties winning presidential elections in South and Central America at the beginning of the millennium.

such as the case of Mexico where Sin maíz no hay país and Alianza por nuestra tortilla (Alliance for our tortilla) have put native seeds at the centre of public discussions (NET005).

Seed-specific campaigns like the Venezuelan National Peasant Seed Day, or the Colombian Seeds of Identity (Semillas de Identidad) were the starting points for the creation of SGNs in those countries. SGN-adjacent campaigns against free trade agreements, and for land reform, farmers' rights, water protection, among other issues, also aid the advocacy work of the networks. An important example of a communications piece having transnational impact is the Colombian documentary 9.70. This film spread the message of anti-peasant legislation enforcement throughout the region, informing multiple transformation processes.

Lawsuits are one of the most widespread tools in the advocacy arsenal of SGNs. In Mexico, the networks have filed lawsuits against transgenic corn, leading to a moratorium. In Ecuador, SGNs have campaigned against multiple laws that affect their work, most notably to rewrite 15 articles of the national seed law. Interestingly, the Ecuadorian seed guardian network sued the Ministry of Agriculture to release information about the regulations they were drafting. As NET006 frames it, 'I had to sue them to be able to speak to … [engage in] dialogue with the Ministry of Agriculture, while big capitalist companies call the minister directly every week' (NET006).

Dissidence and resistance are pervasive in SGN advocacy, whether against neoliberalism, the green revolution, capitalism, concentration of land ownership, glyphosate, or overexploitation of resources, amongst others. However, SGNs not only resist legislation, but also contribute by developing proposals and supporting initiatives that advance their agendas.

In Mexico, the networks have actively supported policies of price guarantee for food products overseen by SEGALMEX, the body responsible for food security (NET005). The Ecuadorian seed guardian network participated as an advisor to the National Assembly in drafting the 2008 Constitution (NET006). In Venezuela, SGNs were highly active in the development process for the 2015 seed law: they gathered signatures in support of their interests, monitored what was happening in the National Assembly, organised a process of consultation (popular debate workshops), and drafted a proposal for the law (NET007, NET008). In Mexico, SGNs have developed a draft of the Law for the Promotion and Protection of Native Corn, which includes the creation of a Corn Council that envisages mandatory participation from civil society, Indigenous peoples, rural communities, and peasants (NET005). Finally, in Colombia there have been some joint projects and an ongoing co-visioning process for the definition of a national seed system (NET009).

Knowledge-wise, SGN advocacy remains a mystery; there are no mentions of lawyers, politicians, legislators, or political scientists in their ranks. Advocacy appears to also respond to cycles of action-reflection-action, as they are citizens participating in decision-making from an outsider positioning. As NET006 puts it, 'we are always out, we appear suddenly, we do a lot of things and again we disappear … I feel that we are seen by other actors as excessively informal, radical. And I do feel that some allies … are often annoyed seeing the network's management and outreach capacity, because we don't move within the normal schemes in which all these movements move' (NET006).

Despite their unorthodox approach, SGNs have become a powerful force in seed systems. As has been previously mentioned, industry and transnational corporations almost have guaranteed seats at the table, while civil society must open spaces to have a say in seed legislation. But as NET005 explains, 'there are little entrances, like small fractures,

where you can enter and make them bigger, and create the world that is in your [interest]' (NET005).

It is necessary to mention again the burden of proof as part of knowledge associated with advocacy. As NET009 puts it, 'the issue of advocacy in public policy forces us to demonstrate, … to influence policy … we … must show those who have power … that [our practices are] good and that [they] work' (NET009). This requires skills, both to develop successful experiments with demonstrable results, and communicate them to an agnostic audience. Part of the advocacy work of SGNs is to demonstrate the benefits of agroecology, organic farming, AfroIndopeasant and family agriculture, and native seeds.

NET009 is deeply troubled by this, as he expresses it - 'this seems absurd to me. Demonstrate that organic farming is good for the environment? When have those who are producing damage with agrochemicals, with that model, had to prove anything? They are the ones who must show what's good, they're the ones who have to show that transgenic seeds do no harm. And they put the burden of proof on us. [It's] the world upside down! The one who goes with the gun must prove that the gun doesn't kill. So, [we] have to [make] things … right. Those who must show that they do no harm are the ones who come up with new things. This is a very unequal dilemma in … public policy' (NET009).

Ultimately, the objective of advocacy is to develop public policy that allows for informal(ised) and formal seed systems to coexist. This is first and foremost an exercise of visibilisation. As NET009 puts it, 'the [informal] system works, [but] it isn't visible, characterised, it isn't written, there's no [official or institutional] document … So what you have to do is make it visible, show it' (NET009). This is a titanic endeavour, since there are pervasive agro-industrial biases in government and the neoliberal state's strength is constantly deployed to

defend corporate interests. Furthermore, SGNs are going against 500-plus years of coloniality that have pushed their narratives and practices to the periphery.

As NET008 explains, hegemonic actors speak of 'Afro-descendant seeds [as] … linked to blackness, to slavery, to backwardness' (NET008). Such is the challenge of pursuing transmodern decolonial futures while transcending colonial structures, worldviews, values, etc. Even if the process of creating an egalitarian set of rules is successful, a law that enables the coexistence of modern and non-modern practices may be full of contradictions. How can you draw clear physical boundaries between transgenic and native seeds? How would a law stop both from sharing genetic material? How can regulation ensure that airborne agrichemicals don't spread to communities and crops where they are not wanted? How can the state support AfroIndopeasant regimes without aligning them with modern values? (i.e. without handouts of hybrid seeds and fertilisers). And ultimately, who has control of national agri-food patrimony moving forward?

Conclusion

Latin American seed guardian networks have consolidated over the last 20 years. This organisational process has been first and foremost an exercise in revaluing and reframing existing seed production and exchange practices typical of AfroIndopeasant and family agriculture. However, not all Indigenous, Afro-Latino, or peasant farmers are seed guardians; this category refers to a special type of knowledge-holder with a particular skillset.

Guardians are deeply curious and experimental; they are prefiguring seed traits in their fields but also futures of food sovereignty and autonomy. Seed guardianship is a place-based practice that quickly transcended the local level to become a trans-local practice plenum with

presence at national, regional, and global levels. This organisational process of networking has simultaneously created a shared narrative field and increasingly complex practices at multiple scales.

SGNs have created a flexible and constantly shifting discourse coalition, a narrative field that both coalesces the network through shared purpose and pulls external allies into its orbit. It differentiates native, creole, and landrace seeds in AfroIndopeasant hands from those of industry. It paints a picture of high control over food systems leading to increasing dependence, and networked efforts of seed custody as a pathway to resilience. It reframes and revalues Indigenous agriculture and other alternatives against the failure and persistent damages of the green revolution. It also dares to dream of transitions to alternative futures where plural agricultural self-sufficiency models are locally developed to preserve the dignity, autonomy, and freedom of peoples and seeds. This narrative field has provided meaning to seed guardianship practices, strengthened practitioners by reframing traditional seed care as futural, and configured guardians and their allies as a coalition through shared ideational elements.

The consolidation process of SGNs can also be seen as an exercise of social practice governance. Through their interactions, seed guardians have experimented with introducing and interchanging new meanings, materials, and competences. This has simultaneously transmodernised traditional seed care practices and the rules that govern national seed systems. Recognising and renaming the practice of seed guardianship, connecting practicing outliers, creating seed houses, experimenting with education and training to provide new skills, or with materials such as genetic-testing kits or virtual databases, have all contributed to the emergence of an influential new system. The consolidation of this practice plenum has effectively created a niche space that innovates according to non-modern values and visions. SGNs have made the

previously invisible visible, the networks have broken the abyssal line showing hegemonic actors that which they ignore and informalise.

Narratives and practices of SGNs position them as a sustainable materialist social movement (Scholsberg, 2019), a political organisation based in sustainable material practices, collective action, and prefigurative politics. SGNs emerged as a response to the unsustainability and injustices of the global food system. They are a transmodern reaction to the exhaustion of modernity/coloniality, embodying non-modern narratives and practices that unsettle both everyday material flows and macro-level structures.

Ultimately, guardians realised that system rules had to be changed in order to guarantee their permanence and build a transition to their desired futures. Through advocacy, network-state interactions have opened translational contact zones where science and law are unsettled, allowing transmodernity to emerge. The next three chapters explore cases of translational contact zones opening in Colombia, Ecuador, and Venezuela. They focus on network-state interactions that attempted (with varied degrees of success) to transmodernise system rules with SGNs as the protagonist transformative force.

4
Colombian seed system transformations

Despite producing most of Colombia's food, AfroIndopeasant and family agriculture actors are historically excluded from decision-making spaces, and their practices are routinely ignored or even suppressed by hegemonic players.

In recent years, however, a combination of bottom-up actions and national level inclusion efforts have resulted in a participatory approach to transform the Colombian seed system. This exploratory process aims to conceptualise a national seed system for Colombia and was officially launched in 2019 by AGROSAVIA (Colombian Corporation for Agricultural Research, previously known as CORPOICA). Crucial to this initiative, and radically different from previous government-led efforts to transform the national seed sector, is the inclusion of the Organización Nacional Indígena de Colombia (ONIC, National Indigenous Organization of Colombia) and seed guardian networks (SGNs).

This chapter explores the events that led to changes in the Colombian seed system during the last 30 years, presenting them chronologically as precedents of the current efforts to conceptualise a novel seed system. It presents the recent interactions between AGROSAVIA and SGNs to create seed system visions after more than a decade of tensions between two opposing but interlapping ways of producing food, industrial and AfroIndopeasant/family agriculture (See Figure 4.1.).

As presented in chapter 1, these tensions have their origin in colonial processes and are maintained by the interrelated systems of power of coloniality. Although actors do not reference their actions as decolonial,

the process described in this chapter touches upon issues related to coloniality and evidences the emergence of transmodern futures.

In the first decade of this century, Colombia experienced an intensification of neoliberalism in the form of international trade partnership agreements. Liberalisation of the economy expanded the power of multinational seed corporations, aligned the country with international seed standards and regulations, and allowed the introduction of transgenic seeds. In parallel, Indigenous communities, in cooperation with international non-profits like SWISSAID, declared their territories transgenic-free. This created an opening for the creation of seed guardian networks aligned with international movements in defence of native seeds.

For some authors, structural obstacles for participation in the legal regime led farmers and seed movements to focus on seed saving as a strategy for transformation (Silva Garzón & Gutiérrez Escobar, 2020). Although these social movements initially relied on international non-profit discourses to develop their tactics, they eventually matured to put more weight on contextualised community needs (Rodríguez Goyes, 2018).

In 2010, an abnormal rainy season wrought havoc in rural Colombia, leading to a multidimensional crisis for which the government offered an insufficient response. That same year, the controversial Resolution 970 was published, a confusing piece of legislation that planted the idea of state criminalisation of native seeds and related practices. This was exacerbated by an independent documentary published on YouTube (Solano, 2012) which became popular in food-related social movements.

Lack of government action in favour of rural actors and narratives of criminalisation of traditional practices led to the consolidation of a novel social movement grouping rural concerns that went on strike in 2013. A

political shift consistent with what Latin American commentators dub the 'new plural left'.[33] The 2013 national agrarian strike achieved a change in seed legislation by eliminating Resolution 970 and clarifying the applicability of new legislation to industrial seeds only. However, all other seeds were kept in a non-legal space by state actors.

These changes occurred as the negotiations between the Colombian Government and the FARC-EP guerrillas were progressing. In 2016, a peace accord was signed that prioritised structural rural reform in the country while timidly pointing towards buen vivir trans-development framings. The peace accord between the longest active guerrilla movement in the world and the Colombian Government had direct consequences on agricultural policy.

One such consequence is the internal transformation of CORPOICA in 2017 in order to handle the challenges of a post-accord rurality. A culture of collaboration was emphasised, a seed department was created, and the organisation appeared to be experiencing an 'ontological turn'. Parallel to this shift, the Ministry of Agriculture developed a novel legal framework for non-hegemonic agriculture that appeared to promote buen vivir values.

In 2018, CORPOICA rebranded itself as AGROSAVIA to rehabilitate its image as a top-down research agency disconnected from rural populations, a reputation that garnered deep mistrust from farmers throughout the country. Regarding its work with seeds, AGROSAVIA implemented a National Seed Plan to strengthen seed producing

[33] It is important to emphasise that this 'new Plural Left' is not really new, it has always been part of the Latin American political agenda. A poignant example in Colombia would be the 1960s utopian socialist pluralism of Camilo Torres. Torres was a Catholic priest from a well-off family who, in his desperation to solve the profoundly unequal social structures of the country, decided to pick up a rifle and join the guerrillas of the ELN (*Ejército de Liberación Nacional, or National Liberation Army*), only to be killed on his first combat mission.

organisations and, in 2019, started bringing seed system actors together to co-create a national seed system.

This visioning process was done from a complex systems perspective, purposefully including Indigenous organisations and SGNs with openness to their worldviews and practices. Two crucial aspects differentiate this process from previous attempts at conceptualising a national seed system: i) recognition of potential in the informal system for quality seed provisioning that responds to local environments and is fairly priced; and ii) valuing all knowledge(s) involved in production, collection, characterisation, conservation and use of agrobiodiversity (AGROSAVIA et al., 2019).

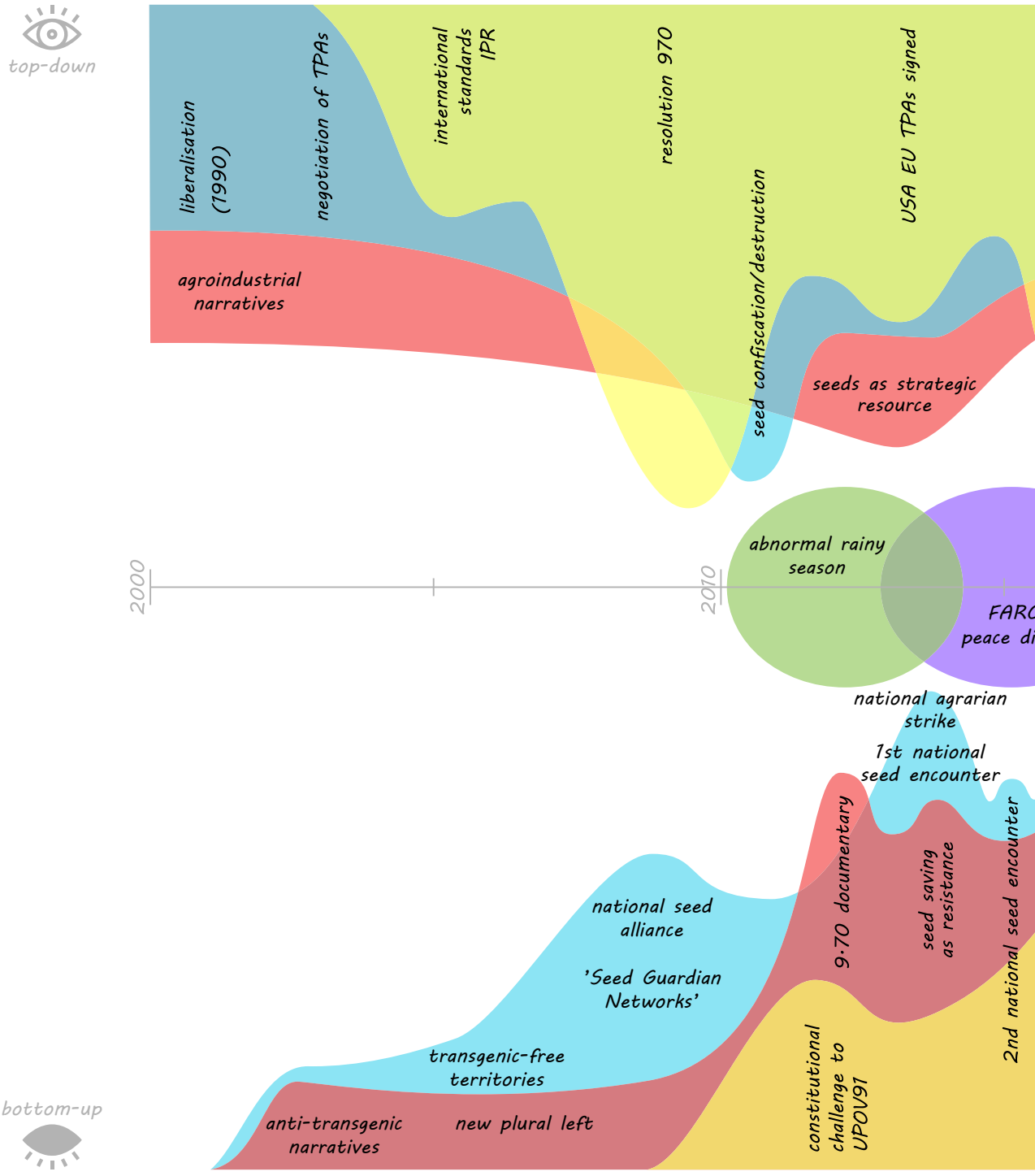
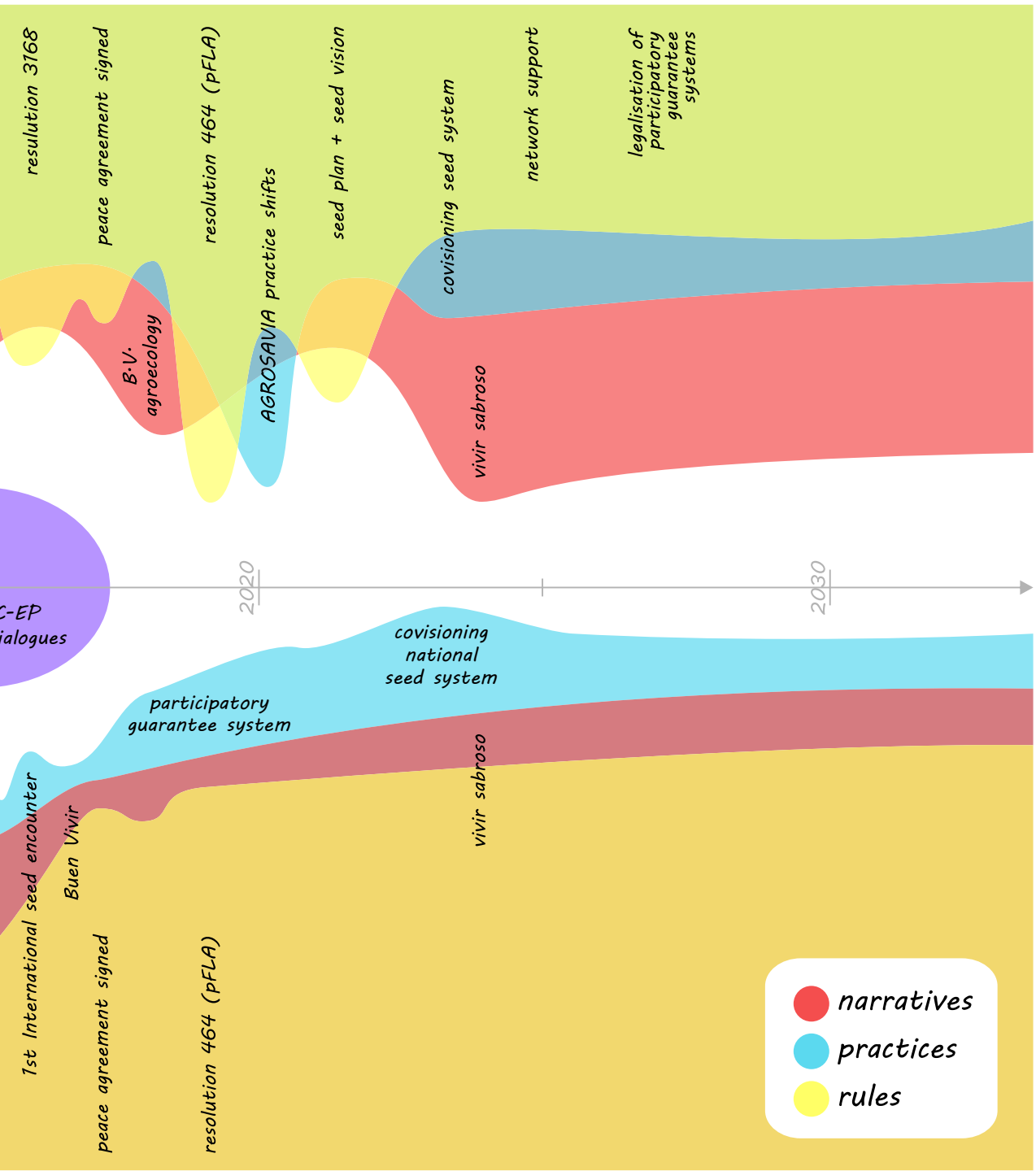


Figure 4.1. A visualisation of Colombian seed system transformations as a result of bottom-up and top-down pressures


resulution 3168
peace agreement signed
resolution 464 (pFLA)
B·V. agroecology
AGROSAVIA practice shifts
seed plan + seed vision
covisioning seed system
vivir sabroso
network support
legalisation of participatory guarantee systems
2020
2030
C-EP
ialogues
covisioning national seed system
participatory guarantee system
vivir sabroso
1st International seed encounter
Buen Vivir
peace agreement signed
resolution 464 (pFLA)
narratives
practices
rules

2000-2010 Seed guardian networks and neoliberalism

The emergence of SGNs can be traced to the Campaña Semillas de Identidad (Seeds of Identity Campaign), a program created to recover traditional seeds with Indigenous and peasant producer organisations. It was established in the first years of the 2000s by SWISSAID[34] and the Colombian NGO Grupo Semillas, focusing mainly on the Caribbean region of Colombia (Campaña Semillas de Identidad et al., 2017).

In 2002, Colombia approved the use of transgenic corn and cotton seeds, leading several Indigenous and peasant communities to declare their territories as transgenic free. For these communities and the organisations supporting them, transgenic seeds were seen as a threat to local biodiversity, people's health, and local economies (SWISSAID Colombia, 2012). The Indigenous Resguardo of San Andrés de Sotavento was the first area to exclude transgenic seeds in 2005 and was soon followed by other Resguardos in the region.[35]

Indigenous communities argued that seeds are unable to be privatised or trademarked since they really belong to mother earth (Gutiérrez Escobar & Fitting, 2016). They also raised concerns about the global privatisation of biodiversity, and the ongoing negotiations for a free trade agreement with the United States of America (SWISSAID Colombia, 2012).

Of special importance, in 2009, the Resguardo of Cañamomo y Lomaprieta created a local seed guardianship network with the support of the Campaña Semillas de Identidad. This process began by identifying local farmers that kept heirloom seeds and grouping those willing to collaborate in a network of custodians. The objective of this

[34] SWISSAID is a non-profit based in Switzerland that develops projects with smallholder farmers in developing countries.

[35] 'Resguardos' are territories that are tied to Indigenous communities and are ruled by special autonomous statutes.

organisational process was to produce seeds that would enable a self-sufficient territory, capable of advancing productive projects designed by the local mayor's office and the Resguardo.

The Campaña Semillas de Identidad supported this by strengthening the organisational effort through financing and providing technical support to improve seed quality (GRAIN, 2017). The experience of Cañamomo y Lomaprieta served as an example of what would become a broader strategy for seed guardian networks in Colombia. Also supported by SWISSAID, this strategy sought to identify existing native seed custodians in an area and organise them into networks or around community seed houses.

These networks would develop inventories of local seeds, characterise them to recover dwindling varieties or preserve existing ones, and then propagate and distribute them in the area. Crucially, the local networks would connect with other organisations and the Campaña Semillas de Identidad to form a national seed alliance to advocate for favourable state-level policy. The alliance has, since inception: i) worked for the promotion of native seeds and their improvement; ii) organised knowledge and seed exchanges at the local, regional, and national level; iii) developed communication strategies to emphasise the importance and potential of native seeds; and iv) lobbied governments for the inclusion of native seeds in decision-making and public policy (SWISSAID Colombia, 2019).

As SGNs were emerging in the country, the Colombian government began negotiating free trade agreements with the United States of America (2002) and the European Union (2007). These 'trade promotion agreements' (TPAs) were the latest step in the process of liberalisation of the Colombian economy, a process kickstarted by President Cesar Gaviria in 1990 by opening up the country to multinational corporations

and removing import tariffs without protection for internal markets (Coscione & García Pinzón, 2014).

Particularly for food systems, this meant that large estates and monocultures were favoured while smallholdings were discouraged, accelerating the dismantlement of AfroIndopeasant life-worlds and giving way to more technoscientific knowledge safeguarded by patents (Santana Garzón & González, 2013). More generally, this led to a 're-primarisation' of the Colombian economy (focusing especially on energy and mining), a simultaneous shrinking of agriculture and industry as part of national GDP, and an increase in unemployment and inequality (Coscione & García Pinzón, 2014; Drago, 2017).

This process came to a head when several 'trade promotion agreements' were signed between Colombia and counterparts like the USA, Canada, and the EU in the early 2000s. In addition to preferential tariffs for food products, the free trade agreements established sanitary and phytosanitary measures, 'to protect human, animal, or plant life or health' (Trade Promotion Agreement, 2012). Additionally, it strengthened intellectual property rights (IPR) regimes and their enforcement (Trade Promotion Agreement, 2012).

Of particular interest for seed systems, the TPAs required Colombia to ratify the 1991 International Convention for the Protection of New Varieties of Plants (UPOV). Up to this point, Colombia ascribed to UPOV 1978, which allowed seed saving of IPR-protected varieties by farmers. Moving to UPOV 1991 meant more protection for industrial breeder rights but impacted long-standing farming practices like seed saving and exchange (Senini, 2018; Wattnem, 2016).

These requirements regarding intellectual property rights over seeds became a key factor in stimulating public debates regarding 'informal' seeds in Colombia (Gutiérrez Escobar & Fitting, 2016). For seed and food

sovereignty social movements in Colombia and beyond, these regulations that moved the system towards global standardisation of seeds and IPR protection for transnational corporations could 'annihilate popular food autonomy and sovereignty' (Grupo Semillas, 2010, p. 1).

As the TPAs were being negotiated, the Instituto Colombiano de Agricultura (ICA, Colombian Institute of Agriculture) approved Resolution 970 in 2010 to establish 'requirements for the production, conditioning, import, export, storage, commercialisation, and/or use of seeds for sowing in the country and their control' (*Resolución* 970, 2010, sec. 1). This piece of legislation was controversial for informal(ised) food system actors, as it was interpreted as an additional effort to privatise seeds, effectively prohibiting peasant and Indigenous communities from saving their seeds for resowing (NET002). As such, Resolution 970 was framed as a direct threat to AfroIndopeasant identities and ways of life (NET003), an interpretation that would massively impact the agricultural system over the next decade.

Regretfully, this period also saw Colombia facing one of its most serious environmental disasters in recent memory. Between June 2010 and May 2011, the heaviest rainfalls for over 40 years poured over most of the country. This climate phenomenon caused floods and landslides affecting 70 per cent of the national territory, damaging the homes of 2.2 million people and killing 301. The extent of the damage and the number of people affected led then President Juan Manuel Santos to declare an economic, social, and ecological emergency and disaster situation to deal with the impacts.

2011-2015 Fallout of TPAs, climate shocks, and novel social movements

In 2012, the trade partnership agreement between Colombia and the USA was signed, leading to the implementation of Law 1518 which binds

Colombia to the UPOV 1991 protocol (Silva Garzón & Gutiérrez Escobar, 2020). In response, SGNs, which had not been consulted by the government, decided to challenge this law in Colombia's constitutional court. The courts recognised that UPOV91 could adversely affect the biodiversity, culture, and ecosystems of Indigenous and Afro-Latino communities, and sided with SGNs (Gutiérrez Escobar & Fitting, 2016).

Whilst this decision did not affect other regulations that had already been introduced to implement UPOV91 like Resolution 970 (Silva Garzón & Gutiérrez Escobar, 2020; Hernández Vidal & Gutiérrez Escobar, 2019), it was a big win for the networks as Law 1518 was declared unenforceable. The networks continued their work throughout 2013 when the First National Meeting of the Free Seed Network of Colombia was held (García López et al., 2019). The construction of the first 'casa de semillas' (seed house) in Cañamomo y Lomaprieta also started that year. This first seed house was a system that included custodians, growers, and plots of land revolving around a 'seed centre', where seeds were selected, identified, registered, and stored to guarantee their quality for exchange, loan, or trade (GRAIN, 2017).

In mid-2013, multiple peasant organisations came together to develop a series of proposals aimed at kickstarting a national agrarian strike, a move that was directly correlated with the environmental disaster of 2010 and the signing of TPAs. The main issue for the leaders of these peasant agrarian movements was a breach of previous commitments made by the government, including subsidies on product sales, negotiations to discuss prices of agricultural inputs, and other issues.

Peasant organisations came together as the Mesa Nacional Agropecuaria y Popular de Interlocución y Acuerdo (MIA, National Agricultural and Popular Roundtable for Dialogue and Agreement). Demands of social movements included opposition to TPAs and food imports, more protections for small producers, and defence of food

sovereignty and autonomy. SGNs also participated in the formulation of the national strike, producing a list of demands that included protection of farmer seeds and elimination of all IPR-related seed policies (Gutiérrez Escobar & Fitting, 2016). The movements consolidated the initial proposals in a document with six demands:

i) To implement measures and actions responding to the agricultural production crisis.
ii) To guarantee access to land ownership.
iii) To recognise peasant territoriality.
iv) To facilitate the effective participation of communities, small and traditional miners in the formulation and development of mining policy.
v) To comply with real guarantees for the exercise of political rights of rural populations.
vi) To increase investment in education, health, housing, public services, and roads for rural and urban populations (Mesa Nacional Agropecuaria y Popular de Interlocución y Acuerdo, 2013).

The national agrarian strike started in late August of 2013, in 25 regions and with more than 50 instances of vehicular traffic interruptions. This stirred solidarity in urban areas, where other unions and social movements mobilised in support, leading to a heavy-handed response from the armed forces. After ten days of mobilisations, the national government negotiated with potato and dairy farmers in three regions, agreeing to not apply Resolution 970, to organise a technical dialogue about seeds with the MIA, and other measures related to the TPAs (Coscione & García Pinzón, 2014).

It is important to highlight that peace dialogues between the Marxist FARC-EP[36] guerrillas and the government started in 2012. Throughout the agrarian strike and subsequent rounds of negotiations, the FARC-EP expressed its support for farmer organisations and criticised government responses. This was of special interest to the guerrillas, since the first item in the potential peace accord was an integrated rural reform that, among other things, sought to 'structurally transform rural areas, closing the gap between the rural and urban, and create wellness and buen vivir conditions for rural populations'[37] (*Acuerdo Final Para La Terminación Del Conflicto Y La Construcción De Una Paz Estable Y Duradera*, 2016, p. 7).

Buen vivir is mentioned 31 times in the text of the final peace agreement and, although not directly defined there, it can be understood in its broadest sense as post-capitalist well-being in harmony with nature. For Coscione and García Pinzón (2014), the national agrarian strike was merely a symptom of a wider political transformation happening in Colombia. A series of popular mobilisations, starting with an Indigenous *minga*[38] in 2008, were pointing to a broader appetite for structural change.

For the authors, these 21st Century popular struggles are led by the peasantry and focus on rural areas as the main scenario for confrontations between the popular sector and an oligarchic economic and political model (Coscione & García Pinzón, 2014). This observation is consistent with other academic opinions of a new plural left consolidating in the region: an open left that articulates social concerns beyond class struggles, connecting Indigenous, Afro-Latino, peasant,

[36] FARC-EP stands for Fuerzas Armadas Revolucionarias de Colombia – Ejército del Pueblo (Revolutionary Armed Forces of Colombia – People's Army).

[37] This and all subsequent translations from Spanish are by the author.

[38] 'Minga' is an ancestral Indigenous institution used to gather the community around a common purpose, be it gaining consensus or working collaboratively on building infrastructure.

environmental, feminist, LGBTQ+, and other agendas with traditional Marxist concerns to advance transformation (Cubillo-Guevara & Hidalgo-Capitán, 2019; Santos, 2016; Schavelzon, 2015).

Due to the multidimensional crisis between 2010 and 2012, the Colombian Government launched a series of strategies to reactivate the national agricultural sector. Amongst the relevant agencies to implement them were the ICA, as the national agricultural health authority, and CORPOICA, a spin-off of the ICA founded in 1993 to focus solely on research. The ICA had been responsible for seed certification since the 1960s as part of green revolution strategies, including a plan started in 1983 to distribute high-quality seeds and encourage their use by small-scale farmers (Wagner-Medina et al., 2021). In the 1990s, part of CORPOICA's mission was to oversee genetic improvement programs for new cultivars and produce seeds for these varieties. By the 2010s, seeds were framed as the primary input of food systems in government agricultural recovery strategies, leading to the development of a National Seed Plan (Plan Nacional de Semillas) (AGROSAVIA et al., 2019).

Throughout the first years of the 2010s, seeds gained widespread attention in Colombian society. Increasing demands from industry and government soon made evident that orientation, scope, and coverage of the National Seed Plan were insufficient. For instance, private actors requested institutional support on normative matters for seed commercialisation, regional governments asked for research support to develop cultivars, and national-level authorities demanded official positions on the introduction of transgenic seeds to the country or on international agreements like the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA, also known by its Spanish acronym TIRFA).

Due to these multilateral demands, CORPOICA decided to create a division exclusively dedicated to seeds, focusing on four areas of action:

i) research on seed production and genetic improvement; ii) seed production; iii) strategic initiatives or programs (including the National Seed Plan); and iv) understanding seed supply and demand dynamics (GOV002). While this seed-specific division was being created inside CORPOICA in 2012, informal(ised) system actors published a manifesto in adherence to a global campaign for freely accessible seeds (Campaña semillas libres, 2012). In it, Indigenous, Afro-Colombian, peasant, and environmental organisations, and other civil society actors, condemned national seed policy and linked the food system crisis to the negotiation of TPAs.

Broadly, the manifesto argued that: i) government policies are increasing inequality to the detriment of rural areas by fomenting big mining, energy, infrastructure, and agro-industrial projects; ii) AfroIndopeasant practices are being criminalised by seed, IPR, and biosecurity regulations implemented in the first decade of the 2000s; iii) these laws are unconstitutional and in violation of the rights of multiple sectors of Colombian society; iv) corporate control over life, all forms of intellectual property rights over seeds and associated knowledge, as well as biopiracy and transgenic seeds should be rejected; v) seeds are an essential part of life, representing the work of thousands of generations of farmers, a heritage to be transmitted to future generations that marks the foundation of Indigenous, Afro-Colombian, and peasant culture; and lastly, vi) farmers should have the right to freely access, produce, store, exchange, and sell seeds. This last point was specially framed as a hedge against climate change and as a pillar of food sovereignty and autonomy.

The manifesto makes references to seed confiscations during 2010-2011, rejecting these practices by the ICA and notifying them as such: 'for each seed that you confiscate from us, we will make them germinate and flourish again, multiply them, spread them to walk freely with farmers through the fields of Colombia' (Campaña semillas libres, 2012, para. 9). The document demands public policy that favours 'living peasant seed

systems' under community control, agroecology, and participatory research under peasant control. These policies would also be geared towards prohibiting privatisation and seed monopolies, as well as limiting non-reproducible seeds.

The manifesto culminates with a call to Indigenous, Afro-Colombian, and peasant communities to preserve, protect, develop, and share their seeds as a form of resistance (Campaña semillas libres, 2012). In the weeks following the publication of the manifesto, the first international meeting of seed guardians convened in Venezuela. A declaration was also made as part of the meeting, framing Indigenous and peasant seeds as holders of knowledge, identity, and millenary culture. The declaration condemned current treatment of local seeds, pointing to these practices as evidence of an 'insatiable, mercantilist, and ruthless economic model' (GRAIN, 2017, p. 4).

A narrative shock to the system

Some of the 2010-2011 seed confiscations and their subsequent destruction were documented by filmmaker Victoria Solano in her documentary 9.70. It portrayed a case of peasant communities whose rice seeds were confiscated by police and later burned by ICA officials. The documentary connected seed destruction to TPAs and ICA Resolution 970, producing an overarching narrative of a government that protects corporate interests by criminalising traditional seed practices.

The documentary's portrayal of the situation alarmed social movements not only in Colombia but throughout the region (NET007). This situation was seen as a manifestation of their worst fears regarding absolute corporate control over seeds and the complete erosion of their means to subsist. By contrast, CORPOICA saw the documentary as outright misinformation that led to more division and mistrust within the national seed system.

The official story behind what the documentary portrayed is that the Colombian guild of rice producers asked the ICA to exercise more controls on so-called 'sack seeds'. These seeds account for around half of the 500,000 hectares of rice produced in the country but are often affected by pests or plant diseases. The rice seeds burned by the ICA in the documentary did not meet the appropriate plant health parameters and were destroyed, so the official story says, to protect other rice farmers from harm (GOV002).

Although the burning of seeds in Solano's documentary was unrelated to ICA Resolution 970, it cemented the idea of an uncaring government legislating in cahoots with 'Big Ag' to destroy AfroIndopeasant seeds. Now with more than 1.2 million views on YouTube, the documentary has permeated the narratives of food sovereignty social movements all over Latin America.

CORPOICA admitted that Resolution 970 was concise to the point of becoming confusing, which may have led to misinterpretations that were magnified by the documentary and other actors. Resolution 970 established a myriad of seed types with scant definitions that end up meaning everything and nothing. Many Colombian researchers frame Resolution 970 as prohibiting native seed saving and exchange, effectively rendering AfroIndopeasant practices illegal (Coscione & García Pinzón, 2014; García López et al., 2019; Gutiérrez Escobar & Fitting, 2016; Santana Garzón & González, 2013; Vargas-Chaves et al., 2018; Hernández Vidal & Gutiérrez Escobar, 2019). Yet despite the sheer quantity of research that supports this position, the oppositional response of social movements may have been unwarranted because, as far as CORPOICA is concerned, the resolution was never intended to regulate native seeds at all (GOV002). The text is incredibly ambiguous, but generally points to technoscientific seed production and its use within the formal system (*Resolución* 970, 2010).

This work aligns with positions of the Colombian state as having a clear agro-industrial bias, with policies being skewed towards industry to the detriment of AfroIndopeasant practices. However, it also recognises that social scientists may have their own biases, since researchers that frame Resolution 970 as outlawing native seeds and related practices may be advocating in support of non-hegemonic actors and mobilising their research to advance their cause.

While this is commendable and very much needed as a response to power asymmetries in the country, there is a clear ideological bias there that appears to completely neglect the national necessity of preserving plant health, with benefits to all farmers. While not having extensive knowledge of the more nuanced motivations of the ICA, this work recognises that seed burning in 2010-2011 may very well respond to quelling plant disease to the benefit of the broader food system.

Non-legal spaces and invisibilisation

Now that some of the subtleties regarding Resolution 970 have been clarified, this thesis argues that although not directly criminalising informal(ised) seed practices (as other researchers contend), it does something equally damaging: it keeps these practices in a non-legal space.[39] Resolution 970 is a good example of state actors failing to recognise non-modern practices, a view shared by network actors like Grupo Semillas, that critique this legislation for ignoring seeds obtained by non-conventional genetic improvement (Grupo Semillas, 2010).

The invisibilisation of AfroIndopeasant practices may be an unintended result of internalised government agro-industrial biases, but the consequences of non-recognition are still harmful. It perpetuates

[39] At the moment of writing, the ICA has not yet produced any sort of regulation pertaining to these seed types. For the time being, they remain in a non-legal space.

multiple dimensions of injustice on historically marginalised actors and stifles their possibilities for innovation in collaboration with state institutions. This limbo that traps non-modern practices is an epistemic injustice produced by coloniality, a system of power that sees them as primitive.

In 2015, CORPOICA finally replaced Resolution 970 with Resolution 3168, an update that aimed to clarify the earlier resolution's many grey areas. In this new resolution, the prohibition on saving and selling seeds only applies to certified seeds and upholds a farmer's right to save and propagate a percentage of their market-bought seeds, excluding genetically modified seeds (Silva Garzón & Gutiérrez Escobar, 2020).

The resolution is explicit in its exclusive application to improved seeds product of genetic improvement programs, and although it also establishes general rules for seed marketing, these do not apply for native and creole varieties (GOV002). Despite these clarifications, some authors argue that the resolution is still overly ambiguous by referring to 'conventional' and 'non-conventional' seed production methods without specifying them (García López et al., 2019). Furthermore, the ICA continued with seed destruction throughout the country under Resolution 970 and Resolution 220 (Vargas-Chaves et al., 2018).

For social movements, Resolution 3168 is a direct result of their pressures on government, especially from the 2013 agrarian strike and Solano's documentary (NET003). This narrative of transformation of seed legislation through pressures from civil society (Indigenous and peasants especially) is also present inside AGROSAVIA (Wagner-medina et al., 2021).

Closing this half-decade, the second meeting of the Colombian free seeds network, seed guardians, and custodians occurred in mid-2015, attracting around 350 people from 150 organisations (Vera Herrera,

2015). The event was framed as a space to share knowledge about native seed practices and strategise the defence of local seeds and food sovereignty. The networks organised this meeting over five stages: i) preparatory meetings in regional nodes to discuss strategies and actions relevant to the wider mission of the network; ii) sharing multiple local experiences of seed guardianship and agroecology while discussing the current Colombian legal regime; iii) development of a network plan for seed conservation, advocacy, and communications strategy; iv) field trips to nearby farms to share experiences; and finally, v) a seed fair and barter space to interact with broader civil society.

Ultimately, the intention of this meeting was to strengthen weak and disconnected organisations by opening a space for knowledge exchange and to consolidate the network (Vera Herrera, 2015). During this year, participatory guarantee systems were established as parallel certification mechanisms (García López et al., 2019), leading to the publication of a methodological guide for community seed houses that contained a participatory quality-guarantee system (Campaña Semillas de Identidad, 2018).

2016-2017 Peace accords, CORPOICA shifts, and novel laws

In 2016, the much-awaited peace accord was signed between the FARC-EP and the Colombian Government.[40] As a direct result of this historic event, the Ministry of Agriculture developed and approved Resolution 464 in 2017, 'by which strategic guidelines for peasant, family, and community agriculture (PFCA) are adopted' (*Resolución 464 de 2017*, 2017, p. 1). The objective of this legislation was to 'plan and manage integrated state action and guide social and private institutions towards

[40] This agreement put an end to a conflict with more than 7 million victims and an estimated 220,000 deaths. At the time, the FARC-EP guerrillas were the longest-lived active rebel group in the world.

strengthening the social, economic, and political capacities of families, communities, and organisations of PFCA, supported by a rural development model with a territorial focus that improves the sustainability of agricultural production and produces well-being and *buen vivir* of the rural population' (*Resolución 464 de 2017*, 2017, p. 3).

The distinction between well-being and buen vivir in the text of the resolution mirrors the language of the 2016 peace accord. Whilst the resolution does not provide a specific definition for buen vivir, differentiating it from well-being is clearly important. This interpretation is reinforced by several buen vivir principles that appear in the concepts and definitions section of the text.

First, PFCA emphasises the role of women and community, particularly Indigenous and Black communities; it also mentions a focus on family, cooperative, and community labour, and a preference for reciprocity, cooperation, and solidarity. Second, agroecology is defined as practices and a social movement focused on agri-ecosystem interactions, sustainability, and social justice, based on local/traditional and scientific knowledge interactions. Third, 'rural development with a territorial focus' and 'proximate commercialisation circuits' speak of place-based systems thinking. Fourth, 'dialogue between knowledge(s)'[41] includes local communities, farmers, and the technical/scientific community, encouraging mutual learning that produces common but non-equal understandings. Fifth, emphasises that 'farmer seeds' are not subject to control or certification by the state, and also mentions that they have been 'cared for' by local and ethnic communities for generations. Finally, the legislation also defines 'participatory guarantee systems' and 'food sovereignty'. Buen vivir is also hinted at in the guiding values of the resolution, which commit to 'actions and relations that

[41] The Spanish phrase is 'diálogo de saberes'. 'Saberes' is the plural form of 'saber' (knowledge). Since there is no plural word for 'knowledge' in English, the (s) is added.

respect the lives of people, nature, and knowledge' (*Resolución 464 de 2017*, 2017, p. 8).

The vision of the resolution is to position PFCA as the main driving force of rural development and a pillar for the consolidation of peace by 2038. It does so through three precedents: First, the resolution acknowledges the global and national repositioning of family agriculture and peasant economies as important for food security[42] and combating climate change. Second, it points to the importance of opening spaces for dialogue with peasant, Indigenous, black, and ROM[43] communities at a national level to produce these policies. Third, it criticises technical assistance initiatives as exclusionary and disconnected from the needs of communities.

The resolution also proposes ten guidelines to reposition PFCA as part of rural development: i) rural extension and capacity building; ii) public rural goods; iii) access to land and land tenure; iv) incentives and financing; v) sustainable production systems; vi) proximate commercialisation circuits; vii) social marketing; viii) non-agricultural diversification of production; ix) advocacy and participation; and x) information systems.

It is relevant to expand on guidelines iii, v, and vi, as they promote agroecological practices and knowledge(s), as well as dealing directly with seeds. Several proposed actions in each of these guidelines are relevant to the broader seed system transformation process. In education, a strategy for Rural Agroecological Schools will be designed

[42] Resolution 464 reiterates the importance of Afro-Indo-peasant agricultural practices by recognising that they produce more than 70 per cent of the country's food. This number is contentious, since other accounts estimate that nearly half of the food consumed in Colombia is imported (Santana Garzón & González, 2013). However, in all accounts PFCA, Afro-Colombian, and Indigenous practices seem to account for around half of the country's food production.

[43] Commonly known as gypsy communities.

and implemented; agroecological learning communities will be promoted, while technical high schools, technical and technological schools, and universities will include agroecology courses. Additionally, pedagogical tools focused on ancestral knowledge(s) and practices will be specifically developed in partnership with communities. Participatory guarantee systems will be legally recognised and regulated in collaboration between territorial agencies and communities.

Regarding seeds, the resolution recognises the loss of native and creole seeds, as well as a reduction in the capacity of communities to handle them autonomously. The resolution aims to 'establish and support networks that preserve, guard, defend, and reproduce farmer seeds as a measure to resist the effects of climate change, and plant diseases, preserve agrobiodiversity, traditional practices, and knowledge(s) of PFCA' (*Resolución 464 de 2017*, 2017, p. 12). Other relevant actions proposed in the resolution include a strengthening of community seed houses through participatory mechanisms and funding, so that PFCA actors can access subsidised or free resources; promotion of participatory research in the recovery, conservation, and use of farmers' seeds; and support of transgenic-free areas while strengthening controls over corporate appropriation of farmer seeds.

Emergence of AGROSAVIA

In parallel with the publication of Resolution 464 by the Ministry of Agriculture, a series of broad internal transformations occurred in CORPOICA starting in 2017. The appointment of a new general director led to the development of a new corporate mission, vision, and objectives. Research focus and practices also began to shift towards more integration, holism, and participation. CORPOICA started hiring more anthropologists and sociologists, moving from a highly technical focus to include the social dimension of farmers' lives. This opened more

space for participatory action research to validate technologies provided to farmers by CORPOICA.

The organisation also grew more preoccupied with expanding its involvement in the value chain to include food consumers, understand food markets, and consider how to create new market opportunities for farmers. This meant moving from producing demand-driven technologies to creating the demand for fresh and processed food products. A culture of collaboration was also encouraged, both internally and externally, manifesting in researchers seeking partnerships and joint funding opportunities with other organisations, more interdepartmental dialogues, and framing projects as farmer-researcher partnerships instead of top-down impositions (GOV001).

Despite these internal changes, CORPOICA still faced the enormous challenge of overcoming widespread mistrust. Historically, the organisation had a poor reputation amongst farmers throughout the nation and across different crop types (GOV001, GOV002). This issue was directly related to CORPOICA's heavy top-down approach, with researchers directing projects without, it would seem, much connection to the lived experience of farmers (GOV001).

As previously mentioned, narratives emerging from historical institutional distrust continued to erode collaborative possibilities (e.g. social movement actors believing that CORPOICA willingly surrenders national seed biodiversity to multinationals). This narrative stems from denied permissions to small farmers who request access to national germplasm banks for seeds to plant commercial crops. As clarified by CORPOICA, the role of the germplasm banks is to store low quantities of seeds (often just 100 grams or 100 seeds of each variety) for seed production and improvement programs. The reality is that anyone can access these seeds, but they first must comply with specific viability and conservation standards (GOV002).

Cumulative image problems ultimately led to a rebranding of CORPOICA as AGROSAVIA in 2018, marking the 25th anniversary of the organisation.

For organisational executives in the Ministry of Agriculture, seeds were of strategic importance for the country and merited being positioned as a vital line of work. Yet, traditionally, seed-related work had been very much the initiative of individual researchers without an organisational structure. Finally, regulation mandated a specific group working on seeds, leading to the formation of a new seed department in 2017 in Bogota involving staff from all regional centres.

The seed department was created to support other teams working on seeds within AGROSAVIA, for example, seed breeding and conservation programs led by the agrobiodiversity group, and laboratory-based seed production and rescue overseen by the laboratory department. Articulation between different areas was a priority for the seed department to enrich their work with diverse expertise. The culture emphasised within the department was that their work was relevant at a national level, adopting a reflective stance regarding their impact on the daily lives of farmers. This new area in AGROSAVIA appeared to have a thoughtful approach to farmers' lived experience, translating into a heavy emphasis on responsibility and accountability for how their decisions may affect multiple rural actors (GOV002).

To lead the new seed department, AGROSAVIA assigned a person with expertise in rural development with a wider perspective on seeds to encourage such an integrative approach. The role was expected to connect technoscientific knowledge of seeds with strategic thinking, and the daily needs of farmers. Expectations also included the encouragement of dialogues between diverse actors in various scenarios by understanding the multiple dimensions of seeds - technology, uses, culture, identity, knowledge, etc. (GOV002).

A two-pronged strategy: Seed plan and system

AGROSAVIA's seed department currently works on two fronts: i) the National Seed Plan and ii) the National Seed System. The National Seed Plan is an internal macro-project that seeks to build seed production capacities in farmer organisations. AGROSAVIA provides knowledge to strengthen farmers as quality seed producers, including genetic improvement training. The agency prioritises crops like rice, corn, beans, sugarcane, potato, *chontaduro* (peach palm), and avocado, among others. The National Seed Plan currently involves 60 organisations in 19 regions, and aims not only to fulfil local demand, but also to cover other national and international markets.

AGROSAVIA feels that some local organisations of seed producers saw the National Seed Plan not only as a path towards food security, but also as a viable source of income. Some saw it as an opportunity to revitalise species like the '*pajarito*' pea of the Colombian Atlantic coast. For others, it was the first time they were approached by a government agency to support local agriculture, as some communities are extremely remote, only reachable after hours on muleback from the nearest town (GOV002). However, not all communities were equally supportive of AGROSAVIA's seed plan. When the organisation approached them asking for their seeds with a promise of returning them with improvements and full certification, many communities saw this as seed appropriation and as a threat to seed sovereignty (NET009).

As SGNs started hearing of AGROSAVIA's approaches, they invited representatives to present the National Seed Plan to a forum organised by the Alliance for Biodiversity. This is a multi-actor space where NGOs, academics, universities, social organisations, SGNs, and all those interested in defending native and creole seeds gather to discuss relevant issues. This meeting led the Organización Nacional Indígena de Colombia (ONIC) to approach AGROSAVIA to develop a project on

Indigenous seeds supported by the Ministry of Agriculture, the 'ethnic seed route'. However, due to a lack of organisational experience in agroecology, the project was not initiated. This situation has changed in the last two years, as AGROSAVIA is involving more experts on agroecology (NET009). Parallel to this initiative, SGNs proposed a similar 'peasant route' project to AGROSAVIA, focused on agroecological seeds.

The 'Colombian seed system' ('sistema de semillas en Colombia', also known as the 'national seed system') is a much broader concept that includes all pre-existing activities and relationships between its actors. For AGROSAVIA, the objective of the Colombian seed system should be to increase the availability and use of quality seeds, benefiting from their potential while reducing risks from poor-quality material (GOV002). The fulfilment of this objective requires recognition of the widely diverse food production systems that exist in Colombia. As such, AGROSAVIA acknowledges that all agricultural practices and their preferred seed types (native, creole, regional, improved, transgenic, etc.) are relevant and important. This stems in part from questioning the capacity of the formal seed system to attend to all Colombian seed production needs (Wagner-medina et al., 2021).

To dynamise the Colombian seed system, AGROSAVIA deployed a two-pronged strategy. On one side, the National Seed Plan strengthens local systems with organisations producing quality seeds. On the other, a top-down effort aims to bring system actors together, aligning them with the concept of a national seed system, and collaborating towards its development. The organisation believes the Colombian seed system is beginning to consolidate and hopes to see a system where actors recognise each other and co-exist harmoniously. The organisation has kept working to eliminate polarisation in the sector between the discourses of improved seeds produced by multinational corporations and the creole/native seeds of green movements (GOV002).

For AGROSAVIA, all seed actors should recognise the need for research, development, education, and normativity beyond their preferences or particular seed inputs (GOV002). This strategy is also supported by a study of national seed systems in other countries done in collaboration with the Food and Agriculture Organization of the United Nations (FAO-UN), and a retrospective/prospective study of the Colombian national seed system. Both studies are still yielding data, but seed system referents show elements that could be replicated in Colombia, while the retrospective study has evidenced some of the reasons why seeds have not been awarded an important status in Colombian society (GOV002).

2018-2022 Co-visioning a national seed system

As the seed department was consolidating, AGROSAVIA started to pitch the idea of a national seed system to other relevant organisations (GOV002). Complexity and fracturing in the system[44] led AGROSAVIA to favour one-on-one detailed conversations instead of opening many fronts of action to advance the process. This meant the department opted against an open call via mass emails.

The enlistment process was slow, as AGROSAVIA carefully told the story of an emergent national seed system to each actor to build trust. The start of COVID-19 restrictions also contributed to a sluggish recruitment process, forcing dialogues into a virtual space. Rather than moving slowly, one could say that the process is moving at the speed of

[44] For instance, the networks have seen businesses and government historically degrade native and creole seeds by equating them to low quality and low productivity (NET009). This negative image is the opposite of what the networks seek, which is to value these seeds (NET003, NET009). Another example would be the dialogue with the *Universidad Nacional de Colombia*, where anti- and pro-transgenic camps are often at odds (GOV002).

trust, as discussions are laborious and can be extremely complex even with a single actor (GOV002).

To efficiently advance this process, the organisation prioritised actors who would most probably have a positive response. The initial group included the Ministry of Agriculture, FAO-UN, and ACOSEMILLAS (the Colombian association of seeds and biotechnology). With their involvement, AGROSAVIA started contacts with ONIC and SWISSAID, organiser of the Campaña Semillas de Identidad and promoter of SGNs in Colombia. Involvement of these actors required a gentle touch by AGROSAVIA, due to decades of mistrust, recognising points of agreement while also establishing clear demarcation lines (GOV002).

AGROSAVIA expects to enlist other actors that are perceived as more difficult (mainly other SGNs) later (GOV002). This overly cautious approach is understandable but may not be fully justified. SGNs appreciate that AGROSAVIA is using a complex systems approach and making an effort to map all actors involved in seed processes. What the networks really expect is a vision built in a participatory manner without dominance from government or business actors (NET009).

The seed department has also encouraged interdepartmental collaborations within AGROSAVIA to interact with external actors. For example, when interacting with ONIC, the department assembled a team including legal, intellectual property, technical, and agronomy experts. This integrated approach is seen as a winning strategy by the department, allowing them to speak in diverse contexts, and to move from claiming absolute truths to being supported by experts in specific areas relevant to seeds (GOV002).

The seed department also decided to promote evidence-based discussions by sharing project results from the National Seed Plan (GOV002). This proves that AGROSAVIA is involved all throughout the

seed system (e.g. rescuing creole varieties but also doing genetic improvement – including transgenics – or developing agroecological production systems while also using chemical fertilisers).

There has also been a clear effort by the seed department to be transparent. All actors involved are aware of each other's participation and AGROSAVIA constantly emphasises that the country needs all actors and seed types. Inclusion of all participating actors will require fine-tuning institutions and norms, but consensus should occur within a common seed system framework (GOV002).

Co-visioning workshop process

To advance this co-visioning process of a national seed system, AGROSAVIA held a first workshop with 16 actors in late 2021. Due to COVID-19 restrictions, this encounter was a hybrid event, held online and in-person, with participants from government, industry, guilds, and non-profits. The workshop began with AGROSAVIA representatives sharing their ideas and intentions, emphasising that they do not want to impose an ideal seed system, but seek to create the system Colombia needs (GOV002). Participants were then organised into working groups that paired antagonistic organisations to gather data on their visions, previous approaches, and proposals for next steps.

This workshop was far from easy for AGROSAVIA, as some actors held preconceived notions that other participants had hidden agendas. The seed department had to emphasise the common interests over seeds and the previous socialisation phase with participants. In addition to these difficulties, the department (as with most organisations throughout the pandemic) was still struggling with virtual tools and workflows (GOV002).

Despite these obstacles, the workshop allowed points of agreement between system actors to surface. All believe that seeds are an important national resource, especially since Colombia is one of the most biodiverse countries on the planet; all actors understand the natural richness embedded in seed agrobiodiversity. Seeds are also seen as deeply connected to food security and cultural identity. Actors also agree on quality as an integral part of seed production. However, there are disagreements regarding existing norms, legislation, and their implementation (GOV002, NET009).

Remaining tensions in geography and law

One contentious aspect of ongoing dialogues concerns the interaction between transgenic and non-transgenic seeds. One of the key issues for SGNs is to maintain some territories free of transgenics, a measure that would allow the creation of distinct areas for agroecological and organic farming (NET009). These types of agriculture become impossible when there is a risk of contact with agrichemicals or transgenics. The networks use the example of big landowners using airborne fumigation of their crops which often affects the health and production of surrounding small farmers.

For the networks, public policy regarding land use should be developed to address this issue in seed systems (NET009). AGROSAVIA does not see an easy way to resolve this tension, as their programmes and technicians should be able to reach any region in the country (GOV002). Additionally, this could limit free circulation of hybrid and transgenic seeds, or essential inputs like fertiliser, ultimately leading to individual conflicts between neighbours that choose to grow food in different ways.

Coexistence is important for the networks, but they are aware of power asymmetries in the system, which is why they are pushing for

novel policy frameworks that protect their practices (NET009). However, this position by the networks may prove problematic in the co-visioning process. AGROSAVIA feels it has been able to sway organisations like the ICA and ACOSEMILLAS to recognise the importance of creole and native seeds. The seed department sees a favourable discourse emerging in industry actors of coexistence with 'informal' seeds, opening spaces for novel certification schemes and other inclusive regulations aligned to the realities of these seed types (GOV002). A push for land reform limiting seed use may be a step too far for industry and government.

Despite these unresolved tensions, AGROSAVIA is optimistic about the process, since a wide range of actors are now talking about the emergent system, and those currently involved are open to dialogue (GOV002).

Differing measures of seed quality

Seed diversity is important since Colombia has a wide variety of ecosystems and soils. Each seed is adapted to specific conditions, so a single seed that will work everywhere is impossible. Yet there is a simplistic view in the system whereby industrial seeds are framed as being inherently good and native seeds inherently bad, with some even tying this to racism, 'because [industrial seeds] are produced by whites, and [creole seeds] are produced by blacks' (NET009).

Seed networks emphasise that although informal(ised) actors sometimes use low-quality seeds carrying pests or diseases, or producing lower yields, creole seeds can also be considered as high-quality seeds. An essential part of the co-visioning process, therefore, is to achieve consensus on what constitutes a 'good' or 'bad' seed, inclusive of the huge diversity of native and creole seeds (NET009).

Qualifications of good or bad seeds must acknowledge existing agro-industrial biases and state-industry interactions that have shaped the

existing seed system to benefit some more than others. As Silva Garzon demonstrated in the case of transgenic cotton, GM seeds are not a panacea and may be sometimes detrimental to Colombia's seed system (Silva Garzon, 2019).

Incumbents typically frame the value of native and creole seeds as purely symbolic or as part of national genetic resources. This tends to obscure the fact that these seeds guarantee food sovereignty, security, and income as a fundamental part of the economy of many families. If those seeds were of bad quality, the survival and livelihoods of millions of people would simply not be possible. As mentioned by Gutiérrez Escobar and Fitting, these narratives challenge hegemonic discourses of local seeds as 'raw material and a resource, to be "discovered", "invented" and commodified by industry and Western-based science' (Gutiérrez Escobar & Fitting, 2016, p. 712).

For the networks, appropriate quality metrics should be developed for these seeds, distinct from those used with industry. One important aspect would be to decouple yield volumes from the inherent quality of a seed (NET009). For example, hybrid corn seeds may produce yields of up to 18 tons per hectare, while creole varieties may yield one or two tons. For SGNs, this should not be taken as a sign of low quality. AGROSAVIA's seed department tends to agree that specific seeds produce particular yields that should be studied to develop standards (GOV002, NET009).

Another important aspect to consider in alternative quality metrics is the varied uses of crops in AfroIndopeasant agriculture. In these food systems, there is no need to produce a standardised product aligned to market demands. Using corn as an example again, all of the crop would be put to use depending on its characteristics: some would be moved to market, some would be used for home cooking, some to feed chickens,

etc. (NET009). In these settings, quality takes on a different meaning since homogeneity of the crop is not very relevant.

Narrative battles

At the intersection of seed quality and transgenics, it is relevant to review the discursive battles that occur alongside them. An outstanding example is Silva Garzon's study on the introduction of transgenic cotton to Colombia. The author maps three narrative strategies used to monopolise transgenic seed markets: choice, care, and discredit (elección, cuidado y descalificación) (Silva Garzon, 2019). Choice assumes cotton farmers are able to choose transgenic seeds freely whilst, in reality, their expansion was accompanied by seed confiscations that led national seed producers to temporarily exit the market. Care frames the farmer as the leading force in crop development; if seeds are successful, it is because they are good and stable, but if the crop fails, it is because of undisciplined farmers.

Extreme weather is also blamed when farmers do not get expected yields from transgenics. It is common for technicians to use the expression 'mal del trópico' (ailment of the tropics) to refer to foreign seeds' lack of resilience in rough local ecosystems (Silva Garzon, 2019). As Silva Garzon suggests, while the ailment of the tropics highlights the fact that not all seeds respond in the same way to the same ecosystems and climates, it is also a 'miasmatic argument with colonial undertones that describes the tropics as wild and untamed' (Silva Garzon, 2019, p. 13). Finally, the narrative of 'discredit' frames foreign seeds as vulnerable and local seeds as robust, emphasising the roughness of the place where they are sown instead of their inherent quality.

This adds to existing framings of 'creolised seeds'[45] (Silva Garzon, 2019, p. 14) as 'conventional' while transgenics are sold as 'unique' seeds evoking processes of technological innovation (Silva Garzon, 2019). These narratives dominate the repertoire of monopolisation processes and are also effectively deployed to assign responsibility for seed success and failure throughout the food system. Narratives unveiled by Silva Garzon show the deeply ingrained agro-industrial and technoscientific bias in Colombian institutions. This highlights the difficulties of SGNs and other informal(ised) actors to frame their seed types and practices as valid leading to complex narrative battles in the system.

Epistemic injustice

Knowledge is key in the transformation of the Colombian seed system. However, as elaborated in the previous section, there is an overarching issue of epistemic injustice in the system.

AGROSAVIA places a high value on scientific knowledge and technical results, but also recognises that the scientific method is not the only form of knowledge that can support recommendations. The seed department recognises, respects, and values ancestral knowledge, but feels this knowledge is often not made sufficiently explicit by communities, effectively hindering development processes (GOV002). For their part, SGNs advocate for the development of a 'real knowledge' of seeds, where each of their characteristics is known. This would facilitate evaluations of their multidimensional quality instead of using broad generalising value judgements of seeds as good or bad (NET009).

Debates regarding seed knowledge must also consider the contextual variables of a country like Colombia. In the case of small-scale farmers,

[45] Silva Garzon uses the term 'semillas acriolladas' (creolised seeds) to refer to seeds resulting from the adaptation of certified or industrial seeds to local environmental conditions.

knowledge comes from their parents, grandparents, or neighbours and is transmitted from generation to generation. These farmers do interact with technicians, but most knowledge transfers occur from knowledge-holders who have experience with specific crops. For big landowners with highly industrialised crops, knowledge may come exclusively from technicians, mainly agronomists that manage production systems, while landowners focus on commercialisation. Adding to this complexity, expert agronomists usually work for local commercial distributors selling chemical inputs that are the product of technoscientific institutions aligned with the dominant agricultural model (GOV001).

AfroIndopeasant, family, agroecological, and organic agricultural knowledge is still very much alternative. Vested organisations have very little access to resources for research, development, and knowledge transfer (NET009). This power asymmetry is also evident in the advocacy work done by the networks when interacting with government. The networks are constantly pushed to demonstrate that agroecology or native/creole seeds are good and have positive impacts in the economy, the environment, and people's health (NET003, NET009).

For some SGN actors, demands to prove their practices are useful or good for the environment are an absurdity, especially when the requirements for big companies regarding new transgenic technologies or agrichemical impacts appear laxer. The networks think it is a travesty that powerful actors require them to carry the burden of proof. Having to constantly produce evidence persuading others that they are not harming people or the environment, even when native seeds and their practices have been feeding communities for decades, centuries, or millennia.

This situation is slowly changing, as hegemonic actors like FAO-UN do more work to research and promote agroecology. SGNs themselves are also compiling cases to make benefits visible, often in collaboration with

external actors that value these practices like chefs or health and nutrition advocates (NET009).

Carrying the burden of proof to demonstrate the value of AfroIndopeasant agricultural practices also constitutes an epistemic injustice. Existing biases in the system lead to an impairment of AfroIndopeasant epistemic achievements. Additionally, these actors do not have the resources to communicate this information widely, resulting in multiple wrongs that the system perpetuates (Hookway, 2010).

The differences in knowledge practices and resulting power imbalances discussed in this section may prove difficult to navigate in the co-visioning process but are of the utmost relevance to the successful transformation of Colombia's seed system. For Hernández Vidal and Gutiérrez Escobar, the aforementioned conflicts over seeds in Colombia could be framed as processes of cultural coloniality, defined by the authors as 'a form of epistemic-political domination related to the issue of expertise and knowledge inclusion/exclusion processes in the production of public policy' (Hernández Vidal & Gutiérrez Escobar, 2019, p. 44).

There are two key harmful premises here: i) there is a single knowledge that can be legitimised when developing seed public policy, and ii) this knowledge can only be recognised economically when it is found as private property - in this case, defined as intellectual property (Hernández Vidal & Gutiérrez Escobar, 2019). This is also evident in Silva Garzon's study on cotton, where narratives are often deployed laying the blame for GM crop failure and seed effectiveness on farmers or environmental conditions, while transgenic seeds are given a pass by being framed as infallible inventions (Silva Garzon, 2019).

Knowledge is an important part of the process but navigating it in its plurality is challenging. There are still latent colonial power structures that perpetuate epistemic injustices, such as the way in which agroecological and technoscientific knowledge is represented as dominant. This narrative manifests in creole seeds being perceived as low-quality despite being an integral part of PFCA systems that produce around half of the country's food. Also, in burdening AfroIndopeasant communities with proving the value of their knowledge(s) and resulting technologies despite millennia of successes. However, there seems to be one point of agreement: Incumbents want non-hegemonic knowledge to be more explicit, while informal(ised) system actors want to co-produce better knowledge of native seeds in their wide diversity.

2022+ National seed system futures

The complexity of the co-visioning process cannot be overstated. Transcending mistrust in the system and pre-existing conceptions of other actors' agendas is a monumental challenge. However, despite the deep differences between perspectives, there seems to be an overall agreement on coexistence emerging. All actors involved see each other's practices, narratives, and materials as valuable to food provisioning in Colombia. They also recognise the multiple dimensions of seeds, their importance, and the need for quality seeds throughout. Disagreements appear to orbit around system rules. These might relate to differences in interpreting existing legislation, implementation of the emerging seed system through laws, who should govern it, and norms on transgenics and transgenic-free zones.

The continuing co-creation process of a national seed system coincided with a change in the national government that gave victory to the first leftist president in the history of the country. This momentous change will surely transform many aspects of Colombian society.

However, change might not be of the depth expected, since almost half of voters were against the election of now President Gustavo Petro, and conservative parties are actively opposing the government.

The arrival of buen vivir

Although the new Colombian administration and the 2022-2026 national seed system plan draw from many perspectives, it can be ascertained that this election signals the arrival of buen vivir politics to the highest seat of power in Colombia. In their victory speeches, the incoming president and vice-president made several mentions of 'vivir sabroso', which roughly translates as 'living flavourfully'.[46] This phrase can be interpreted as a play on 'vivir bien' (roughly, 'living well'),[47] adjusted to the culture of the Colombian coasts from which the candidates originate.

The speeches also emphasised the role of marginalised racial and ethnic identities and ways of life, LGBTQ+ identities, feminism, the importance of water, and crucially, the rights of nature. However, incoming president Gustavo Petro aligns more with a classic leftist focus of industrialisation of agriculture, even mentioning that he wants to develop Colombian capitalism. It is uncertain, then, to what degree the new government will become an enabler or an obstacle for the emergence of a cohesive national seed system vision. Government narratives appear to suggest intentions to integrate modern and non-modern perspectives. Whatever the case, the seed department has expressed its deep commitment to the system and a continued push for the emergent vision.

[46] The term 'vivir sabroso' has been used widely in black resistance movements of the Colombian Pacific coast and the Atrato River (Quiceno Toro, 2016).

[47] The term 'vivir bien' is used mainly in Bolivia as a stand-in for 'buen vivir' to draw a distinction with the Ecuadorian political project of that name.

Strengthening and legitimising

In the long term, AGROSAVIA sees a mature national seed system consolidating, and hopes that strengthening it will lead people at higher decision-making levels to better understand the value of seed supply. The seed department wants people throughout the country to understand the importance of seeds and their quality. In their opinion, people are too focused on normative issues and should be more attentive to seed benefits and risks (GOV002).

For this to happen, the concept of a national seed system needs to be legitimised. For the networks, legitimacy will come through their visibility in the system, and feel AGROSAVIA has been working towards this through the co-visioning meetings. Some feel the outputs of these meetings should be published as an official document, enshrining the system in public policy that recognises, protects, and stimulates informal(ised) practices (NET009).[48] Yet the networks fear that this will become just another academic exercise without much impact on the system.

For SGN actors, true legitimacy would come through development of a new public policy that promotes coexistence in the system while supporting native seeds and the networks. AGROSAVIA knows that the seed system will eventually permeate legislation but is not convinced that a specific law would be the best way to implement it. Such a law may be perceived as yet another imposition rehashing the tensions of previous normative attempts. However, AGROSAVIA has not yet discarded a legislative approach and is currently studying other seed

[48] Publication of the outputs of the co-visioning meetings might also alleviate the confusion of some seed guardians, who were baffled at the start of the process, since they had never encountered a document that talked about a national seed system (NET003).

systems in Latin America that have been implemented through legislation (GOV002).

Another important aspect for the future of the system is the question of ownership. AGROSAVIA sees itself as just another actor, rather than the de facto administrator of the national seed system. The organisation would most likely become the main body to develop a system proposal, but all participants should agree on who would run it; for the seed department, the natural fit for this task is the Ministry of Agriculture, as AGROSAVIA cannot be left as judge, jury, and executioner (GOV002).

Communication and funding problems

Beyond the agreements produced by dialogues between AGROSAVIA and SGNs, the networks visualise a difficult road ahead to specification of rules as they are cynical about AGROSAVIA's motives (NET009). Despite their cynicism, there is evidence of AGROSAVIA's intention to dynamise the system while allowing coexistence of its formal and informal(ised) sub-systems (Wagner-medina et al., 2021).

Additionally, one of the results of the first workshop was an invitation by SWISSAID to AGROSAVIA to participate in the 2021 annual meeting of SGNs. This space allowed AGROSAVIA to clarify specificities of the process to all regional nodes of the network, allowing each node to decide its participation or withdrawal (NET009). This meeting was important because SWISSAID does not represent SGNs, and they have no central decision-making structure. Colombian SGNs are formed by highly horizontal autonomous nodes, meaning that some clusters may choose not to participate at all in the visioning process.

As a move towards greater understanding and agreement, asynchronous dialogue between AGROSAVIA and the networks is happening, whereby each questions the other to gauge positions and

establish points of agreement and disagreement. This dialogue includes topics like transgenics, seed quality, certification, and participatory guarantee systems, among other issues (GOV002, NET009). AGROSAVIA has also signed a cooperation agreement with SWISSAID that would allow both organisations to collaborate on future projects. However, this agreement has not been very fruitful due to funding issues,[49] which may constitute a serious obstacle for the overall visioning process.

Internally, AGROSAVIA's limited resources often lead researchers to contribute money from their own pockets to pay for participant transportation or catering. The organisation has called on its researchers to always seek external sources of funding for their projects, especially from international cooperation agencies. For their part, farmers often do not have enough resources to participate in these processes, since even a single dollar expense on transport or internet credit may be too much to bear (GOV001).

Conclusion

So, what has contributed to change? (see Figure 4.1.) Food provisioning in Colombia is split in half between AfroIndopeasant, family, and community agriculture on one side and industrial production on the other. The intensification of neoliberalism in the country led authorities to implement regulation in line with international seed rules. As a response, seed sovereignty social movements emerged to protect and strengthen existing informal(ised) institutions. Due to confusing seed regulation, a narrative of AfroIndopeasant criminalisation consolidated throughout the country emboldening plural social movements. This

[49] SWISSAID is ready to contribute money, but is not willing to fund projects unilaterally, while AGROSAVIA has struggled to secure resources to advance common interests. SWISSAID did fund a trust-building space as part of the national seed system co-visioning between AGROSAVIA and seed networks, but at the moment that is the only result from the agreement [NET009].

narrative painted a picture of an uncaring government allied with Big Ag to erode AfroIndopeasant practices and outlaw native seeds. This was a turning point which strengthened SGNs and their alternative practices aimed at circumventing formal institutions.

As this was happening, the peace accord between the FARC-EP and the Colombian Government deployed buen vivir into national politics. Without justifying the violence and many atrocities of this guerrilla movement, the peace accords effectively moved the Overton window[50] to open spaces for alternative discourses and novel policies. Case in point, Resolution 464 backing peasant, family, and community agriculture was informed by buen vivir principles.

Finally, an internal cultural transformation in AGROSAVIA led to more inclusivity and dialogue between hegemonic and non-hegemonic sides of the seed system. The simultaneous strengthening of SGNs and the social turn inside AGROSAVIA opened a translational contact zone where modern and non-modern perspectives engage in dialogue and agonism to co-produce a new seed system. With the arrival of a 'vivir sabroso' government in 2022, these novel inter-epistemic spaces might clear the way for transmodern futures in the Colombian food system and beyond.

[50] The 'Overton window' refers to the range of policies that are acceptable to the mainstream population at a given time.

5
Venezuelan seed system transformations

This chapter explores Venezuelan seed system transformations over the last 20 years. In a highly concentrated food system structured as an import-distribution complex to capture petrodollars, marginalised actors found a new voice, accessing decision-making spaces while connecting with transnational food sovereignty social movements. This process was kickstarted by the 'Bolivarian Revolution' establishing an eco-socialist model of development that promoted both altered state-society relations and more horizontal human-nature relations.

When a new seed law started being discussed in 2012, marginalised food system actors connected and mobilised physically and virtually to participate in drafting its text. SGNs and their allies used Bolivarian Revolution institutions like 'street parliamentarism' to ensure their visibility in emerging legislation. However, altered state-society relations did not directly translate into altered state-capital relations. As these participative legislative processes kept encountering resistance from confederations representing corporate interests.

In addition to resistance from formal system actors to increased participation of the informal system, pervasive agro-industrial biases in government constantly challenged the validity of AfroIndopeasant agricultural knowledge(s) and practices. Despite these barriers to a more inclusive seed system, social movements successfully manoeuvred the legislative process to ensure that historically marginalised actors were represented in the law.

In late 2015, the Venezuelan seed law was approved, becoming a global reference for progressive seed legislation. The law acknowledges the

importance of AfroIndopeasant agricultural practices, recognises plurality of knowledge(s) and knowledge-holders, and sets the stage for the emergence of novel institutions that encourage dialogues between technoscience and traditional ecological knowledge.

Regretfully, the Bolivarian model entered a deep multidimensional crisis after the law was approved, effectively stunting the development of the seed system under this new set of rules. While social movements continued their work of seed guardianship and exchange, the state faced critical conditions which stunted the implementation of proposed programs. Implementation of the 2015 law continues today with a backdrop of a multidimensional crisis, capitalist interests pushing to change the law to align with their visions, as well as resistance from traditional leftists pushing for more agricultural industrialisation. Dynamics of this change process can be understood as a series of nested transformative fields emerging from previous structuration (See Figure 5.1).

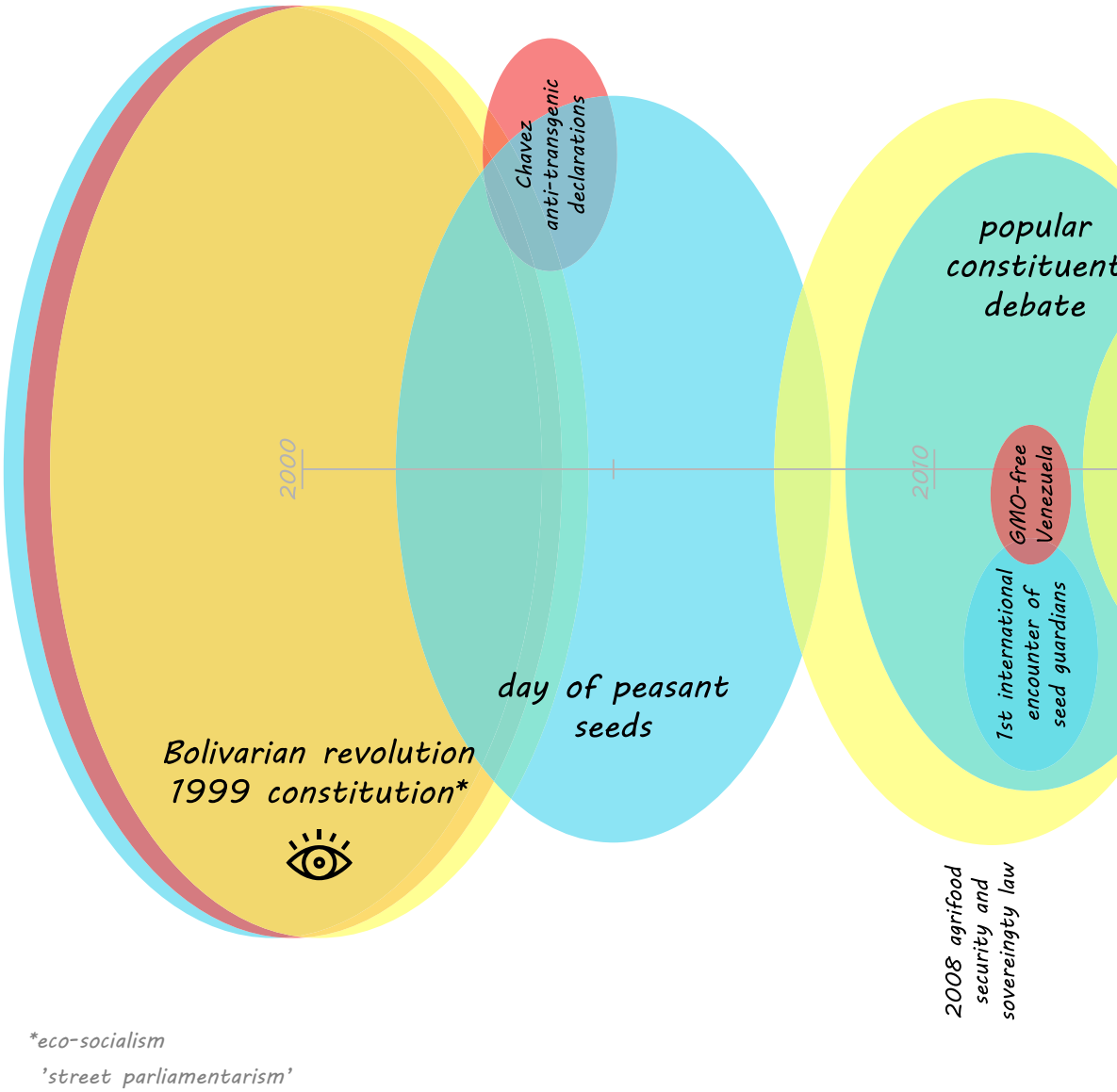


Figure 5.1. A visualisation of Venezuelan seed system transformations as a series of nested fields emerging from previous structuration

'black markets' industrial seeds
conuco economy vs. industrial production
plan patria
2015 seed law
2020
2030
national seed commission
scientific-peasant alliance
narratives
practices
rules

Precedents

Bolivarian revolution

Before going into the particularities of the Venezuelan seed system and its transformation, it is important to dedicate a few lines to the broader stage of the Bolivarian Revolution. This political process was led by Hugo Chavez, a military officer who founded a leftist revolutionary movement within the armed forces in the 1970s (Rory, 2014). The movement was ideologically heterogeneous but aimed for a middle ground between the neoliberal model and radical leftist positions of insurgencies like the communist Red Flag Party.

From 1977 to 1984, Chavez maintained a secret cell in the Venezuelan army which constantly recruited personnel. In 1992, after several years of planning, Chavez executed a military coup to remove then President Carlos Andrés Pérez from power. Pérez had implemented IMF-supported policies, despite promising the opposite during his campaign. These austerity measures led to widespread protests and looting known as the 'Caracazo', which were met with violent military repression (Felicien et al., 2018).

The 1992 coup d'état failed, but gave Chavez notoriety, since his surrender speech was broadcasted to the nation. While Chavez was in prison, another coup was thwarted in late 1992, with Pérez ultimately being impeached in 1993. Chavez was released in 1994 and founded the MVR (Movimiento Quinta República, Fifth Republic Movement) political party in 1997 to participate in the presidential election to be held in 1998.

Hugo Chavez was finally elected president with 56 per cent of the vote, mainly from poor and middle classes, reflecting a historical dissatisfaction with traditional parties (Felicien et al., 2020) and the fact that more than half of the population was living in poverty (Felicien et al.,

2018). After his election, Chavez moved quickly to dismantle existing systems of checks and balances, putting his family, and allies from leftist politics and the military in positions of power, a move widely criticised for establishing a 'Bolivarian bourgeoisie' with little experience in public administration. However, the Bolivarian process also opened key spaces for people from social movements in relation to the government, 'producing a more complex arena within institutions allowing new agendas to emerge' (NET007).

New actors were included in the state and existing government employees were encouraged to collaborate more closely with societal actors, 'further [blurring] the boundaries between state and society' (Felicien et al., 2020, p. 655). The revolution also established novel political and legal tools like 'street parliamentarism', which is 'nothing more than encouraging people through their organisations to propose their own laws, … it was just as valid [for civil society organisations] as [for] a group of parliamentarians to draft a text for a possible law' (NET008). Indeed, one of the first actions of the revolution was to 'build the legal architecture necessary for broad-based popular participation in governance, towards a vision of protagonistic [sic] and participatory democracy' (Felicien et al., 2020, p. 654).

In 1999, Chavez called an election to produce a constitutional assembly inclusive of Indigenous groups (Felicien et al., 2020). The resulting constitution and subsequent legislation share an eco-socialist frame giving more attention to ecological issues and expanding participation through the institutionalisation of 'popular power' (Pérez et al., 2016).

Relevant to this research, the constitution gives special attention to popular cultures constitutive of 'Venezuality' (Venezuelan identity), recognising and respecting interculturality under the principle of equality of cultures (Article 100). It guarantees and protects the collective

intellectual property of Indigenous knowledge(s), technologies and innovations, prohibiting the patenting of their genetic resources and associated knowledge (Article 124). It positions the state as promoter of sustainable agriculture as the strategic basis for overall rural development, guaranteeing food security and self-sufficiency by prioritising and developing internal agricultural production (Article 305). Finally, it enshrines the rights of Indigenous peoples (including to their intellectual property) and attempts to progressively eliminate large estates (Chapter VIII, Article 307) (*Constitucion de la República Bolivariana de Venezuela*, 1999).

The new constitution was approved in December 1999, increasing protections for Indigenous peoples and the environment, expanding state benefits, but also increasing presidential powers and reshuffling existing institutions giving more power to the military. Chavez was re-elected in the year 2000 as part of elections intended to legitimise a post-constitutional government. During his second presidential term, tensions with the United States of America started rising due to Chavez's condemnation of the invasion of Afghanistan. Additionally, the president began to meddle with the autonomy of the state-run oil company PDVSA (Petroleos de Venezuela) by replacing managers and executives with political allies. Chavez then used PDVSA to take control of the national oil industry by establishing majority ownership in privately owned companies.

These measures led to a better-organised opposition that resisted a perceived 'Cubanisation' of Venezuela and increased authoritarianism from Chavez and his allies. This ultimately resulted in a coup attempt against the Bolivarian government in 2002 and a recall referendum in 2004 to remove Chavez from power (both unsuccessful). Chavez went on to serve three presidential terms until his premature death due to cancer in 2013 as his fourth presidential term was starting.

His then Vice-President Nicolas Maduro was elected president in April 2014, facing renewed disapproval of the Bolivarian Revolution and a series of massive protests that for some signalled the decline of this political model (Minaya & Vyas, 2014). However, a decade later, the Bolivarian process is very much still alive and resistance to it appears to come almost exclusively from middle- and upper-class areas, led by a largely young, urban, and white crowd (Felicien et al., 2018).

Contours of the Venezuelan food system

History of the import-distribution complex

The 1930s are critical in the history of Venezuelan food systems. The confluence of the 1929 US stock market crash and the development of the oil industry in Venezuela resulted in most wealthy families shifting their capital from agro-export businesses to oil exploitation concessions. This was paired with an acceleration of proletarianisation and urbanisation, removing capital from rural areas and increasing urban poverty (Felicien et al., 2018).

The 1930s also kickstarted the process of agricultural modernisation, as the increase in oil revenues translated into imports of supplies, machinery, and agricultural implements (Felicien, 2016), as well as the establishment of strong relationships between agribusinesses and the state (Felicien et al., 2020). During this decade, 'owners of the former agro-export complex were able to take advantage of its existing infrastructure, the inflow of oil dollars, and the newly acquired purchasing power of Venezuela's emerging middle class to shift from exports to imports, giving rise over time to a powerful agri-food import-distribution complex inextricably linked to petroleum extraction' (Felicien et al., 2018, p. 5).

Subsequently, the arrival of the green revolution in the 1950s consolidated economic competitiveness as the guiding principle for

agriculture, leading to planned efforts by technical and political elites to substitute traditional food production with industrial agriculture (Felicien, 2016). These efforts made the Venezuelan agricultural sector the most mechanised in Latin America at the time, combining the use of specialised machinery, improved seeds, and agrichemical inputs (Felicien et al., 2018).

The 1950s also brought the first seed production programs and certification standards, implemented through public-private partnerships, mainly benefiting large-scale companies (Felicien et al., 2020), and aimed at expanding the frontiers of mechanised agriculture (Felicien, 2016). In 1961, an institution dedicated to seed certification was established (SECERSEM) and the first certification regulation (INV-71) was enacted by the Ministry of Agriculture and Livestock. By 1986, general seed standards (NORGESEM) and a National Seed Service (SENASEM) were created (Felicien, 2016). Despite all efforts to strengthen the Venezuelan food system, the sector was still relatively weak, since it operated in an import-focused rentier society, especially in the post-neoliberal 1990s (Buitrago Arévalo, 2016).

Venezuela's agro-industrial sector is still today 'oriented towards importing food to capture foreign currencies that are centralised by the oil industry' (NET007). This was exacerbated after 2003, as oil prices skyrocketed, leading to more caloric dependence on foreign sources (Rodríguez Rojas, 2009). Venezuela's import-based system has an 'oligopolistic structure and is articulated with the transnational agri-food industry … [with Venezuela] as the recipient of [global] agricultural surpluses' (Felicien, 2021, p. 4) including supplies and technologies.

Historically, Venezuelan agro-industrialists have not aimed to develop an agro-industrial sector, but to 'capture the state's foreign currency for their import-export businesses and to expand their capital outside of Venezuela' (NET008). This has resulted in the national agricultural

industry having minimal participation in the internal economy, where just a few big food-producing companies control much of the diet of urban Venezuelans (NET008). This does not mean that transnational corporate interests are absent, as they are strongly represented by national associations or confederations (Felicien et al., 2020).

Seed system generalities

This macro framing of Venezuelan agriculture trickles down to seeds as one of its primary inputs. As Buitrago Arévalo emphasises, 'to understand seed production, it is necessary to understand the developmentalist logic of extractivism in Venezuela, especially oil, since this logic has been the organiser of ways of life and social relations in the country at all scales' (Buitrago Arévalo, 2016, p. 78). Aligned with this logic, the formal seed system in Venezuela has been and continues to be highly dependent on imported seeds produced by private companies and international germplasm banks (Felicien et al., 2020).

At the beginning of the new millennium, there still wasn't enough national seed production to fulfill market needs, and locally produced hybrid seeds responded to outdated quality standards (Felicien, 2021). In addition, quality standards for imported seeds were and still are less restrictive than those for nationally produced seeds (Felicien, 2016). The 2005 National Seed Plan attempted to mitigate these issues but achieved mixed results. This plan was the 'central seed research and production policy … aimed at developing novel varieties that could be used by the majority of peasants' (NET007).

More broadly, the process of capitalist industrialisation of agriculture in Venezuela encouraged the production of a very small number of agro-industrial products, like cereals, textiles, oilseeds, and sugar cane, while ignoring products historically associated with self-subsistence, like grains, legumes, and tubers (Ochoa, 2016). Adding to this, only 11 of the

79 vegetable products in the Venezuelan food system use certified or supervised seeds despite existing formal structures (Miranda & Urdaneta, 2020).

This evidences the importance of non-certified farmer seeds in the Venezuelan food system, which have historically been rendered invisible in national laws and regulations (Felicien, 2016). This invisibilisation has led some authors to state that the seed system is ordered in a racialised manner, with AfroIndopeasant seeds being 'systematically displaced by agribusiness, revealing the supremacist logic of this corporate model' (Felicien, 2021, p. 21). This is just another example of the pervasive agro-industrial bias in state institutions and beyond, as explained in previous chapters.

For confederations representing corporate interests in Venezuela, 'the issue of seeds is concentrated in very few [varieties] … that are part of industry - soy, corn, everything that is part of processes of animal production' (NET008). Confederations work closely with the National Institute of Agricultural Research (INIA, Instituto Nacional de Investigaciones Agrícolas) to develop new varieties or register breeder rights in what represents an 'important state subsidy for the private seed sector' (Felicien et al., 2020, p. 656). A state that responds almost exclusively to the interests of agribusiness.

Relevant legislation

Post-constitutional legislation transformed the food system in Venezuela, setting up the stage for the 2015 seed law. To begin, it is important to mention that Venezuela is not part of the International Union for the Protection of New Varieties of Plants (UPOV), so it is outside of transnational systems for plant variety protection, allowing more flexibility in national laws.

Very soon after the approval of the Bolivarian constitution, the Law of Land and Agrarian Development (2002) set a legal framework for agrarian reform and recognised the *conuco*[51] as a historical source of agrobiodiversity (Article 19). This law privileged collective organisations in agricultural production (Article 4, 5), protected ancestral agricultural techniques while promoting research about them (Article 17, 19), and established measures against large unproductive estates (*Ley De Tierras Y Desarrollo Agrario*, 2002).

In 2008, several laws were approved moving the Venezuelan food system more towards food sovereignty and agroecological framings, these are: The law of integrated agricultural health (*Decreto 6.129, con Rango, Valor y Fuerza de Ley de Salud Agrícola Integral*, 2008), the law of management of biological diversity (*Ley de Gestión de la Diversidad Biológica*, 2008), and the organic law of agrifood security and sovereignty (*Decreto Nº 6.071, con Rango, Valor y Fuerza de Ley Orgánica de Seguridad y Soberanía Agroalimentaria*, 2008).

The law of integrated agricultural health includes provisions for the development and promotion of agroecology and expanding popular participation in agricultural health. Crucially, it positions agroecology as a pathway for the transformation of the national social and economic model. The law of management of biological diversity aimed to preserve and re-establish ecological balances that would allow humans and other living beings to live in harmony with their environment. It also established the need to prevent negative impacts of GMOs, and to include traditional knowledge related to biodiversity (Article 2).

The organic law of agrifood security and sovereignty establishes agrifood sovereignty as the right of a nation to define and develop agrifood policy according to its own needs. This includes a recovery of

[51] A system of shifting cultivation in smallholdings typical of peasant, family, and community agriculture.

traditional agricultural practices and technologies with a focus on the sustainable development of future generations (Article 12), as well as the development of new technologies (Article 15). It also promotes the fair distribution, exchange, and commercialisation of food products, including barter and other forms of non-monetary exchange (Title III). Finally, it establishes participatory planning instances in multi-scale agrarian assemblies inclusive of peasant producers (Chapter 2, Second Section).

It is important to mention here the 'all hands to sowing' programme implemented since 2009 by the Ministry of Popular Power for Education. This initiative incorporates agroecology curricula into the Venezuelan education system as a transition strategy from an agrichemical to an agroecological model. Curricula includes agroecological soil management; water and agroecology; ecological control of insects, disease, and spontaneous vegetation; and seeds. This last item aimed to define seeds as of strategic importance for food sovereignty and includes thematic contents such as seed selection, importance of peasant seeds, basic seed quality tests, and socialist seed distribution, among others (*Resolución Ministerial* N° 024, 2009).

Additional contours

There are four additional variables of Venezuelan food systems worth mentioning: i) AfroIndopeasant agriculture plays an important role in national food production; ii) Venezuela has avoided transgenics; iii) there are many contradictions in the implementation of legislation and the Bolivarian model; and iv) food sovereignty social movements have grown considerably during the Bolivarian Revolution.

First, traditional Indigenous, Afro-Venezuelan, and peasant agriculture play an important role in feeding the country. The *conuco*, an ancestral agricultural institution kept alive by small-scale farmers today,

is responsible for a large amount of national food production. It is important to situate this phenomenon historically, as food exports during the colonial period were produced by colonial elites in large plantations using mainly slave labour, while labourers used communal plots called *conucos* for their subsistence (Felicien et al., 2018). This persists to this day, with the organisation of agro-industry on mechanised large estates, while AfroIndopeasant agriculture occurs on smallholdings still generally referred to as *conucos*.

Second, despite Venezuela having a high concentration of land tenure with a predominance of large estates, 'it was always much more profitable for capital to appropriate oil income via imports, and not via the occupation of the land with technologies that are … expensive and that imply [capitalists] have to work' (NET007). This means that Venezuela is 'outside of the frontiers of transgenic monoculture expansion, because of its role as oil provider' (NET007). In addition to this, then President Chavez issued what could be interpreted as an informal prohibition of transgenics in 2004 (Felicien, 2016). During his recurring televised program Aló Presidente, Chavez stated - 'here in Venezuela we are working, and we have already banned a trial that they wanted to introduce here with transgenics, and we are putting up the respective barriers at national level to transgenics, which do a lot of damage to agriculture and above all to the sovereignty of our peoples' (Instituto IAEPHCH, 2004). After 2004, the Institute of Integrated Agricultural Health ensured that seeds entering the country weren't transgenic (NET007), but presently no law explicitly forbids the use of transgenics in the country.

Third, there are many contradictions in Venezuela's food system that have only increased in recent years due to the systemic crisis of the Bolivarian model. Worth mentioning are:

i) Conflicts between national and supranational legislation, as exemplified by the unconstitutional recognition of plant breeder rights as part of Venezuela's entry to the Andean Community of Nations (Felicien, 2016).

ii) A decrease in per capita agri-food production, while dependence on food imports increased throughout the Bolivarian Revolution (Gutiérrez, 2015). These imports are often part of state-run food programs allocating state oil revenues to the private agri-food import-distribution complex, effectively subsidising powerful companies (Felicien et al., 2018).

iii) Implementation of humanitarian aid stemming from the current economic crisis has led to 'new dynamics of reinforcing control over … seed systems' (Felicien, 2021, p. 21).

As Buitrago states, despite the Bolivarian Revolution, 'the lack of a diversified productive matrix makes Venezuela vulnerable to an onslaught from the hegemonic world order of corporate agribusiness' (Buitrago Arévalo, 2016, p. 79). As many Venezuelan researchers agree, these issues 'are symptomatic of the fundamental structural problems of a food system based on imports and dominated by the interests of capital, through deep [capital-state] alliances that have been forged over the course of history' (Felicien et al., 2018, p. 22).

Finally, the last 20 years have seen an increase in the number and strength of social movements concerned with food sovereignty and agroecology (Felicien et al., 2020). This has to do with the framing of Venezuela as an eco-socialist space where an ongoing revolution moves towards alternatives, but also with the global spread of these concerns, as exemplified by organisations like La Via Campesina which coordinates

organisations globally around issues of peasant and family agriculture, as well as food sovereignty.

Over the last two decades, important spaces for seed production, knowledge production, and training emerged, playing an important role in configuring a seed movement in Venezuela (NET007). Collectives like PROINPA (Red de Productores Integrales del Páramo) in Merida (focused on the recovery of native potato varieties), 'Sin maíz no hay país' in Guanape (focused on corn), or Monte Carmelo in the state of Trujillo. This movement has been promoting transformations in the Venezuelan food system beyond formal institutions, by strategically using leverage points in their interactions with the state as political opportunities emerge (Felicien et al., 2020).

The following section reviews the process by which the 2015 seed law was approved from the perspective of social movements. This law was arguably the biggest historical victory for marginalised food producers in Venezuela, and is a process recognised globally for its progressiveness.

Path to the 2015 seed law

National peasant seed day

As a product of articulations between native seed guardians and INIA, a day to celebrate peasant seeds was instituted in Venezuela in 2005. Every October since, diverse seed system actors gather in the village of Monte Carmelo to share knowledge, exchange native seeds, and resist transgenics and capitalist agriculture. Monte Carmelo has become the 'meeting place for all small, large, new, and traditional seed initiatives' (NET008). Moreover, this space and the experiences it has enabled have become a 'benchmark for the issue of peasant seeds in Venezuela' (NET007) and were a 'very important part of the process of generating the [2015] Seed Law proposal' (NET008).

Two instances of the National Peasant Seed Day (Día Nacional de la Semilla Campesina) will be explored in this section, its first and seventh iterations. The first iteration produced the declaration of peasant seeds, which evidences the goal of solidarity between farmers and seeds, cementing the non-modern foundations of this space which would inform the transformation process to come. By its seventh year, this space had consolidated as a powerful political force in opposition to capitalist agriculture. It readied for mobilisation, using the participatory legal frameworks of the Bolivarian Revolution to draft a proposal for the 2015 Seed Law, ultimately transforming national food system rules.

A non-modern seed is planted

In 2005, as part of the first National Peasant Seed Day, participants signed a declaration of peasant seeds. The text written by peasant farmer Gaudy María García is translated by the author in its entirety, as it exemplifies the intention of these networks to acknowledge non-human perspectives:

We, the peasant seeds gathered in an assembly with the farmers of Monte Carmelo, declare:

That we are the hope for feeding our peoples.

That for centuries we have filled stomachs, pockets, marusas,[52] *sacks and barns.*

That we are part of the Venezuelan people, because we're always together at breakfast, lunch, snacks, and dinner.

That in addition to being food, we are medicine and joy for peasants.

That we are born and give life for love, and with the love of the humble and genuine peoples of the countryside; and that we like to be cultivated as in the last century, without receiving so much mistreatment.

[52] A 'marusa' is a sac or bag used by peasants and made of woven fibres or paper.

That despite the persecution and mistreatment received by other more powerful seeds, we are still huddled in Monte Carmelo.

That with courage and bravery we have resisted the inclemency of herbicides and insecticides spilled on us.

That we are born from the womb of mother earth and that we cry with her for her deterioration and the little love she receives.

That we are friends with insects, birds, and microorganisms.

That we like to be caressed with fresh water when we are already planted.

We like to be sung songs of love and fertility with a voice of patriotism and national identity.

For these reasons and many more we shout to the world:

That we need to meet with all the seeds of the world, especially those of Latin America and the Caribbean.

That seeds configure as cooperatives to defend our existence.

Let those who don't know us get to know us and reproduce us and support us in our just demands.

That the creation of Autochthonous Seed Banks be promoted in all Venezuelan villages.

That love for us be promoted in schools, high schools, universities, and in any educational centre.

That girls and boys play with us when they are cleaning us to cook us.

May we never be missing as food from the tables of Venezuelans.

That we, peasant seeds, can live and enjoy together with men, women, boys, girls, adolescents, and young people in an environment without pollution from agrochemicals and industrial waste. Avoid at all costs being displaced by transgenic and imported seeds. Be ourselves with our own flavour, colour, and smell.

The seeds of Monte Carmelo, together with their industrious friends, inhabitants, and servants of this village; we declare today, October 29, the Day of the Peasant Seed so that it is celebrated every year on this same date throughout

Venezuela, with the pertinent respect and honours that such a memorable date represents for the Venezuelan people.

Finally, seeds present in this assembly agree in consensus and unanimously: disseminate a copy of this declaration throughout the world.

Given, signed, and sealed in Monte Carmelo, on the twenty-ninth day of the month of October 2005.

For peasant seeds in compliance, signs: The paspasa seed.

(Waraira Repano, 2013)

Moment zero

Seven years after the signing of the declaration of peasant seeds, the first international meeting of seed guardians was held in Monte Carmelo in 2012. More than 300 people representing 100 organisations attended the event, including people from Argentina, Bolivia, Brazil, Colombia, Ecuador, El Salvador, México, Paraguay, Uruguay, and Venezuela (GRAIN, 2017). The meeting was organised under the slogan: 'Guard the knowledge of the best seeds of the best blossoms to guarantee anti-capitalist food independence' (Participantes 1er encuentro internacional de guardianes de semillas, 2012).

The agenda included an exchange of rituals and *pagamentos*[53] associated with seeds and the *conuco*, as well as seed exchanges. In fact, one of the requirements to attend was to bring local seeds to barter with other participants. One of the objectives of the meeting was to promote dialogue between guardians in three roundtables about: i) strategies and spaces for seed production, custody, and multiplication for the preservation of seed biodiversity and the *conuco* economy; ii) traditional protocols, legislation, and public policies for the preservation of seed biodiversity; and iii) pedagogical and communication strategies for the preservation of seed biodiversity.

The meeting produced a declaration framing seeds as the patrimony of humanity and not the property of a few corporations and rejecting the use of transgenics and agrichemicals. The declaration framed local knowledge-holders (*maestros-pueblo*) as leaders in the transformation of the economic system. It set out to overcome understandings of knowledge production as exclusive to universities and official institutions, attempting to 'lift the veil' of capital that hides the sacred bond between food, medicine, and seeds. The declaration was oriented

[53] 'Pagamento' is the act of making ritualistic offerings to land, food, spirits, etc. for good crops.

around four axes: i) production, custody, and multiplication; ii) legislation and public policies; iii) research and education; and iv) communication (Campaña Venezuela Libre de Transgénicos, 2016).

Axis I demanded preservation of Indigenous and peasant seeds, as well as water and *conuco* culture. It declared a continuous resistance to 'Capitalism, Imperialism, Large estates, Monoculture, Transgenics, Agrochemicals, and the Gospels according to empire and Wars' (Participantes 1er encuentro internacional de guardianes de semillas, 2012, p. 3). It established a commitment to self-governance to maintain seeds in the hands of popular power, by creating seed houses and fostering seed exchanges.

Axis II reinterpreted the ecological framing of the 2013-2019 government development plan to propose a new national objective: 'recognise and respect the rights of mother earth as the basis of *buen vivir* to overcome capitalism and the overarching civilisatory model' (Participantes 1er encuentro internacional de guardianes de semillas, 2012, p. 3). For participants, this would translate into the other two objectives, the protection and promotion of AfroIndopeasant seeds and associated knowledge, as well as maintaining Venezuela as a country free of transgenics.

Crucially, the 2012 National Peasant Seed Day celebrations coincided with news that a seed law was being discussed in the National Assembly. Participants 'didn't know much about the contents of the law, so [they] agreed that people living closer to Caracas (which is the centre for decision-making) should monitor what was happening and try to influence the elaboration of that law' (NET007). In line with this, axis II included a demand to participate in the construction of the new Venezuelan seed law (Campaña Venezuela Libre de Transgénicos, 2016).

Axis III sought to 'rescue' Indigenous and peasant knowledge, as well as to recover traditional food and medicinal memory. It advocated for the inclusion of this knowledge in schooling at all levels and committed to developing participatory and emancipatory seed research. Finally, axis IV established the Venezuelan National Seed Guardian Network, and linked this to other initiatives happening in Venezuela and Latin America. The network also committed to developing a large communications campaign to publicise the 'emancipatory capacities of Indigenous and peasant seeds' (Participantes 1er encuentro internacional de guardianes de semillas).

The 2012 National Gathering on Peasant Seeds also led to the launch of the Campaign for a GMO-Free Venezuela (Campaña Venezuela Libre de Transgénicos). The Campaign grouped a diverse range of actors under a common banner beyond differences in existing agendas to intervene in the seed law process (Felicien et al., 2020). It enabled an encounter between two spheres, urban movements (young people, intellectuals, environmental activists, diversity activists, etc.) and rural/peasant movements. These stakeholders shared environmental, agri-food, and ecological concerns converging in the issue of transgenics (concerns exacerbated by social media at the time).

News of the proposed seed law led these seemingly disparate actors to 'move, at least to ask: 'What's going on? Where does it come from? Who's proposing this?' ... to ask what was happening and make a counterproposal' (NET007). Adding to these emerging coalitions, the Venezuelan congress on biodiversity was also held in 2012, with a wide range of actors focusing on rescuing traditional seeds. Interestingly, around this time the Colombian documentary 9.70 (discussed in chapter 4) was being broadcast on national television. This led informal(ised) seed system actors to 'raise the alarm, [as the documentary] made it easier for us to understand the risks ... deriving from the implementation of laws that are basically anti-peasant' (NET007). Understandably, the dynamism

of the seed sector throughout the year has led many to frame 2012 as 'moment zero' for the 'battles around the seed law' in Venezuela (Felicien et al., 2020, p. 659).

2013-2015 Seed law battles

Death of Chavez, a call to attention

Hugo Chavez, the figurehead of the Bolivarian Revolution died in early 2013. His passing opened a space of uncertainty, despite leaving behind a strong legacy with the 1999 constitution. For food sovereignty social movements, his death was a wake-up call, infusing movements with a 'new sense of energy and urgency, especially with the risk of clashing institutional orientations of the state shifting further away from radical agrarian politics and more towards depoliticised technological solutions' (Felicien et al., 2020, p. 660).

The movements also reflected on the role Chavez had played in activating popular power and creating the structures to mobilise it (Felicien et al., 2020). An arena that network participants were keen to take advantage of, especially since by this point, they felt empowered after a decade of multiple organisational efforts consolidating in the country (NET008).

Due to the death of Chavez, GMO-Free Venezuela redoubled its efforts. By then, the campaign had grown considerably, linking both rural and urban social movements united mainly by a vision of popular control of the food system, beginning with seed sovereignty (NET008). The campaign's vision also included a resistance to industrial agriculture, identification with transnational food sovereignty principles, and an affinity with place-based agroecology (Felicien et al., 2020). The campaign made its first public appearance in May 2013 as part of the global March against Monsanto, an event they leveraged to raise

awareness of the discussion being held around a new seed law. On that day, the campaign collected signatures on a statement that was sent to the National Assembly, which opened a space for participation in the subcommittee discussing the upcoming law (Felicien et al., 2020).

Drafting a new seed law

The Campaign for a GMO-Free Venezuela started attending meetings of the Permanent Subcommittee on Agri-food Development in the National Assembly, along with representatives of several ministries, the Ombudsman's Office, and the Universidad Bolivariana. The campaign wanted to audit and demand popular participation in the creation of the law, commenting on a first draft which had been developed by the technical commission of the National Assembly (Campaña Venezuela Libre de Transgénicos, 2016).

From these meetings, the subcommittee organised popular constituent debates to discuss the law. Eventually, the debates produced an amended draft which was leaked to the campaign by an ally inside the National Assembly. This draft showed that input from social movements was absent, reflecting existing agro-industrial biases. It demonstrated that 'many government officials believed that peasant-based agriculture was politically correct but not technically correct' and that, despite participation by the movements, 'altered state-society relations do not automatically translate into altered state-capital relations' (Felicien et al., 2020, pp. 657–660).

As a response, the campaign organised protests, social media campaigns, collected signatures, and strengthened its alliances with government actors. This second round of activism led to an agreement with the National Assembly that the law would be developed with social movement participation through a mixed process of legislative and popular power. That is, people would create the law beyond just a

process of consultation to validate an existing proposal (Felicien et al., 2020).

Recalling the political and legal tools created by the government under Hugo Chavez, this process was framed by the movements as an exercise in 'street parliamentarism'. Popular organisations leveraged the opportunities for participation that such institutions provided to effectively take over the seed law process (NET008). In late 2013, the campaign met again in Monte Carmelo for National Peasant Seed Day, for the first meeting to discuss the law. This kickstarted two parallel strategies - a series of public consultations by the National Assembly, and a popular constituent debate organised by social movements (Felicien et al., 2020).

The process spilled over to the public, moving beyond interested parties to become a national discussion. As the movements increased their participation in the drafting of the law, the seed industry took to the press to reassert their positions. The Campaign for a GMO-Free Venezuela saw this initially as a threat, but quickly realised that it favoured them, since the topic was on everybody's lips.

The wider public knew that discussions were being held, that issues with transgenics were part of the debates, and that a seed law was in the works. This awakened broad solidarity, turning the street parliamentarism process into a 'movement with national and international presence, [with] statements of solidarity from other movements, ... signatures from academics, and ... more initiatives supporting it' (NET008). The social movements also deployed other narrative strategies to sway public opinion, namely, referring to the president of the subcommittee – and proponent of the law – as 'Deputy Monsanto', a moniker that stuck throughout the whole drafting process (NET008).

This process shifted the coalition from a defensive to an offensive position. The drafting process was framed as a confrontation with a clearly delineated enemy - corporate interests protected by the state. The movements would develop a draft of the seed law to counterbalance the initiative presented by the National Assembly. This coalesced all social movements involved. As expressed by a participant, it 'unified the people a lot ... it's not that we're going to negotiate a law! We're going to work on a law that opposes this other option' (NET008).

In this space, discussions moved from what should be resisted, to proposals on what the law should be. Mainly, visibilising and re-valuing AfroIndopeasant seed knowledge(s) and practices, as well as the *conuco* as a valid form of production (Felicien et al., 2020). One of the activists involved refers to this process as having two stages: 'First, the movement was weak and appeared like spoiled youngsters who didn't want transgenics. [Technicians mobilised] their pseudo-technical discourses [to frame the movements as] against global technical progress, cutting-edge technologies, and whatnot. But later, as street parliamentarism and agency were really taken up by the people of the street, especially from the rural street, from the fields ... they changed things, they organised their own consultation systems from town to town' (NET008).

It was through this shift that the coalition decided to move beyond commenting on existing drafts and produced their own version of the law 'article by article' (Felicien et al., 2020, p. 663). This popular debate ended up taking three years, as workshops were held across the country to gather people's opinions. These spaces allowed for a deeper 'articulation of different experiences working on the issue of peasant seeds at the national level, allowing [the campaign] to have a broad picture of the diversity of experiences, struggles, perspectives, types of seed, types of technologies, and actors' (NET007).

Plan de la patria 2013-2019

A crucial element that energised the Campaign for a GMO-Free Venezuela and opened more spaces for it in the seed law discussions was the approval of the Plan de la Patria 2013-2019 (Plan of the Fatherland 2013-2019). In 2013, President Nicolas Maduro presented this six-year economic and social development plan for Venezuela, which had been developed by Hugo Chavez before his death.

The plan was approved by the National Assembly in early December, with the vision of 'turning Venezuela into a national power in the social, economic, and political spheres, highlighting the idea of national power associated not only with the economic and productive component, but also with the social dimension, as well as a power supported by transformative education. *All in service of a vision of a relationship between humans and nature in which the latter is considered as a subject and not as a mere commodifiable object* [emphasis added]' (Asamblea Nacional de la República Bolivariana de Venezuela, 2013, p. 5).

Under this vision, the plan focused on the following objectives:

i) Defend, expand, and consolidate the most precious asset reconquered after 200 years: national independence.
ii) Continue building Bolivarian socialism of the 21st century in Venezuela, as an alternative to the destructive and savage system of capitalism, and thereby ensure the 'greatest amount of social security, the greatest amount of political stability, and the greatest amount of happiness' for our peoples.
iii) Turn Venezuela into a powerful country in the social, economic, and political spheres within the emerging great power of Latin America and the Caribbean, which

guarantees the formation of a zone of peace in our America.

iv) Contribute to the development of a new international geopolitics in which a multicentric and multipolar world takes shape, allowing balance for the universe and guaranteeing planetary peace.

v) Preserve life on the planet and save the human species.

As part of these objectives, the plan included (among other points), a strengthening of popular power to be mobilised towards emancipation. Achieving food sovereignty by eradicating large estates and increasing peasant access to agricultural inputs and popular power, promoting

> diversified production models, based on family, peasant, urban, peri-urban, and Indigenous agriculture, recovering, validating, and disseminating traditional and sustainable production models (Asamblea Nacional de la República Bolivariana de Venezuela, 2013, p. 10).

Objectives also included consolidating a transformative, diverse, and creative scientific, technological, and innovative style geared towards solving the needs of Venezuelans under a socialist ethics. Promoting the inclusion and *vivir bien* (good living or living well) of Indigenous peoples, consolidating a vision of heterogeneity and ethnic diversity, with respect for and participatory inclusion of minorities and native peoples. As well as 'dismantling and fighting against international schemes that promote the commodification of nature, environmental services, and ecosystems' (Asamblea Nacional de la República Bolivariana de Venezuela, 2013, p. 25).

Additionally, a national adaptation plan would be designed to allow the country to prepare for climate impacts as a 'consequence of the irresponsibility of industrialised nations, polluters of the world' (Asamblea Nacional de la República Bolivariana de Venezuela, 2013, p. 26).

Finally, the Plan de la Patria 2013-2019 aimed to counteract the production and valorisation of cultural elements and historical narratives generated from the dominant neocolonial perspective.

As is evident from the text, the Plan de la Patria 2013-2019 doubles down on the eco-socialist framing of the Bolivarian Revolution. It situates the country in a cataclysmic climate crisis produced by rich nations and pervasive narratives of nature as a commodity. Of special relevance to seed system transformations, it positioned food sovereignty and decolonial knowledge(s) as key elements for achieving post-capitalist wellness. Despite the plan's inclusion of oil exploitation as the engine for development, it delineates a clear direction towards post-Development. This macro-level framing of Venezuela and its institutions allowed seed movements to validate their narratives and practices to continue the push to transform seed system rules.

2015 Last push to transform seed systems

Over the period of 2013-2014, seed system stakeholders in Venezuela had engaged in public consultations and a popular constituent debate to draft a new seed law. However, it was evident that these processes were being held in parallel, with little cross-pollination between stakeholders. In early 2015, four different versions of the law were presented in public consultations - one from the National Assembly, one from INIA, one from FEDEAGRO (the main confederation of mid- and large-scale producers in Venezuela), and one from the Campaign for a GMO-Free Venezuela (Felicien et al., 2020).

Several points of contention emerged when comparing these drafts. Some stakeholders pushed for more state control and financing, others wanted more intellectual property protections and promotion of genetic engineering. Meanwhile, the campaign kept pushing for the inclusion of AfroIndopeasant seed practices. Social movements problematised the

contradictions between intellectual property rights (IPR) and the rights of farmers, particularly the irrelevance of IPR in traditional collective forms of production by small-scale farmers based on care systems (Felicien, 2016).

In line with this perception of incompatibility, the campaign's initial proposal argued for two different systems (formal and informal), each with its own law. This would allow for recognition of new diverse subjectivities in the system, while also acknowledging those already recognised and validated by certification and quality control schemes (Felicien et al., 2020).

As the last trimester of 2015 approached, the social movements organised the VI Venezuelan Congress of Biological Diversity. This space was the product of new government and social movement partnerships favoured by allies of the Campaign for a GMO-Free Venezuela in the National Office of Biodiversity (ONDB). The theme of the event was 'seeds for life and for food sovereignty', and the final declaration, signed on October 12, urged seed system stakeholders to enact the seed law as proposed by popular power (Congreso Venezolano Diversidad Biológica, 2015). The recently formed Ministry of Eco-socialism and Water (with oversight over ONDB), INIA, the National Assembly, and the campaign came together after the event to develop a final proposal for the seed law based on a consensus (Felicien et al., 2020).

The campaign shifted its position on having two separate laws, agreeing that formal and informal seed systems should operate under the same law. This change stemmed from recognition that producers used both systems simultaneously, but more importantly, that the uniqueness of the law comes in part from reflecting 'both the reality of the here and now, as well as the aspirations for a radical transformation of the food system based upon principles of food sovereignty. That both short-term and longer-term visions are reflected in the law, as well as mechanisms

for the attempted transitioning from reality to vision' (Felicien et al., 2020, p. 665).

By late October of 2015, the race was on to finalise a coordinated draft of the seed law and get it approved before year's end. There was a sense of urgency from the Campaign for a GMO-Free Venezuela, since in 2016 an opposition majority would be in control of the National Assembly. During one of the last parliamentary sessions of the year, the law was approved, thanks in part to the Chavista majority in power (NET007).

As some researchers have recounted, the law almost wasn't approved; it required a 'groundswell of mobilisation from below, together with critical openings within the state' (Felicien et al., 2020, p. 649). The success of social movements has been attributed in part to having an 'irreverence' for the law, an attitude that along with Bolivarian participatory institutions enabled a perception of the state as 'hackable' (Felicien et al., 2020).

The approval of the law was celebrated by social movements as a great achievement. As was recounted by one of the proponents - 'in that semicircle, on those balconies, people from the movements … with the strength [of their] work. The formation of … new self-esteem, gained by [their] seeds and [their] knowledge, defending and asking for the approval of the seed law … well, [it was a] great party' (NET008). Indeed, the victory achieved was no small thing, as evidenced in the next section where the final text of the law is examined.

2015 Venezuelan seed law

This section will focus on those aspects of the law that promote the inclusion of historically marginalised actors, who, despite playing a key role in national food production, were absent from its legislation. As Pablo, one of the seed guardians put it: 'The importance of this new law

is that it will allow us … the exchange of experiences and participation, which we will all have equally. Here in this law, we are not going to be excluded, we are going to have full participation in all the decisions that have to do with the production of food for our country, for our people' (Pérez, 2016, p. 99).

It is important to emphasise that inclusion of informal(ised) actors does not mean exclusion of formal system actors; the law acknowledges the existence of two seed systems: i) Industrial seeds subject to certification, and ii) AfroIndopeasant and local seeds. The law sets out to strengthen the national seed system from an agroecological socialist vision, prioritising national seed production, and valuing AfroIndopeasant and local seeds, while resisting seed patents and prohibiting transgenics from entering the country (*Ley de Semillas*, 2015).

The law aims to encourage a transition from conventional food production (monocultures, agrichemicals, industrial seeds) towards sustainable agroecology. It seeks to protect agrobiodiversity through the production of AfroIndopeasant and local seeds. Crucially, it re-values and re-legitimises local, traditional, and ancestral knowledge(s), wisdom(s), beliefs, and practices. To implement all the above, it directs the 'organisation and planning of public policies in function of different scales of production, differentiating policies destined for family agriculture or pluricultures in micro-spaces of production, from those of big producers' (*Ley de Semillas*, 2015, para. 9).

The law recognises seeds as living beings that are constitutive of Mother Earth, and as such, subject of rights and rules on the preservation of life on the planet and the conservation of biological diversity. Seeds are also framed as a common good of public interest and the public domain. More broadly, the law is framed under principles and values that include: i) fighting against the poverty and exclusion produced by capitalism and neocolonialism; ii) practicing equity, inclusion,

emancipation, gender equity, social justice, buen vivir, among other values; iii) recognising the interculturality present in the seed; iv) promoting solidary seed exchanges and free access to seeds against intellectual property and patents, thereby defending AfroIndopeasant and local seeds from biopiracy; and finally, v) promoting agricultural knowledge exchanges (*Ley de Semillas*, 2015).

The law recognises popular power by establishing bodies like the Popular Council for the Safeguarding and Protection of Local, Peasant, Indigenous and Afro-descendant Seed (Pérez et al., 2016). It creates free seed licenses to protect local seed knowledge from biopiracy and appropriation via patents. It denominates as 'maestres pueblo'[54] the people that create, possess, bear, and transmit oral, popular, and community tradition, as well as AfroIndopeasant knowledge(s), practices, and beliefs on biodiversity (*Ley de Semillas*, 2015).

The role of 'maestres pueblo' is part of the broader recognition and revitalisation of traditional AfroIndopeasant and local knowledge in the law (Felicien, 2016). This includes a commitment to the buen vivir of AfroIndopeasant and local populations, and a promotion of the *conuco* as a sustainable mode of production. These recognitions are paired with the promotion of production, distribution, circulation, exchange, and consumption of AfroIndopeasant seeds, the validation of participatory quality assurance systems, and seed collection and storage centres (all under principles of co-responsibility).

It is important to reiterate that these provisions for AfroIndopeasant seeds do not exclude industrial seeds that are subject to certification. The law also creates a National Seed Commission to oversee the national

[54] The Spanish phrase 'maestres pueblo' (popular teachers or knowers), refers to local knowledge-holders, particularly those community experts with experience of local seed varieties. In the legislation, they are referred to in the masculine as 'maestros pueblo', but here the author chooses to use the genderless 'maestres'.

seed registry (RENASEM), encourages the creation of germplasm banks, and promotes seed technological innovation (*Ley de Semillas*, 2015). The law distinguishes research on certifiable seeds and traditional knowledge(s) of seed improvement, but importantly, it creates a third space of co-responsible participatory research which would evolve into an institution to be named the Scientific-peasant Alliance.

The approval of the 2015 seed law was one of the final acts of the Bolivarian-majority National Assembly (Felicien et al., 2020). The law granted recognition to long-standing agricultural practices that have been an essential part of the Venezuelan food system. As expressed by one seed activist, 'what we did was collect those practices and have them recognised by law so that they were not illegal or outlawed, which is what other laws do, they begin to criminalise traditional practices. We made them part of the seed system and on par with everything that has to do with certified seeds' (NET007). For seed guardians, this is an extraordinary victory, especially in a space with so many interests and a historical trajectory that has favoured the elites. For Venezuelan SGNs, 'all these policy programs in favour of agroecology, food sovereignty, and peasant seeds were the result of a process [of resistance] that is 500 years in the making' (NET007).

The spirit of the law is to acknowledge modern biases concerning knowledge, technology, and human-nature relations, to open up transmodern spaces that aim to close the divide between the modern and non-modern. However, the implementation of such an ambitious project faces countless obstacles that produce more questions than answers regarding the integration worldviews in food systems. The next section describes the multiple crises faced by the Bolivarian Revolution after the approval of the seed law, and the continued efforts of SGNs to maintain recognition and consolidate novel institutions.

Bolivarian revolution in crisis (2015-present)

While some people might argue that Venezuela has been in crisis since the rise to power of Hugo Chavez, it is clear that the drop in oil prices of 2015 was the key moment that plunged the country into an emergency. Since 2015, Venezuela has been suffering from hyperinflation, an increase in morbidity, hunger, and crime, and a scarcity of medicine and other essentials. Other issues include fuel shortages, institutional deterioration, and currency devaluation (Felicien, 2021). The situation is so complex that it resulted in the biggest mass migration in Latin America's modern history. By some estimates, nearly seven million people have fled the country to find better opportunities, mainly in other Latin American countries (Agencia de la ONU para los Refugiados, 2023).

Impacts on the food system

In a heavily import-based food system, the crisis impacted seeds in two particular ways: i) there was a considerable reduction of imported seeds in the Venezuelan market; and ii) when these seeds did circulate, they were out of reach for the average farmer by being priced in US dollars. This led to widespread recovery of native seeds and people organising networks of seed growers. Farmers occupied land no longer used for industrial agriculture to expand the *conuco* model, growing vegetables, old varieties of peas and wheat, among other crops. However, the crisis also left some people trapped in a logic of scarcity, increasing aid dependency, and preventing farmers from fully developing their productive capacities (NET007).

In recent years there has been a reconfiguration of the forces of agribusiness, with chemical inputs again becoming available, and hybrid and probably transgenic seeds circulating in Venezuela. Between 2018 and 2020, new informal contraband markets for certified seeds emerged,

selling imported seeds on Instagram or WhatsApp (Felicien, 2021). Some of these seeds do not align with existing national certification standards, so there is no way for consumers to complain if they are of poor quality. One of the commitments of the state was to monitor and control certified seeds, which has not been fully implemented, probably knowingly in order to manage the national food crisis (NET007).

Impacts on social movements

For some participants, Venezuelan defenders of AfroIndopeasant seeds cannot be considered a social movement, as they do not have homogeneous forms of organisation with clear agendas and programs. However, there are diverse levels of articulation, exemplified by the National Peasant Seed Day, which continues to be celebrated to this day. As one participant puts it, 'we could say that we have some level of dispersion, because everyone returns to their territories to continue building their own spaces. But when it is necessary to advance transformations, there is a concrete articulation … the response is very quick' (NET007).

New divisions emerge

In the context of expanding and contracting articulation between multiple stakeholders with diverse agendas, the material conditions of the country have put a significant strain on social movement alliances. The 2015 seed law was in part developed as a transition strategy from agro-industry to agroecological and AfroIndopeasant *conuco*-based production. However, the current crisis makes previous agreements more tenuous. As described by one participant, some territories that were symbolic in the defence of AfroIndopeasant seeds and the *conuco* economy are now positioned as a key part of agribusiness (NET007).

For NET007, the material crisis of the Bolivarian Revolution revealed tensions between different networks that were not evident before. This is exemplified in the articulation that existed during the battles for the seed law with agrarian reform networks that are against large estates but still pursue industrialisation via mechanisation, hybrid seeds, etc.

NET007 sees in this case a disjunction between discourses and practices affecting the politics of the movement. While there may be commonalities in narratives, there are no coincidences in practices (agroecological and AfroIndopeasant *conuco*-based production). For this participant, this has to do with 'the historical perspectives of the Left in general … with those notions of, basically, modernity [i.e. industrialism] that still prevail in this agenda' (NET007).

Openings from COVID-19

With the implementation of COVID-19 restrictions, the 2020 National Peasant Seed Day had to move to a virtual space. Participating networks created a WhatsApp group, and the event was held in a decentralised and dispersed manner throughout the year, celebrated as each region saw fit (NET008). This virtual space has become more important over the last few years, as the crisis led to shortages of petrol collapsing public transport, and frequently interrupting public services like telephone lines (NET007, NET008).

Through WhatsApp, interested parties are permanently connected; some 'groups keep in touch more, others don't, but everyone here knows who's who in the area of seeds and there's always interaction' (NET007). WhatsApp chat participants are widely diverse and demonstrate the intercultural nature of the movement. There are representatives of peasant women, of urban agriculture, of Indigenous groups from the Amazon such as the Piaroa and Kumea peoples, and of education initiatives like 'Todas las Manos a la Siembra' (All Hands to Sowing). There

is even representation from all regions of the country, ethnicities, ages, and agricultural practices.

Participants are sometimes surprised to see who is in the chat group, as when the Minister of Urban Agriculture suddenly sent them a greeting (NET007). For guardians, this space has served several purposes - 'a lot of information of all kinds is shared, decisions of a more political nature [are made], but also particular techniques, calls for activities, exchange spaces. Over [the chat] we coordinated several of the seed exchanges that took place last year and, well, I think it fulfills an interesting function now in terms of the interconnectivity of that network' (NET007).

Attacks to the law

Throughout 2016, a grassroots effort to inform the population about the new seed law was carried out in four regions of the country. Agribusiness attacks to the law intensified during this period, framing it as anti-scientific, anti-biotechnology, and biased towards local seed systems (Felicien et al., 2020). These attacks came mostly from opposition[55] deputies that mocked the recognition of AfroIndopeasant seed practices and the *conuco* (Felicien et al., 2018). For some researchers, this resistance reveals a 'contentious politics of knowledge at play' (Felicien et al., 2020, p. 668).

These attacks came as a surprise to some SGN participants, since their perspective is that the law did not affect industrial interests. Rather, it allows certified seeds to circulate with institutions and procedures for their regulation, only prohibiting GMOs (NET008). However, on the multiple occasions when the opposition has declared the collapse of the Bolivarian government and established 'ghost' governments or parallel

[55] The opposition came from the 'Democratic Unity Roundtable' party (MUD, from its initials in Spanish).

assemblies, 'one of the first things they do is … put together a proposal for a seed law, … so it is clear that it is on their agenda' (NET008).

Implementation of the law

Despite government efforts, implementation of the 2015 seed law has been limited. The multidimensional crisis of the Bolivarian model has played a big role in this, as, for example, not enough technicians are being educated and the few that are working cannot travel to the regions due to the lack of petrol (NET007). As mentioned in a previous section, some institutions have been created for the 'formal system' (i.e. RENASEM), but are not playing an active role controlling certified seeds.

Some 'informal system' institutions have not been created. A Popular Seed Council was proposed, but after some attempts to get it going, it has not been established. The networks created an online peasant seed information system called 'el conuco', but documentation of cases has been slow, as there are severe limits to communication (e.g. blackouts or internet outages). As expressed by a participant, 'implementation has been lethargic due to the crisis' (NET007).

The implementation has also seen some successes, like the formation of the National Seed Commission or the development of the People's Seed Plan, 'an ongoing process of articulation among grassroots actors from across the country to coordinate efforts on the production and exchange of seeds' (Felicien et al., 2020, p. 667). Of particular interest to this research, the Scientific-peasant Alliance is being implemented by the Corporation for Scientific and Technological Development (CODECYT).

This initiative joins technoscientific knowledge and popular knowledge(s) to develop agroecological alternatives for food production. The alliance has a place-based approach, whereby the *conuco* is

recognised as a space of learning, local capacities are acknowledged, and family is understood as the centre of productive and cultural processes. As of September 2022, the alliance includes 3,500 peasant families organised in 152 seeding groups in 18 Venezuelan states (Ministerio del Poder Popular para Ciencia y Tecnología, 2022). A guardian manifested their faith in the advancements of the scientific-peasant alliance in the potato sector - 'there are some very interesting processes of creating technical spaces for improvement, germplasm banks, etc. managed by social groups. In other words, it's not that [they] created an intermediary to manage [it] for people; the technicians are sons [and] daughters of peasants trained for it' (NET008).

In the meantime, SGNs continue their work articulating stakeholders for the defence of native seeds in the face of a multidimensional crisis. As described by one participant, 'connecting all these initiatives will reconfigure the Venezuelan movement for the defence of seeds. If you had interviewed me earlier, I would have given you a totally different answer, but I have come from three meetings that have made me realise that the people are there, they are active, and they are mobilising' (NET007).

Conclusion

So, what has contributed to change? (Figure 5.1.) This research frames Venezuelan seed system transformation as a nested process of change starting from the 1999 Bolivarian constitution. This and subsequent legislation were framed as steps towards eco-socialism which included directing the national food system closer to agroecology and food sovereignty. In fact, the whole Bolivarian revolution is framed as a transition from capitalist extractivism to a participatory socialism where humans and nature coexist harmoniously.

In parallel to the Bolivarian revolution, SGNs and other adjacent social movements consolidated through loose narrative connections and an interest in protecting and encouraging AfroIndopeasant food practices. These actors took advantage of novel participatory democracy instruments to be involved in the development of the 2015 seed law. A process of popular debate led to the production of the most progressive seed law in Latin America, a law that recognises and promotes a formal and informal(ised) seed system. This process can be considered as the opening of a translational contact zone, as it required diverse actors to see beyond the epistemic, legal, and scientific abyssal lines.

Implementation of the 2015 seed law has been sluggish due to the multidimensional crisis in Venezuela and resistance from various food system actors. More research is needed to understand emerging transmodern institutions and their impact. However, a transmodern seed has been planted in Venezuelan food systems as more spaces for epistemic justice and horizontal human-nature relations have opened.

It is important to emphasise that the Bolivarian model has brought suffering to the Venezuelan people as was explained in the introduction and last section of this chapter. State institutions have weakened, hunger and economic hardship are spreading, and millions of Venezuelans have left the country. Although there is no consensus on the causes, this work recognises the failings of the Bolivarian model while also acknowledging that external forces are at play (i.e. economic sanctions by rich nations).

6
Ecuadorian seed system transformations

The early 1990s marked the 500-year anniversary of the Iberian invasion of America. This momentous occasion stirred Indigenous social movements all over the region, but particularly in Ecuador, where they became a political force to be reckoned with. Two important Indigenous-led events occurred during those early years of the 1990s: the formation of the Confederation of Indigenous Nationalities of Ecuador (Confederación de Nacionalidades Indígenas del Ecuador, CONAIE), and the emergence of a Quichua neologism in the Amazon – *sumak kawsay*; an alternative way of being in harmony with oneself, community, and nature.

Following historical trends, these peripheral emergences would have been kept on the sidelines, but in this case, they went on to transform Ecuadorian politics two decades later. Sumak kawsay, later translated into Spanish as 'buen vivir', can be considered as an umbrella term with a purposefully vague definition that encourages diverse alternative ways of relating to self, society, and nature. The term emerged from Indigenous life-worlds in response to the global ecological crisis, as Amazonian communities were confronted by 'Global North' definitions of sustainability.

However, buen vivir is not purely an Indigenous concept, but fruit of transcultural interactions between Indigenous communities, non-profits, and an Indigenous and mestizo 'indigenist intelligentsia'. The concept remained on the peripheries of intellectual production until it crossed into the mainstream through academic publications, becoming a central theme in Ecuadorian social struggles in the early 2000s.

The beginning of the 21st century was a critical juncture for Ecuador. The country was a young democracy, with its first ever democratic election held in 1979 after decades of military and populist rule (Tanasescu, 2013). From 1979 to 2006, Ecuador had a dozen presidents, most of whom faced staunch resistance from rural and Indigenous social movements as neoliberal reforms were implemented and the economy was dollarised. In fact, the 1996-2006 period saw three presidents ousted by social movements: Abdalá Bucaram (1997), Jamil Mahuad (2000), and Lucio Gutierrez (2005) (Clark, 2016; Peña, 2013). The main opposition during this period of political instability was the CONAIE (Clark, 2017), which went on to create an Indigenous political party in the early 2000s (Pachakutik), becoming a key player in Ecuadorian politics. It was at this critical juncture that sumak kawsay/buen vivir was mobilised politically as an alternative societal pathway.

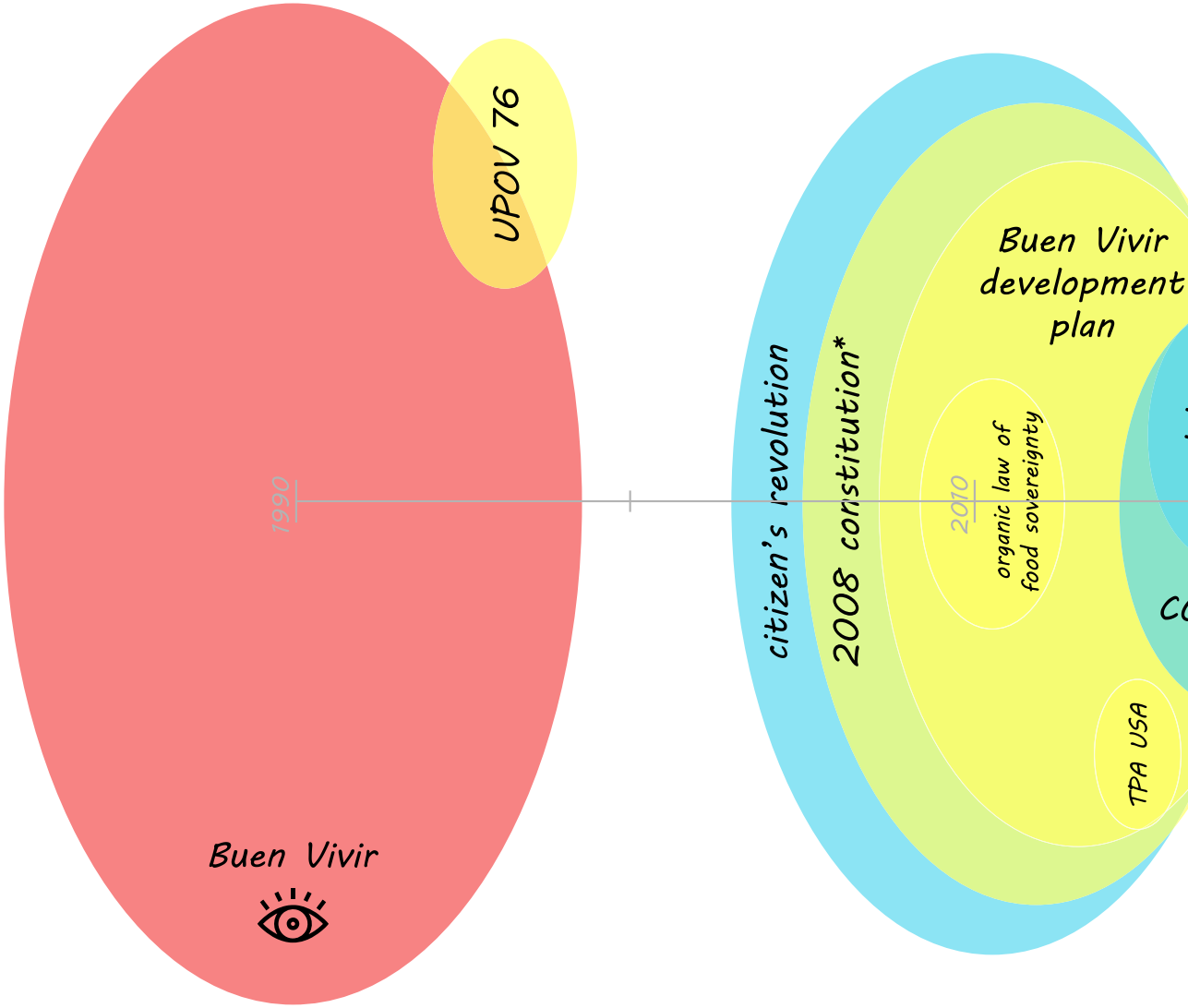
After more than a decade of political crisis, the economist Rafael Correa ran for office in 2006 without any party affiliation as a rejection of the establishment. His platform promised the launch of a 'citizen's revolution' that would create a new constitution to guide the country into the new millennium. Social movements representing marginalised sectors supported Correa, putting him onto the highest seat of power in 2007 with the mandate of organising a constitutional assembly. After more than a year of national discussions, a new constitution was approved using buen vivir as a guiding principle. It enshrined the rights of nature, included the right to food sovereignty, and cemented institutions for participatory democracy.

The 2008 constitution led to the creation of a development plan based on buen vivir principles (Plan Nacional Para el Buen Vivir 2009-2013), the Organic Law of Food Sovereignty (2010), the Organic Law of Rural Lands and Ancestral Territories (2016), and the creation of the Plurinational and Intercultural Conference on Food Sovereignty (Conferencia Plurinacional e Intercultural de Soberanía Alimentaria, COPISA). This

organisation began drafting a new seed law in 2014, which was finally approved in 2018 as the Organic Law of Agrobiodiversity, Seeds, and Promotion of Agriculture.

The government of Rafael Correa and his citizen's revolution (2007-2017) have been widely criticised for betraying social movements and abandoning buen vivir principles to implement a neo-extractivist agenda. However, it cannot be denied that this period of Ecuadorian history was a fertile space for the emergence of novel and alternative legal frameworks and institutions.

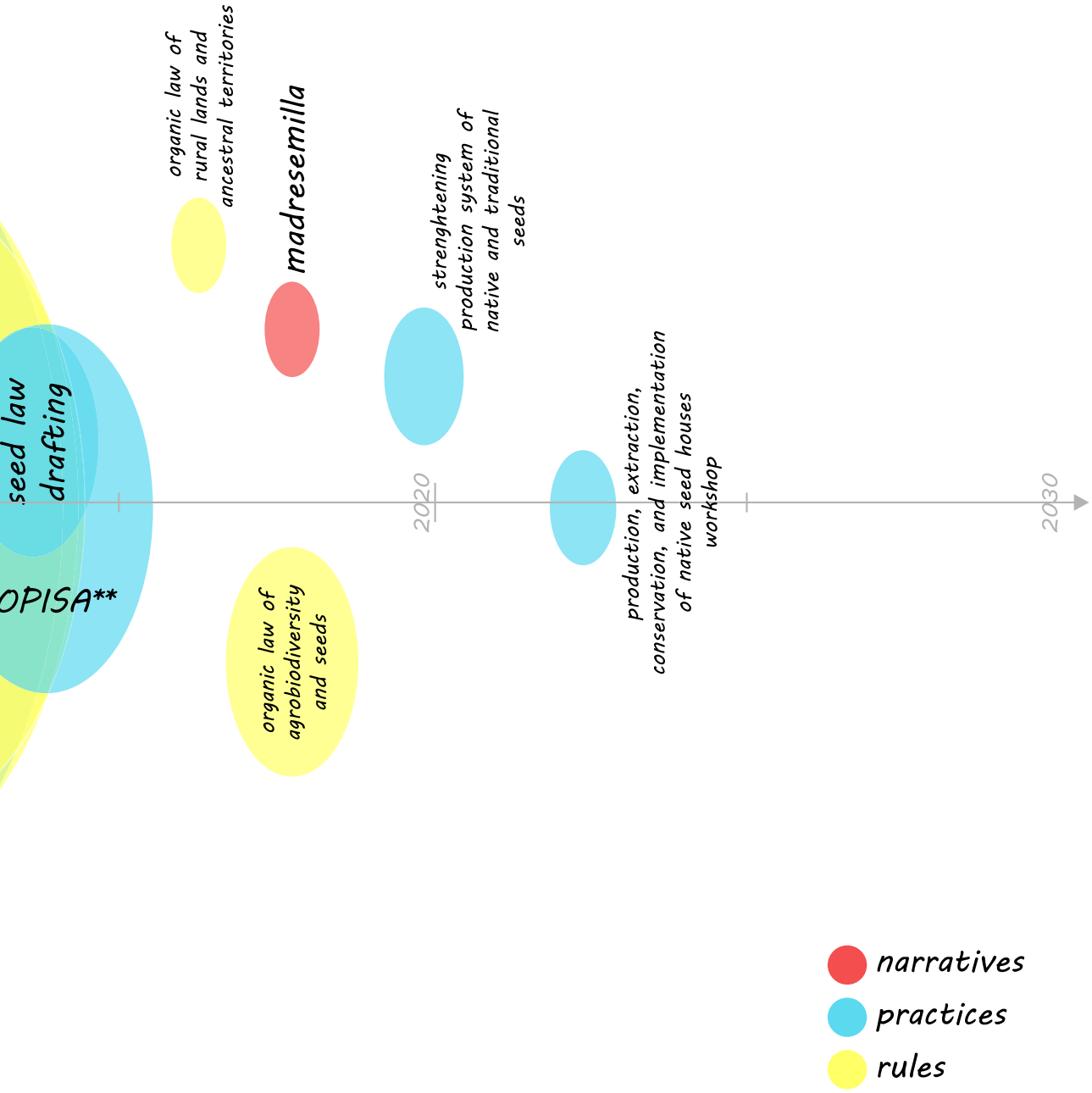
This chapter presents the transformation leading to the 2018 seed law and beyond as a process kickstarted by the emergence of sumak kawsay in the early 1990s (See Figure 6.1.). The openings afforded by buen vivir and its irruption in the foundational narrative of the Ecuadorian state in 2008, allowed for broad inclusion of non-modern practices. This process was moved forward by AfroIndopeasant social movements at multiple scales with an active participation of seed guardian networks. Ecuador has been touted as having the most advanced legal and policy framework for food sovereignty in the world (Clark, 2017). In this transformation process, Indigenous visions of alternative futures opened spaces for non-modern food practices to be recognised in transmodern policy, to be protected and encouraged by state actors.



*Food sovereignty
Participatory democracy

**Plurinational and Intercultural Conference of Food Sovereignty

Figure 6.1. A visualisation of Ecuadorian seed system transformations as a series of nested fields emerging from previous structuration


organic law of rural lands and ancestral territories
madresemilla
strenghtening production system of native and traditional seeds
seed law drafting
OPISA**
organic law of agrobiodiversity and seeds
production, extraction, conservation, and implementation of native seed houses workshop
2020
2030
narratives
practices
rules

Sumak kawsay (buen vivir)

The emergence of buen vivir is positioned in this thesis as the first step for the consolidation of a transmodern seed system in Ecuador. This discourse spread throughout the nation, becoming a central concept for the formation of coalitions and a platform to transform politics. Eventually, this concept would become the guiding idea for the 2008 constitution which kickstarted a legislative boom that opened new spaces for food sovereignty, native seeds, and related care practices.

Buen vivir: discourse and platform

Buen vivir is often defined as a way of living in harmony with oneself, community, society, and nature (Acosta, 2015; Hidalgo-Capitán & Cubillo-Guevara, 2017; Huanacuni Mamani, 2010; Schavelzon, 2015; Walsh, 2009); in short, a plurality of 'good coexistences' (Acosta, 2016, 2021). Generally speaking, buen vivir could be understood as a set of ideas that are simultaneously 'a radical critique of development … and a set of alternative proposals where well-being is only possible in socially and ecologically expanded communities' (García et al., 2016, p. 6).

Buen vivir is a discursive innovation (Altmann, 2015; Beling et al., 2018) that does not pursue a return to an idealised past (Chassagne, 2019; García et al., 2016; Gudynas, 2011; Solón, 2018), but looks to the future while conceptualising and building alternative utopias (García et al., 2016; Hidalgo-Capitán & Cubillo-Guevara, 2017). Accordingly, buen vivir can be understood variously as: a 'process of collective social innovation' (Benalcázar & de la Rosa, 2021, p. 152); a 'conceptual and affective platform, another way to understand the world, or even another cosmovision' (García et al., 2016, p. 9); an epistemic alternative and

possible 'line of flight'[56] from the dominant economic paradigm (Polo Blanco & Piñeiro Aguiar, 2020); or a 'rhetorical-ideational resource that breaks with dominant language and mental models, giving it a subversive political and cultural character facing the advance of a totalising and globalising Eurocentric modernity' (García et al., 2016, p. 15).

Buen vivir emerges from Indigenous responses to the multiple crises of the epoch, consolidating in the Amazonian Quichua neologism sumak kawsay (Acosta, 2016). The concept has Indigenous origins, but it is an assemblage of Indigenous notions and Western critiques of Western modernity, including Marxist, feminist, and ecological influences (García et al., 2016; Polo Blanco & Piñeiro Aguiar, 2020; Guzmán Prudencio & Blanco, 2017). As such, it is glocal (García et al., 2016) and dialogical (Beling et al., 2018; Gudynas, 2011).

Indeed, buen vivir is the result of interactions by multiple actors at many levels: Indigenous communities, intellectuals and activists, diverse academics, multiple social movements, leftist politicians, and non-profits. As such, it has been dubbed a 'collage construct' (Hidalgo-Capitán & Cubillo-Guevara, 2017, p. 39), relevant not because of 'its pure expressions but by the interfaces it proposes' (Schavelzon, 2015, p. 192). This refers not only to the integration of diverse Indigenous and Western(ised) concepts, but also to its movement and feedback loops from bottom-up to top-down (Hidalgo-Capitán & Cubillo-Guevara, 2017; Schavelzon, 2015).

Buen vivir has been referenced in the literature as a discourse, a discursive articulation, or a discursive apparatus alternative to traditional notions of Western development (Beling et al., 2018; García et al., 2016; Guzmán Prudencio & Blanco, 2017). It is a concept under constant construction with diverse interpretations (García et al., 2016;

[56] The term 'line of flight' ('ligne de fuite' in the original French) comes from Deleuze and Guattari.

Gudynas, 2011). Accordingly, buen vivir has been referred to as a polysemic notion (Guzmán Prudencio & Blanco, 2017), an ambiguous concept, a 'semantic field in motion' (Schavelzon, 2015, p. 190), and a 'polychrome and ambivalent discourse' (García et al., 2016, p. 15).

Critics contend this ambiguity raises the risk of buen vivir being interpreted as an empty term simultaneously meaning everything and nothing (Hidalgo-Capitán & Cubillo-Guevara, 2017; Schavelzon, 2015). Some authors see buen vivir as a 'neologism built ad hoc' (Guzmán Prudencio & Blanco, 2017, p. 79), since there is little to no ethnographic evidence of Indigenous use of the term before the 21st century (Polo Blanco & Piñeiro Aguiar, 2020; Guzmán Prudencio & Blanco, 2017). Some more critical voices call it an 'invented tradition' produced by an idealised and ahistorical vision of Andean communities (Viola Recasens, 2014, p. 64).

While these critiques are valid, the neologism can also be interpreted as the revaluing of a previously marginalised design for life (Acosta, 2021) with the potential to face the multiple global crises of our current epoch.

Discoursive spread of buen vivir

The emergence of buen vivir has its roots in the historical resistance of Indigenous peoples of Latin America to colonisation and Westernisation (Acosta, 2021). Despite this being a 500-year struggle, multiple forces converge in the second half of the 20th century to set the stage for buen vivir flourishing. It begins in the 1960s with the emergence of environmentalism, the consolidation of multiculturalism, and a renewed Western interest in the 'good life' (García et al., 2016). It continues with the start of neoliberal implementation in the 1970s across Latin America (often enforced by dictatorships) (Ranta, 2015), and then the end of the Cold War and a slow return to democracy in the region

that prompts a revitalisation of civil society, collective action, and a revaluation of the left (García et al., 2016).

Parallel to these trends, international cooperation agencies start disseminating concepts like 'sustainable development' and 'development with identity' amongst Indigenous peoples in the late 1980s. These moves were heavily resisted by Indigenous and mestizo Amazonian intellectuals that sought to pursue alternatives *to* development instead of 'alternative development' (Hidalgo-Capitán & Cubillo-Guevara, 2017). Significantly, by the end of the decade, 24 nations ratified the International Labour Organisation's Indigenous and Tribal Peoples Convention. In which Central and South American countries make up an overwhelming majority of signatories.

The early 1990s brought a wave of constitutional reforms to several members of the Andean Community of Nations,[57] processes that reformulated monolithic and homogenising nation-states into pluri-national, multi-ethnic, and intercultural countries (García et al., 2016; Polo Blanco & Piñeiro Aguiar, 2020). These reforms aligned with the 500-year anniversary of the invasion of America in 1992, an event that spawned numerous mobilisations against the colonial celebration and led to a strengthening of Indigenous social movements (Acosta, 2021; García et al., 2016; Mignolo & Walsh, 2020). Crucially, the Amazonian concept of sumak kawsay as an Indigenous alternative to development also made its first written appearance in 1992 (Hidalgo-Capitán & Cubillo-Guevara, 2017).

The Indigenous political resurfacings of the 1990s[58] converged with an increasing consciousness of humanity's multiple systemic crises and

[57] The Andean Community of Nations comprises Bolivia, Colombia, Ecuador, Peru, and Venezuela.

[58] The most notable of these Indigenous political movements is the Zapatista revolution in Mexico.

concerns about the failed promises of neoliberalism. This pushed citizen movements to develop stronger critiques of market policies, and to eventually question and seek alternatives to neoliberal development (Beling et al., 2018; García et al., 2016). This decade also saw the consolidation of the decolonial and post-Development academic fields (Mignolo & Walsh, 2020; Sachs, 2010; Ziai, 2017). As described previously, the emergence of buen vivir can be interpreted as a historically fortuitous glocal convergence of multiple struggles at various scales (García et al., 2016).

Buen vivir emerged with full force in the first decade of the 21st century (Polo Blanco & Piñeiro Aguiar, 2020) along with the continued resistance of Indigenous, Afro-Latino, peasant, and other social movements against globalisation and the privatisation of natural resources (García et al., 2016). In Latin America, the new millennium brought a slew of left-wing governments that (unlike many of their predecessors) had access to resources due to high commodity prices (García et al., 2016). This phenomenon has been dubbed the 'pink tide', and included Argentina, Bolivia, Brazil, Chile, Ecuador, El Salvador, Honduras, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

The Ecuadorian pink tide was mainly borne along by Indigenous cultural discourses (sumak kawsay), enabling the development of buen vivir experiments at national level. It was later in the decade that the discursive innovation of sumak kawsay truly crystalised by being incorporated into the Ecuadorian constitutional assembly (Acosta, 2021; García et al., 2016; Guzmán Prudencio & Blanco, 2017). The approval of a buen vivir-influenced constitution in 2008 led to the creation of a buen vivir-influenced development plan for 2009-2013.

Ecuador's constitutional process coincided with the United Nations' Declaration on the Rights of Indigenous Peoples (2007) and the economic crisis of 2008, which produced further global questionings of the

neoliberal order and a generalised loss of faith in the political class (García et al., 2016; Guzmán Prudencio & Blanco, 2017). One would think the stage was set for a state-supported move to a biocentric post-capitalist society. However, national implementations of buen vivir have not been completely successful and are often criticised for being more reformist than transformative (Guzmán Prudencio & Blanco, 2017; Solón, 2018; Weld, 2020).

For some, state capture of buen vivir led to a loss of its decolonial potential and 'cutting-edge positionality as a subaltern philosophy and political strategy' (Ranta, 2015, p. 425). The Ecuadorian government has been accused of abandoning, and even betraying, its previous alliances by becoming merely progressive instead of embracing plurality (García et al., 2016). Some frame governmental buen vivir projects as a continuation of the same old developmentalist model using the discourse as powerful new branding (Cubillo-Guevara & Hidalgo-Capitán, 2019; Guzmán Prudencio & Blanco, 2017; Solón, 2018).

Despite all its failings at a state level, buen vivir is and always has been present in the lived praxis of countless communities throughout the region (Polo Blanco & Piñeiro Aguiar, 2020). Additionally, buen vivir is still informing processes at multiple levels and in multiple geographies, 'shaping discourse, political projects, and social, cultural, and economic practice' (Acosta, 2021, para. 16).

Citizen revolution (2007-2017)

In early 2005, the Ecuadorian congress removed President Lucio Gutierrez from power in what has been referred to as a coup d'état (Andrade, 2012). The then vice-president assumed power until early 2007, when economist Rafael Correa was sworn in. Correa ran for president as an outsider from the political establishment, promising that he would convene a Constituent Assembly that would 'collect demands

for the refoundation of the republic and … adopt a development model different from neoliberalism' (Andrade, 2012, p. 38).

This anti-neoliberal narrative differentiated Correa from a hidebound opposition without a clear vision, eventually garnering him the support of social movements (Ellner, 2012). Correa mobilised narratives of a citizen's revolution and 21st century socialism to communicate his political project. At the time, some criticised these narratives as lacking any clear definition, being used only as slogans to justify political action (Salgado Pesantes, 2008). The following sections explore the outlines of these narratives and the legislation produced by the citizen's revolution.

21st century socialism in Ecuador

21st century socialism was a narrative mobilised throughout the region as the pink tide expanded. As Ellner explains it: 'leaders … created a new narrative of nationhood that challenges long-held assumptions and previous representations of culture, history, race, gender, citizenship, and identity. Thus, the new political movements offer an alternative reading of the past that challenges the conventional wisdom that legitimised the old order … Re-envisioning the past serves to incorporate previously marginalised peoples, including the Indigenous, Afro-descendent, peasants, women, and workers who historically struggled to change social conditions' (Ellner, 2012, p. 107).

Some of the contours of 21st century socialism have been defined in parallel to its implementation throughout Latin America. Ellner (2012) sees the distinguishing features of this 'new left in power' as:

- A defence of radical democracy (social incorporation and direct participation).

- A pursuit of alternatives to capitalism, mainly socialism adapted to the concrete realities of Latin America.[59]
- A rejection of working-class vanguardism, or at least a decentring of the industrial proletariat, while seeking the inclusion of the precariat, informal economies, religious communities, AfroIndopeasants, and women.
- A focus on social well-being, fraternity, and solidarity while rejecting capitalist individualism.[60]
- A push for a multi-polar world, while still operating within globalised institutions; self-identifying as 'anti-capitalist' (clashing with the agendas of Washington) and strengthening relations in the region.[61]
- A personification of popular will through historical symbols.[62]

Neoliberal Ecuador was marked by an absentee state in social and economic life. The citizen's revolution pursued a 'return and expansion' of the state, through increased public spending, and the growth of ministries and other government institutions (Clark, 2016). However, for some, the citizen's revolution ended in a state-guided neo-developmentalist plan mostly inspired by classical social-democratic templates rather than by an alternative paradigm (Benalcázar & de la Rosa, 2021; Clark, 2017).

Using food systems as an example, distribution of funds during the citizen's revolution was grossly unequal between different regions (Paz

[59] This recent pursuit of alternatives to capitalism might be inspired by José Carlos Mariátegui's proposal for an Indo-American socialism.

[60] These values might be inspired by Catholic and Protestant liberation theology.

[61] For example, through the Bolivarian Alliance for the Peoples of Our America (*Alianza Bolivariana para los Pueblos de Nuestra América,* ALBA).

[62] For example, the constant references to the independence-era figure Simón Bolívar in post-1999 Venezuela, after whom Venezuela's 'Bolivarian Revolution'—and the 'Bolivarian Alliance'—are named.

& Cepeda, 2022). Investment mainly benefited medium- and large-scale producers, conventional agriculture was preferred to agroecology, and presidential declarations reinforced narratives of small-scale production as inefficient (Clark, 2016). Other critics stated that favouring inclusion instead of production targets translated into 'belittling technical competence and efficiency' (Ellner, 2012, p. 110). Inclusion itself has been criticised, as social movement capacity to mobilise and organise has diminished since leaders were co-opted into government and NGO bureaucracies (Clark, 2016).

In short, the citizen's revolution did not become what was initially envisioned. The resilience of pre-existing economic powers, the weakening of social movements, clientelism, a hyper-presidential structure, and the delegitimisation/criminalisation of government critics eclipsed its broader purpose (Benalcázar & de la Rosa, 2021).

Reconstituting Ecuador

In 2006, Rafael Correa positioned himself as an outsider candidate to the political establishment. As such, social movements carried him to the presidency to fulfil his promise of pursuing alternatives. In his early days as president, he did not have institutional support to carry out plans to produce a new national constitution (Salgado Pesantes, 2008). This led to a convoluted process that set the stage for the citizen's revolution, with all its possibilities and eventual broken promises.

The constitutional process in Ecuador is the key event that opens new pathways for the establishment of legal frameworks and institutions inclusive of food sovereignty and native seed care. As it will be elaborated below, it has had profound impacts in national seed system transformation.

Constitutional assembly (2007-2008)

As soon as Rafael Correa was sworn in as president, he called for a referendum to create a new constitution. This was not a seamless process as conflicts emerged between the executive and the Ecuadorian congress, leading to the removal of 57 deputies opposed to the constitutional process. After this legislative crisis, a constitutional referendum was carried out in early 2007 with upwards of 80 per cent of voters mandating the creation of a constituent assembly.

In September, an election was held to choose 130 assembly members representing the provinces, the national and Ecuadorian diaspora. Through this election, a loose coalition aligned with Rafael Correa (Alianza PAIS) won more than 70 per cent of available seats. This overwhelming majority was the product of a divided opposition contrasted with a plurality of actors coming together in the Alianza PAIS coalition: middle-class dissidents from Quito, urban middle-class actors loosely affiliated with CONAIE, and local-level leaders from peri-urban organisations, among others (Andrade, 2012). The resounding win by Alianza PAIS was interpreted as a defeat of traditional powers and meant that the constitutional assembly would become 'the axis for power struggles in Ecuador' (Paz & Cepeda, 2007, p. 10).

Andrade distinguishes two moments in the constitutional assembly: an installation phase where Alianza PAIS created the rules of the game, and a decisional phase where the definitive texts where decided. In the installation phase, working roundtables were organised around three axes: '[d]eepening of democracy towards participatory democracy, an ecologically sound development model, and the notion of complementarity between the state, nature and society' (Andrade, 2012, p. 39). Roundtables were organised as follows:

- Fundamental Rights and Constitutional Guarantees.

- Organisation, Social, and Citizen Participation.
- State Structure and Institutions.
- Territorial Planning and Power Assignment.
- Natural Resources and Biodiversity.
- Work, Production, and Social Inclusion.
- Development Regime.
- Justice and the Fight against Corruption.
- Sovereignty, International Relations, and Integration.
- Legislation and Oversight.

Going deep into the discussions of each working roundtable exceeds the purpose of this work, as actors and issues discussed were widely diverse. However, these can be broadly understood as a bricolage between neo-constitutionalist, participationist, and presidentialist perspectives (Andrade, 2012).

Despite the elected representatives being tasked with moving the constitutional process forward, this was also a participatory and decentralised effort (Peña, 2013). Ecuadorian and foreign NGOs and intellectuals were very active in the process, writing and disseminating opinion articles, as well as giving speeches to the assembly (Tanasescu, 2013). Social organisations also developed their own proposals,[63] formed their own working roundtables in parallel to the constituent ones, and collaborated directly with legislators (Peña, 2013).

As part of this participative move, an Indigenous and peasant coalition formed a parallel agrarian roundtable to create proposals based on food sovereignty framings focusing on domestic distribution and markets (Wittman, 2015). The Ecuadorian seed guardian network took advantage of these participatory spaces to be advisors to the assembly and help draft the new constitution (NET006). A drafting process that became the

[63] For an example, see the proposals developed by CONAIE (2007).

'critical political opening for food sovereignty in Ecuador' (Peña, 2016, p. 226).

For some authors, the Ecuadorian constitutional process attempted to refound the state (Clark, 2017). It was a historical opportunity to 'decolonise the country's political structures' (Becker, 2011, p. 48) as it sought to inspire new alternative public practices and socioeconomic models, building an understanding of the world from those who have been historically marginalised (Acosta, 2021). Some went as far as claiming that it would bring forth a biocentric turn (Gudynas, 2009).

However, these optimistic framings are frequently criticised, since practical implementations by the state have been far from alternative or post-capitalist, and unable to create a rupture from Eurocentric, colonial, and capitalist frameworks (Viola Recasens, 2014). The process itself was also criticised as an example of plebiscitary democracy, where the executive power frames issues from its own agenda, presenting the constitutional referendum as a zero-sum game (Weld, 2020). The validity of these critiques is unquestionable; however, the constitutional text does diverge greatly from established frames as it includes buen vivir, direct democracy, the rights of nature, and food sovereignty.

2008 Constitution

The constitutional text co-produced in 2008 reflects the inclusion of multiple marginalised actors in Ecuadorian society. This section focuses on items that refer to buen vivir, plurality, nature, and food sovereignty as they provide the foundations for national seed system transformations. In its preamble, millenary roots and women are explicitly recognised; Pachamama[64] is celebrated, appealing to the wisdom of all cultures present in the national territory, and connecting

[64] Pachamama is the Inca/Andean mother-like goddess who creates and sustains life on earth, aids in planting and harvesting, and represents fertility.

to past liberation struggles against all forms of domination and colonialism. The preamble also frames Ecuador as an intercultural and pluri-national state, emphasising the legacy and present of ancestral peoples.

Crucially, the text is positioned as a decision to create a new way to coexist 'in diversity and harmony with nature, to achieve buen vivir, the sumak kawsay' (*Constitución Del Ecuador*, 2008, p. 15). The development model proposed in the constitution is geared towards the attainment of buen vivir, and citizens are expected to act in a framework of interculturality, respect of diversities, and harmonic coexistence with nature (*Constitución Del Ecuador*, 2008). However, implementations of this model are often not aligned with these values.

Regarding rights, the constitution positions nature as a subject of rights and establishes several buen vivir rights. These include the right to water and access to food with a commitment of promoting food sovereignty, along with the right to a healthy environment, and promoting clean technologies for energy production. Also included is the right to education (understood as indispensable for buen vivir), that is 'participatory, … intercultural, … inclusive and diverse, of quality and warmth;[65] promoting gender equality, justice, solidarity and peace' (*Constitución Del Ecuador*, 2008, p. 27).

The rights of Indigenous, Afro-Ecuadorian, and Montubio[66] peoples have special consideration, seeking to preserve and promote their practices of biodiversity management, develop their collective knowledge (framed as ancestral sciences and technologies), as well as

[65] From the Spanish 'calidez', which in this context refers to human warmth.

[66] Montubio peoples are mestizos that live on the Ecuadorian coast and are recognised as a distinct ethnicity.

agrobiodiversity. The text also includes an explicit prohibition of all forms of appropriation of these knowledge(s), innovations, and practices.

Expanding the spectrum of rights, Chapter 7, Article 71 of the constitution states that:

> Nature, or *Pacha Mama*, where life is reproduced and occurs, has the right to complete respect for its existence and for the maintenance and regeneration of its life cycles, structure, functions, and evolutionary processes. All persons, communities, peoples, and nations can call upon public authorities to enforce the rights of nature. To enforce and interpret these rights, the principles set forth in the Constitution shall be observed as appropriate. The state shall give incentives to individuals and legal entities and to communities to protect nature and to promote respect for all the elements comprising an ecosystem (*Constitución Del Ecuador*, 2008, p. 52).

It is important to point out that both right- and left-wing politicians have condemned the inclusion of legal rights of nature as an infantile strategy of indigenist politics (Cadena, 2010; Weld, 2020). This might be interpreted as evidence that the constitution is effectively proposing alternatives despite critiques to the process and its impacts.

Regarding rights to participation, all Ecuadorians can put forward normative projects as popular initiatives. The constitution contemplates popular control of state institutions, society, and its representatives, and establishes the mechanisms of representative, direct, and communitarian democracy for this purpose. Title IV, Chapter 1, Section 4 defines direct democracy, establishing 'normative popular initiatives' as a mechanism for citizens to create, reform, or strike down laws if they have support from 0.25 per cent of people registered to vote.

Additionally, Title VI, Chapter 2 proposes a national decentralised participatory planning system to establish development guidelines.

Of special interest to this work, is the inclusion of food sovereignty as a strategic objective and a state obligation. This constitution was one of the first in the world to explicitly recognize food sovereignty as a goal (Wittman, 2015). This was a very controversial topic, since some provisions contained highly contested issues, such as the introduction of GMOs (Peña, 2013). For some authors, the effort to include food sovereignty was diluted, as it compromised to include many visions of the concept leading to residual pro-poor projects 'rather than a broader transformative pathway with comprehensive agrarian reform' (McKay et al., 2014, p. 1196).

Some important state responsibilities related to food sovereignty are: i) promoting the production and transformation of agri-food and fishing production units at the small and medium scale, at the community scale, and belonging to the social and solidarity economy; ii) strengthening diversification and introducing ecological and organic technologies into agricultural production; iii) promoting the preservation and recovery of agrobiodiversity and associated ancestral knowledge, as well as the use, conservation, and free exchange of seeds; iv) protecting the population from consuming contaminated foods, or foods that put their health at risk, or whose effects are uncertain according to science[67] (*Constitución Del Ecuador*, 2008).

As Benalcazar and de la Rosa put it: 'The 2008 constitutional framework offered an unprecedented opportunity to transform national society. The recognition of new forms of coexistence among ethnic groups (interculturality, plurinationality,[68] and collective rights), popular

[67] This is a veiled form of speaking about genetically modified organisms (GMO).

[68] This term is used to recognise that several 'national communities' with their own culture co-exist in the state.

power (participatory democracy and decentralisation), a harmonious relationship between humans and a nature seen as a living transcendental being (the rights of nature), and production formulas (social and solidarity economy, food sovereignty) was undoubtedly a solid starting point' (Benalcázar & de la Rosa, 2021, p. 165).

Indeed, it was an opening that would lead to a very fertile period for novel legislation produced in a participatory manner. The next section explores this legislative boom, starting with the buen vivir-inspired development plan and culminating in the 2018 Organic Law of Agrobiodiversity, Seeds, and Promotion of Agriculture.

2009-2018 Buen vivir legislative boom

Buen vivir development plan (2009-2013)

This section will list the main objectives of the development plan related to seed system transformation. This 500+ page document touches upon many dimensions of Ecuadorian society, and it is recognised here as the basis for the implementation of the citizen's revolution. The main proposition of the plan is a paradigm change from development to buen vivir. Many decolonial and post-Development concepts appear in Chapter 3, positioning 'development' as a colonial epistemic product and a failed system to produce well-being. There are mentions of a Western monoculture making other systems invisible and promoting the idea of an unilinear history. Inequality between North and South nations is emphasised, positioning the consumption levels of rich nations as a certain route towards planetary collapse. The document also produces a critical reading of Ecuador's history and the structural causes of inequality up to the recent decades of neoliberalism (Plan Nacional Para El Buen Vivir, 2009-2013, 2009).

From these critiques of modern development and Ecuadorian 'developmentalism', the document goes on to propose a 'displacement of

the word development to incorporate the concept of 'buen vivir' into the debate' (Plan Nacional Para El Buen Vivir, 2009-2013, 2009, p. 32) The concept of buen vivir can be read as having seven interdependent and overlapping axes in the document: 'intercultural and plurinational state, participatory democracy and social accountability, rights of nature, decentralisation, the social economy, economic sovereignty and the change of the production model, and the sovereignty of the body' (Benalcázar & de la Rosa, 2021, p. 153). The document explicitly develops ten buen vivir principles aligned with the aforementioned thematic axes, connecting the concept to the rights enshrined in the 2008 constitution.

The development plan can be interpreted as 'anti-developmentalism', pursuing post-neoliberalism through buen vivir. Among the strategies to achieve this, the plan proposes: a democratisation of the means of production and new modes of distributing wealth; the transformation of the economy to overcome the extractivist primary-sector export model; and more integration with Latin America.

Crucially, the plan focuses on rural buen vivir, going beyond an understanding of the rural as agricultural production, and towards an integrated approach to its political economy. The plan recognises rural diversity in order to develop differentiated strategies for broad inclusion (i.e. recognition of rural women and ethnic differences). From these framings, the plan proposes twelve national objectives for buen vivir:

i) Promote equality, cohesion, social and territorial integration in diversity.
ii) Improve the capabilities and potential of citizens.
iii) Improve the population's quality of life.
iv) Guarantee the rights of nature and promote a healthy and sustainable environment.
v) Guarantee sovereignty and peace and promote strategic insertion in the world and Latin American integration.

vi) Guarantee stable, just, and dignified work in its diversity.
vii) Build and strengthen public and intercultural spaces of encounter.
viii) Affirm and strengthen national identity, diverse identities, plurinationality, and interculturality.
ix) Ensure the observance of rights and justice.
x) Guarantee access to public and political participation.
xi) Establish a social, solidary, and sustainable economic system.
xii) Build a democratic state for buen vivir.

Among the many national territorial strategies, it is important to highlight the strategy to 'promote buen vivir and food sovereignty in rural territories' (Plan Nacional Para El Buen Vivir, 2009-2013, 2009, p. 377). Its main pillar is the renewal of national food production (mainly peasant production) through democratisation of the means of production, promotion of short production chains, diversification, cooperation, and infrastructure.

Food sovereignty is mentioned here as a right to healthy, nutritious, and culturally appropriate food, also emphasising that society should decide what, how, and where to produce food. Rural strategies should also include diversification, the promotion of agroecology, and the recovery of ancestral production knowledge(s) and technologies (Plan Nacional Para El Buen Vivir, 2009-2013, 2009).

Organic Law of the Food Sovereignty Regime (2010)

One of the main demands of social movements during the drafting of the constitution was the inclusion of a right to food sovereignty and agrarian reform. However, this was a convoluted process, since multiple

actors brought different interpretations of food sovereignty to the table (McKay et al., 2014).

Food sovereignty was hinted at in the 2009-2013 Plan Nacional para el Buen Vivir and was enshrined in the Organic Law of the Food Sovereignty Regime (Ley orgánica del régimen de la Soberanía Alimentaria, LORSA) with the objective of guaranteeing 'permanent self-sufficiency of healthy, nutritious, and culturally appropriate food to persons, communities, and peoples' (*Ley Orgánica Del Régimen de La Soberanía Alimentaria*, 2009, p. 3). This law contemplates: i) equitable access to water and land, privileging small producers and women heads of household; ii) the protection of agrobiodiversity; iii) research, technical assistance, and dialogue of knowledge(s); iv) participation; and v) food production and commercialisation.

Regarding the protection of agrobiodiversity, the state commits to 'promot[ing] the recovery, use, conservation, and development of agrobiodiversity and connected ancestral knowledge(s)' (*Ley Orgánica Del Régimen de La Soberanía Alimentaria*, 2009, p. 4). Seeds are specifically addressed in Article 8, where 'germplasm, seeds, native plants, and associated ancestral knowledge(s)' (*Ley Orgánica Del Régimen de La Soberanía Alimentaria*, 2009, p. 5) are established as the patrimony of the Ecuadorian people, and as such, unable to be appropriated through patents or other forms of intellectual property. The law further commits to the protection and promotion of native seed use, conservation, qualification, and free exchange, though not regulating them directly.

Regarding research, technical assistance, and dialogue of knowledge(s), the law aims to improve food nutritional quality, productivity, and safety while enriching agrobiodiversity. It commits to participatory research based on knowledge exchanges with small- and medium-scale producers. Additionally, it advocates for the respect of local biodiversity management practices and the preservation,

protection, and development of 'collective knowledge, sciences, technologies, ancestral knowledge, and genetic resources that contain biological diversity and agrobiodiversity' (*Ley Orgánica Del Régimen de La Soberanía Alimentaria*, 2009, p. 5). The law commits to the development of institutions for these purposes, as well as to research and extension programs involving the national science and technology system.

In Articles 14 and 15, the state commits to stimulating agroecological, organic, and sustainable agriculture, through diverse financial incentives as well as giving preference to small and medium agroecological producers when buying for state programs. Crucially, this law declares Ecuador as free from transgenic seeds except in cases of the national interest, when the president can debate their introduction with the National Assembly. There are also commitments to regulate biotechnological research, observing the precautionary principle when importing commodities of transgenic origin, and labelling transgenic products.

Finally, regarding social participation in food sovereignty, the law states that 'the elaboration of laws and the formulation and implementation of public policies for food sovereignty will have the broadest social participation, through public deliberation processes' (*Ley Orgánica Del Régimen de La Soberanía Alimentaria*, 2009, p. 8). For this purpose, it created the Plurinational and Intercultural Conference of Food Sovereignty (COPISA). This body would be formed by state-elected representatives from eight sectors of civil society,[69] with the mission of

[69] The eight sectors represented are: universities/researchers; consumers; small/medium-sized industrial producers; small/medium-sized farmers; small/medium-sized cattle ranchers; artisanal fishers and aquaculture; peasants and irrigators; and Indigenous, Afro-Ecuadorian, and Montubio communities.

developing its internal rules, promoting dialogue, leading research on food sovereignty, and producing reports to advance legislation.

The law established that COPISA representatives would be elected 90 days after the publication of the legislation and would have to produce a 'wide participatory debate process' within 180 days of its formation. This participatory process would have to produce laws regulating: i) the use of and access to land, communes, agrobiodiversity, and seeds; ii) agricultural development; iii) agroindustry and agricultural employment; iv) animal and plant health; and v) the ability of peasants and Indigenous people to access public credit, insurance, and food subsidies (*Ley Orgánica Del Régimen de La Soberanía Alimentaria*, 2009, p. 8).

Participatory food sovereignty legal framework (2010-2014)

Between 2010 and 2012, the COPISA organised a participatory process to develop Ecuador's food sovereignty legal framework. COPISA held 188 workshops with more than 15,000 people and 5,000 organisations throughout the country to discuss eight policy proposals concerning: i) land; ii) artisanal fishing, aquaculture, and mangrove fishery conservation; iii) seeds, agrobiodiversity, and agroecology; iv) ancestral lands and communal property; v) food safety and quality control; vi) agricultural development and employment; vii) credit, subsidies, and insurance; and viii) consumer health and nutrition (Peña, 2013).

The mechanics of the COPISA process are too extensive to discuss in detail in this chapter. However, it is important to highlight that it was an instance of participatory and deliberative democracy. Workshops were broadly promoted to ensure participation from diverse food system actors, most were organised in places where historically marginalised actors could participate (e.g. small churches in rural areas), and members of Indigenous and peasant social movements often participated as facilitators (Peña, 2013, 2016).

Discussions for the Organic Law of Agrobiodiversity, Seeds, and Promotion of Agriculture were held over 21 workshops with the participation of more than 2,000 people and 500 organisations that included the Ecuadorian seed guardian network (NET006). For Peña (2013), the main policy issues discussed around the Organic Law of Agrobiodiversity, Seeds, and Promotion of Agriculture were the regulation of conventional seeds, prohibition of GMO, promotion of agroecology, local seed preservation, agrobiodiversity conservation, and free seed exchanges. This two-year process led to the production of a seed law draft in 2014, for seed guardian NET006 this was, a 'beautiful but imperfect document … that recognised the value of our seed and limited industrial ones, putting controls over them and not ours' (NET006).

For some authors, COPISA allowed for the institutionalisation of food sovereignty in Ecuador (Peña, 2013, 2016), for others, COPISA never fulfilled its promises of direct democracy, and became a toothless government agency unable to ensure implementation of the food sovereignty legal regime (Fiorini, 2015). Whichever the case, by this point the food sovereignty movement in Ecuador had consolidated, leading Indigenous, Montubio, and peasant organisations to form the coalition Red Agraria (Peña, 2013). This coalition participated in the COPISA workshops and eventually mobilised 'iniciativa popular' (the constitutional provision enabling direct democracy) to gain access to the National Assembly and speak in support of the drafted laws (Peña, 2016).

The influence of Red Agraria and the Ecuadorian seed guardian network clearly shows an expansion of recognition and participation in the national food system. However, almost in parallel, the president was mobilising his expanded powers to negotiate a free trade agreement with the European Union further industrialising national agriculture, and eventually 'reshap[ing] the participatory [COPISA] into an unleveraged, low-status agency' (Fiorini, 2015, p. 156).

A new vision for agriculture (2015-2025)

In 2015, the Ecuadorian Ministry of Agriculture (MAG) published guidelines for a new vision of agriculture in Ecuador to 2025 (Ministerio de Agricultura, 2016). The vision contemplates a change in the agricultural model towards a sustainable alternative. It prioritises small- and medium-scale producers, arguing for the relevance of cooperative and community work. It focuses on food quality and safety, recognising gender, cultural, social, and productive diversity. Importantly, it moves towards agroecological technologies and food system actor cooperation.

After the participatory process of COPISA, and as part of this vision for Ecuadorian agriculture, two laws were still pending approval: the Organic Law of Rural Lands and Ancestral Territories, and the Organic Law of Agrobiodiversity, Seeds, and Promotion of Agriculture.

The Organic Law of Rural Lands and Ancestral Territories was approved in 2016 and regulates the possession, property, administration, and redistribution of rural land as a production factor to guarantee food sovereignty. It deals with communal and ancestral land rights and regulation, the conservation of productive soil, and establishes incentives to favour family peasant agriculture and small- and medium-scale food producers. This law is not reviewed in depth here, but suffice to say, it pursues food sovereignty and attempts to dismantle latifundia through rural land redistribution. Crucially, it continues the trend of focusing on small-scale agriculture and promoting cooperative and collaborative economic land use (*Ley Orgánica de Tierras Rurales y Territorios Ancestrales*, 2016). The development process of the Organic Law of Agrobiodiversity, Seeds, and Promotion of Agriculture is explored below.

Seed law battles (2016-2017)

From the perspective of seed guardians, the 2014 seed law drafted within COPISA opened new spaces for native seeds and was inclusive of their concerns. However, the draft was put on hold until 2016 when a group of assembly members started negotiating a new seed law behind closed doors. An ally of the network in the National Assembly leaked the text of the proposed law, which included a declaration that seeds are a strategic resource of the state and imposed mandatory certification of all circulating seeds. These 'negative aspects … filled [seed guardians] with dread … as the state could become the only one to have the final word regarding seeds' (NET006).

At this point, the Ecuadorian seed guardian network (hereafter refered to as ESGN) was weakened, since the government of Rafael Correa had started 'persecuting NGOs, leading to loss of financing' (NET006). Despite the lack of financial resources, the ESGN joined with the National Agroecological Collective (Colectivo Nacional Agroecológico) and other social-sector organisations to challenge the proposed seed law. Some of these organisations had stopped speaking to each other after the constitutional process and COPISA. However, they came together around the issue of mandatory seed certification.

The ESGN and their allies used the mandatory pre-legislative consultations to mobilise social movement representatives to each territory 'sending [a unified] message to assembly members' (NET006). This message expressed concerns regarding free circulation of seeds, protection of native, traditional, and peasant seeds, and expanding seed definitions to include associated ancestral knowledge (Asamblea Nacional de la República del Ecuador, 2016). The law was finally approved in December 2016, responding to the concerns of social movements, primarily that seeds should be declared part of national cultural heritage and that two parallel seed systems should be created (NET006).

Organic Law of Agrobiodiversity, Seeds, and Promotion of Agriculture (2017)

This section provides an overview of the 2017 seed law, focusing on the aspects that deal with informal(ised) seed practices. It views the document as a set of rules that levels the playing field for AfroIndopeasant[70] food producers, as the law recognises the role of native seeds and associated ancestral knowledge, sustainable agriculture, and peasant families in the Ecuadorian seed system.

This is evident in the preamble of the law as it aims to:

> protect, revitalize, multiply, and dynamise agrobiodiversity related to plant genetic resources for food and agriculture; ensure the production of, and free and permanent access to, a variety of quality seeds, through promotion and scientific research and the regulation of sustainable agricultural models; respect diverse identities, knowledge(s), and traditions in order to guarantee the self-sufficiency of healthy, diverse, nutritious, and culturally appropriate food to achieve food sovereignty and contribute to Buen Vivir or Sumak Kawsay.

In addition, the law:

> guarantees the use, production, promotion, conservation, and free exchange of peasant seeds, including native and traditional seeds; and the production, certification, marketing, import, export, and access to certified seeds, through research and promotion of sustainable agriculture (*Ley Orgánica de Agrobiodiversidad, Semillas y Fomento de Agricultura*, 2017, p. 2).

[70] Under the 2017 seed law, the term AfroIndopeasant includes Montubiuo actors.

Among the principles of the law, it is worth highlighting those relating to sustainability, interculturality, solidarity, and equity. The principle of heritage establishes that native seeds are the cultural heritage of peoples and Indigenous nationalities of Ecuador, which could allow seed guardians to challenge the patenting of native seeds (NET006).

Among other aspects, the law aims to strengthen the use, preservation, and free exchange of native seeds, clearly distinguishing them from certified seeds. For this purpose, it aims to 'guarantee availability and equity in the access to native, peasant, and certified seed under equal conditions and without discrimination for food security and sovereignty' (*Ley Orgánica de Agrobiodiversidad, Semillas y Fomento de Agricultura*, 2017, p. 4). Although this guideline could be interpreted in many ways, this research frames it as a proposal for a 'level playing field' where both native and industrial seeds have equal opportunities.

The law also establishes several rights that include the 'free production, preservation, commercialisation, exchange, and access to seeds of all kinds' (*Ley Orgánica de Agrobiodiversidad, Semillas y Fomento de Agricultura*, 2017, p. 4). The inclusion of seed exchanges is important, since they have been controversial for companies that hold intellectual property rights over seeds. Other rights include the right to participate in decision-making regarding agrobiodiversity, and a right to the recognition and valuing of ancestral and traditional knowledge(s) tied to agrobiodiversity and seed production. The section on rights also recognises the pre-eminent role that women and older adults play in seed conservation and guardianship.[71]

Among the obligations assumed by the state, the main one in relation to informal(ised) seed systems is to 'preserve, produce, regenerate, maintain, revitalise, distribute, promote, and facilitate the use, free

[71] This is reminiscent to the concept of 'maestres-pueblo' used in Venezuelan seed legislation.

exchange and consumption, in a sustainable manner, of native and peasant agrobiodiversity and seeds, the recovery and promotion of knowledge, ancestral knowledges, agroecological and organic practices and technologies linked to them' (*Ley Orgánica de Agrobiodiversidad, Semillas y Fomento de Agricultura*, 2017, p. 6).

Other state obligations include prohibiting the appropriation of seed-related knowledge (patenting collective knowledge of agrobiodiversity) and the import of transgenics, controlling the country's status as free of GMOs. The state should also adopt measures to avoid the loss of traditional knowledge and cultural practices associated with seeds, and guarantee participatory scientific research, development, and innovation within a framework of a 'dialogue of knowledge(s)'.[72] Finally, in what could be associated with the constitutional recognition of nature as an agent, there is an obligation to recognise the intrinsic value of agrobiodiversity (*Ley Orgánica de Agrobiodiversidad, Semillas y Fomento de Agricultura*, 2017).

The law recognises two seed production systems: conventional (industrial certified seed) and non-conventional. The non-conventional system is based on peasant seeds, including traditional and native seeds. Native and traditional seeds are clearly defined, and the law calls for the National Agrarian Authority to identify the main native seeds used in Ecuadorian agriculture.

Under the law, native seeds are defined as 'all native or autochthonous sexual and asexual plant reproductive material that maintains its reproductive capacity, that has been domesticated, conserved, raised, cared for, used, and exchanged by producers, communes, communities, peoples, and [Indigenous] nationalities according to their diverse

[72] This 'dialogue of knowledge(s)' calls for a respect for ancestral wisdom related to agrobiodiversity, seeds, and sustainable agriculture. It recognises a plurality of knowledge and prioritises young and female technicians from the areas where the participatory innovation process happens.

knowledge(s) and cultures, whose use, conservation, classification, exchange, promotion, and protection correspond to individuals and communities with the support of the state' (*Ley Orgánica de Agrobiodiversidad, Semillas y Fomento de Agricultura*, 2017, p. 20).

One of the law's titles is dedicated to sustainable agriculture, defined as 'agricultural production systems that allow food to be obtained in a stable, healthy, economically viable, and socially acceptable way, in harmony with the environment and preserving the potential of productive natural resources, without compromising the present and future quality of the soil, reducing the risks of environmental degradation, and physical, chemical, and biological contamination of agricultural products' (*Ley Orgánica de Agrobiodiversidad, Semillas y Fomento de Agricultura*, 2017, p. 14).

The law recognises agroecology, permaculture, and organic and biodynamic agriculture (among other practices) as models of sustainable agriculture. The state commits to preventing plant diseases and epidemics through sustainable practices (without outright banning pesticides), educating the public on the benefits of sustainable agriculture, and promoting peasant, family, and community agriculture to energise this agricultural model. As the law frames it, to 'recover the talent, prominence, and centrality of the peasant family in the development of agrarian and food systems' (*Ley Orgánica de Agrobiodiversidad, Semillas y Fomento de Agricultura*, 2017, p. 15).

The 2017 seed law recognises the 'non-conventional' seed system, it includes and promotes native seeds, and protects associated traditional knowledge. However, the law was not without controversy; the ESGN and their allies brought a suit against 15 of its articles, which would trigger a rewrite if approved. Additionally, two months before leaving the presidency, Rafael Correa vetoed Article 56 to allow transgenics into the country for research purposes (NET006). Despite the difficulties of

reconciling industrial agriculture with alternative practices, and reconciling certified and peasant seeds, the law is meticulous in its definitions and provisions. It connects to the lineage of the buen vivir-inspired constitution with its considerations of nature, expanding participation, and food sovereignty to provide a template for a future seed system.

Post legislative boom seed system

Despite a clear attempt to produce a level playing field for all system actors, seed battles still rage on. Tensions between the conventional and non-conventional seed system continue, but novel interactions provide clues of a transmodern system emerging. This section highlights some activities of the Ecuadorian Seed Guardian Network (ESGN) and the Ecuadorian Ministry of Agriculture and Livestock after the buen vivir legislative boom.

The Ecuadorian Seed Guardian Network

The ESGN ramped up its activities after the signing of the Organic Law of Agrobiodiversity, Seeds, and Promotion of Agriculture. In addition to the legal challenge to 15 of the law's articles, the ESGN wanted to contest government assertations that organic seed production was non-existent in Ecuador. As part of their advocacy, ESGN created an association of organic seed producers and registered a company to sell their seeds. This made visible the non-conventional seed system to the state entity Superintendency of Control over Market Power (Superintendencia de Control de Poder en Mercado, SCPM) allowing seed guardians to be heard in court and to gain access to proposed seed regulations.

The SCPM ruled that the 2017 seed law produced market disparity, since it stated that there are two seed markets (one commercial and the other non-commercial). This opened ground for an unfair competition

case, since the two seed systems are part of the same market, and state support for commercialisation is only given to the conventional system. The case did not advance due to a change of government, but it was an important moment for the ESGN (NET006).

2018 brought a change in strategy for the ESGN, favouring more outreach activities through social media. The network realised that they had 'more than 3,000 seed varieties preserved, but they were going to die with [them] if nobody else learned [about them]' (NET006). The network hired a social media manager, started the Radio Semilla (Radio Seed) podcast, and published actively on Facebook to reach a wider audience. The ESGN assembly also created a web-based platform called MadreSemilla (Mother Seed) on which it offers MOOCs on seed care, agroecology, permaculture, cooking, and associated topics (Madre Semilla, 2023). The platform also includes printed and virtual resources, a documentary series about seed guardianship and alternative food practices, and a virtual store. Most of these are paid offerings, and revenues are directed towards ESGN activities.

The ESGN has maintained its annual meetings since the signing of the seed law in 2017. A particular highlight of ESGN events was the 2019 virtual 'seed festival' that had to move online due to the COVID-19 pandemic. The network was planning an event for 2,000 people but ended up attracting more than 18,000 people from all over Latin America. The ESGN realises that their audience numbers are minimal compared to traditional media, but they 'feel they are doing a labour encouraging people to get on a transformation pathway' (NET006).

The network believes that a 'state that listens' and 'social dialogue' are essential for transformations to happen. However, they feel that old power asymmetries are still present in the Ecuadorian seed system. In one participant's words: 'We had to go to trial with the Ministry of Agriculture so that they would show us information regarding the

regulations they were developing. Meanwhile, the big capitalist corporation can call the minister directly each week' (NET006).

Looking towards the future, the ESGN will maintain their efforts to be an interlocutor of the state to produce change. However, they are acutely aware of the difficulties of achieving a truly open dialogue. In the meantime, they will keep trying to create and implement alternative systems and diffuse them throughout society (NET006).

State interventions in the non-conventional system

This section focuses on the activities of the Ecuadorian Ministry of Agriculture and Livestock (Ministerio de Agricultura y Ganadería, MAG)[73] during and after the drafting of the 2017 seed law. Its engagement with the national seed system has been constant before, during, and after the citizen's revolution (e.g. the 2011 plan for the promotion of quality seed). The intention of this section is not to review all its seed system interventions, but to highlight some activities that evidence increased support for the non-conventional seed system.

It is important to recognise that there is still a heavy agro-industrial bias in the MAG. For instance, in 2017 the MAG implemented the Great Agrarian *Minga*,[74] which aimed to provide farmers with property titles for their land, loans, irrigation, seed kits, insurance, technical assistance, agricultural mechanisation, and access to markets. This program was widely criticised, since it benefited mostly big landowners, delivered certified hybrid seeds with pesticides in its seed kits, and distributed them through big commercial enterprises (León, 2020). As recently as 2022, the MAG implemented a 'seed plan' benefiting growers of bananas, rice, corn, potatoes, coffee, grass, cocoa, plantains, beans, peppers, tree

[73] MAG was formerly the Ministry of Agriculture, Livestock, Aquaculture, and Fishing (Ministerio de Agricultura, Ganadería, Acuacultura y Pesca, MAGAP).

[74] 'Minga' is an Indigenous Andean term that refers to collaborative engagements between friends and neighbours to benefit the community.

tomatoes, avocados, and other fruit, in a project that invested more than US$14 million to deliver certified seeds and associated chemical fertilisers and pesticides (Ministerio de Agricultura y Ganadería [MAG], 2022).

The MAG and seed exchanges

The MAG has participated in local seed fairs since 2013, when the vice-minister of rural development attended the Muyu Rami fair organised by the Union of Peasant and Indigenous Organisations of Cotacachi (Unión de Organizaciones Campesinas Indígenas de Cotacachi, UNORCAC). However, MAG participation in seed and knowledge exchanges appears to increase from 2016, assuming a more active role in organising them.

In 2016, regional MAG representatives participated in the Second Seed Exchange and Agrobiodiversity Fair in Catacocha, Loja. In 2017, the ministry co-organised the Native Seed Exposition and Peasant, and Family Agriculture Fair in Sigsig. This event was touted as an effort to establish short commercialisation chains while also offering locally produced organic fertilisers. In 2018, the MAG co-organised the Second National Seed Exchange Killa Raymi celebrated during the ancestral Andean festival Killa Raymi, where tribute to fertility and seeds is given. All seeds exchanged were agroecological, and the event was framed as an act to 'rescue ancestral knowledge(s) and millenary communitarian practices' (MAG, 2018).

In 2019, the MAG organised the First Seed and Ancestral Knowledge Exchange Kapak Raymi coinciding with a pre-Hispanic celebration in honour of the sun. The event was framed as an intercultural and intergenerational encounter where organic seeds were exchanged and included an ancestral ritual to thank Pachamama. These events have been constant up through 2021, with the MAG playing a central role in their planning. Increased attention to Indigenous practices in MAG-

organised seed fairs might correlate with the creation of a directorate of ancestral knowledge within the Ministry (discussed further below).

Peasant and family agriculture (PFA)

In 2017, the MAG created the division of Undersecretary of Peasant and Family Agriculture through a presidential directive. This unit supports the transition from conventional agriculture to more holistic practices, and strengthens peasant and family agriculture through loans, subsidies, and other strategies. The PFA division has four directorates in its structure, importantly a Directorate of Agroecological and Sustainable Production, and a Directorate of Ancestral Knowledge. The latter's objectives include:

- Promoting the use and consumption by producing families of different seed varieties adapted to each particular area.
- Promoting exchanges of native seeds between producing families.
- Increasing local native seeds to benefit other producing families.
- Increasing arable areas and local yields of native and traditional seeds.
- Promoting the creation of local native seed houses and interconnections between them.
- Encouraging the creation of a network of seed growers at local, provincial, and national levels (Ministerio de Agricultura y Ganadería et al., 2021).

In late 2017, the MAG launched a PFA seal as a strategy to communicate the social origin of food products from peasant and family production units. Individuals and organisations can apply for the PFA seal at regional MAG offices at no charge, and after a technical visit they

might get a certificate and a style guide on how to use the seal on their products.

Despite its commitment to PFA and actions like the PFA seal, the Undersecretary of Peasant and Family Agriculture has not been as effective as social movements would have hoped. This might be due to the small number of employees compared to the overall size of the MAG and budget cuts that have undermined mission fulfilment (Recalde Vela, 2021). It is important to highlight that the Food and Agriculture Organisation of the United Nations (FAO-UN) declared 2019 to 2028 as the UN Decade of Family Farming. This initiative aims to situate family farming at the centre of public policy and investment, so there might be more support to the Ecuadorian MAG PFA unit in following years.

In 2020, the First International Summit of Peasant Family Agriculture was organised by the National Confederation of Peasant, Indigenous, and Black Organisations (Confederación Nacional de Organizaciones Campesina, Indígenas y Negras, FENOCIN), and the Union of Intercultural Social Organisations of Pichincha (Unión de Organizaciones Sociales Interculturales de Pichincha, UOSISP). Both FAO-UN and the MAG made presentations at this summit, alongside social organisations and state representatives from several Latin American countries.

At the event, the Ecuadorian Minister of Agriculture and Livestock presented PFA strategies and framed its challenges as promoting quality and traceability in PFA chains, promoting rural innovation and digitisation, and opening markets for PFA products, closing the gap with consumers through awareness campaigns for healthy and responsible consumption (MAG, 2020a). As part of the summit, the MAG declared the 30th of October as the National Day of Peasant Family Agriculture, an annual celebration to recognise the importance of PFA in the Ecuadorian food system.

Increased visibility of native seeds in the MAG

In addition to MAG-sponsored seed meetings and the increased representation of PFA and ancestral knowledge in the organisation, there is also evidence of knowledge exchanges between native seed guardians and the MAG. In 2020, ministry representatives made an 'observation tour' around the country, visiting producers of peasant seeds (Ministerio de Agricultura y Ganadería et al., 2021). These visits included the Bio-knowledge Centre of UNORCAC, to understand processes of native seed conservation and develop technical assistance strategies to accompany that work. The MAG also discussed with them the possibility of establishing a seed bank at the Bio-knowledge Centre dedicated solely to native seeds (MAG, 2020b).

In 2021, the Undersecretary of Peasant and Family Agriculture taught the 'Training Course for Rural Extension Agents in Sustainable Agriculture' to MAG technicians. A module on 'Production, Extraction and Conservation of Native and Traditional Seeds' was part of the course, reaching all district directorates (MAG, 2021). This course aimed to strengthen technicians' knowledge of native seeds, and to show the process of extraction and conservation of peasant seeds, as well as processes of native seed house implementation (Ministerio de Agricultura y Ganadería et al., 2021).

The slides presented during this module show a wide range of native seed houses, Andean rituals as part of seed exchanges, and establishes step-by-step techniques and procedures for peasant seed extraction, conservation, and seed house implementation.

Conclusion

The recent transformation of the Ecuadorian seed system can be understood as a nested process 30 years in the making. It began in the

early 1990s with the emergence of the Quichua neologism sumak kawsay as both an alternative vision of the future and a platform to achieve it. This transmodern narrative opened a space to cross the abyssal line, allowing marginalised actors to revalue their ways of life and position their life-worlds as futural.[75] The strengthening of rural social movements, and especially Indigenous social movements, during the last decade of the 20th century moved sumak kawsay from the periphery to the centre of Ecuadorian politics as buen vivir.

After decades of political turmoil, a '21st century socialist' project emerged as an outsider response to environmental, social, and political crises. However, it was only through its integration with social movements and the narrative of buen vivir as an alternative to development that it came to power in the early 2000s. Once in power, this '*movimientista* left' (social movement-aligned Left) set out to implement a citizen's revolution that overhauled citizen participation and directed political institutions towards buen vivir instead of developmentalism.

The next decade (2008-2018) was a fertile space for novel legislation to emerge, beginning with a constitution that recognised the rights of nature and rights of people to food sovereignty. The post-constitutional Organic Law of Food Sovereignty opened a broad participatory process (COPISA) to include historically marginalised voices in the transformation of food systems. The Ecuadorian seed guardian network (ESGN) has participated in each step of this process, from the 2008 constitutional assembly up to still unresolved challenges to the Organic Law of Agrobiodiversity, Seeds, and Promotion of Agriculture.

[75] The term 'futural' refers to producing futures, in opposition to the defuturing produced by modern society that takes futures away from humanity. For more see Fry (2009).

New system rules opened more spaces for non-modern and alternative practices of food production, they recognised AfroIndopeasant knowledge, and the importance of peasant family agriculture in the food system. Despite the persistent agro-industrial bias in Ecuadorian state agencies, and all the failed implementations of a buen vivir vision, this legislative process levelled the playing field to give more space to alternatives.

Through their activities over the last 20 years, the ESGN and their allies became influential players in the national food system allowing for non-modern narratives and practices to be seen. The Ecuadorian legislative process is transmodern, as it opened several 'translational contact zones' where the modern and non-modern engaged in dialogue, agonism, and antagonism to further hybridise.

The resulting hybrids (the laws themselves) are transmodern objects, as they include nature, recognise interrelatedness, and create a scaffolding for non-modern, earth-centred, and post-capitalist alternatives to grow. The sustainable materialism[76] of the ESGN continues, as does its advocacy pressuring institutions to 'see' the non-conventional seed system. Meanwhile, the Undersecretary of Peasant and Family Agriculture and its Directorate of Ancestral Knowledge work inside the state apparatus to promote more horizontal 'dialogues of knowledge(s)' in favour of buen(os) vivir(es).

[76] The term 'sustainable materialism' refers to networked sustainable practices of everyday life as a form of activism (in this case food practices). See Scholsberg (2019) for more.

7
Translational contact zones emerging

How did seed system transformations occur in Colombia, Ecuador, and Venezuela in the early 21st century across the abyssal line? Recent transformations in these countries evidence the emergence of new transmodern configurations that allow the modern and non-modern to interact and co-create new ways of doing things. In these processes, novel narratives and practices stimulated society-state interactions that produced new sets of rules effectively transmodernising national seed systems towards buen vivir.

The previous three chapters presented chronological narratives of these change processes and should be considered as the empirical level of the object of analysis. Chapter 1 argued that Andean seed systems are fractured by the abyssal line. That divisions between a formal and informal(ised) system are the product of historical epistemological monopolisation that rendered some knowledge(s) incommensurable and incomprehensible to the modern/colonial core. Seed systems show how modern institutions like capitalism, law and scientific knowledge now have a monopoly on truth. For instance, non-productivist practices and seed bartering are seen as anomalies, non-modern seed production was kept in a non-legal space, and traditional knowledge/technology production was rendered invisible. Accordingly, this work is particularly interested in the epistemic, legal, and scientific abyssal lines as elaborated by Santos (2016).

Andean seed system actors mobilised their epistemological and democratic imagination to create new constellations of knowledge(s) and practices that cross these abyssal lines and challenge current

regimes to build viable alternatives. These time-spaces of mediation and negotiation where relational inequality is reduced have been framed as translational contact zones (TCZ). Translation dynamics occurred between both sides of the abyssal line, leading to the recognition of reciprocal incompleteness, allowing the expansion of parameters that define authorship, intelligibility, and purposefulness. This is a fundamental part of an epistemology of seeing, a stance that embraces a plurality of knowledge(s) and practices aiming towards interknowledge - an integrative hybridising process that creates new meaning articulations through sfumato, mestizaje, bricolage, or transculturation (Santos, 2016).

Latin American seed guardian networks (SGNs) were essential for the opening of these TCZ. SGNs were presented in chapter 3 as peripheral transmodern spaces where non-modern food practices are strengthened and reproduced. In a period of 20 years, these networks became influential players in national seed systems, participating in legislative change to enable a more levelled playing field with formal agricultural practices. This is no small feat, since current food systems perpetuate coloniality by framing AfroIndopeasant and family practices as an antiquated regime to overcome, an obstacle to progress and becoming fully modern. It is important to reiterate that SGNs do not advocate for a return to an idealised past or maintaining traditional food production in a static state. They are exploring new avenues to strengthen these practices frequently interacting with new technologies and modern food science. SGNs are knowledge and technology producers, innovating in a transmodern fashion as they hybridise knowledge(s) to bring forth more just and sustainable futures.

One of the intentions of this research was to better understand how large system change occurs. After analysing the data while reflecting on this question, three themes emerged as the preeminent sites where change happened: narratives, practices, and rules. In this chapter,

multiple theories of change will be deployed as lenses to examine early 21st Century Andean seed system change. New institutionalism, theories of narrative transformation, and social practice theory (SPT) provide insight on the commonalities between change processes. This research does not attempt to integrate these theories, as it recognises deep ontological differences between them. However, it notes overlaps that support case analysis, allowing for a more robust understanding of how change happened.

This chapter aims to provide a description of how translational contact zones opened in Andean seed systems at the beginning of the 21st Century. It does not attempt to prescribe causal relations between phenomena but rather attest to the complexity of interrelations that influenced transformation. The chapter is divided in three sections: i) Transmodern discourse coalitions presents the ideational elements that provided meaning to the change process. It analyses how actors came together through three overlapping narratives - buen vivir, food sovereignty, and the new plural left. ii) Converging practices argues that the scaling up of SGN practices and state moves towards participatory democracy were essential to change the system. Finally, iii) Changing rules of the game frames the blurring of the legal abyssal line and the emergence of new institutions as a reflection of shifting narratives and practices.

Transmodern discourse coalitions

Transformation initiatives intentionally co-create narratives and future visions to assert their purpose and inform action (Waddock & Kuenkel, 2019). Narratives in turn, attract and articulate actors that further reproduce these transformative visions (Riedy, 2020). A multiplicity of actors mobilised narratives to change seed systems at national and transnational scales, forming broad coalitions due to shared

ideational elements. As such, discourses and discourse coalitions were identified as essential forces in Adean seed system change.

Discourses give meaning to physical and social realities, define common sense, legitimate knowledge, and provide the basic terms for analysis, debates, agreements and disagreements. They are important because they inform problem description, define what is imaginable and possible, and condition the way in which actors perceive the rationale and scope of action (Dryzek, 2013; Jernnäs & Linnér, 2019). Discourse coalitions are ensembles of actors that are attracted to specific storylines and reproduce them through practices (Riedy, 2020).

This research argues that discourse coalitions were formed through the linking of shared ideational elements between the narratives of food sovereignty, buen vivir, and the new plural left. These coalitions were instrumental in the transformation of seed systems, as they allowed actors to connect across scales and the abyssal line. Ultimately, commonality between ideational elements favoured the opening of TCZ where agents, knowledges, and practices from both sides interacted (Santos, 2016).

There is an increased interest in understanding the role of ideational elements in processes of systemic change (Riedy, 2020; Waddock, 2015; Wittmayer et al., 2019). **Discourses** are at the top level of ideational structuration. They are defined as a 'web of meanings, ideas, interactions and practices … expressed or represented in texts within institutional and everyday settings' (Riedy, 2020, p. 101). A discourse is a shared way of apprehending the world (Dryzek, 2013) that affords and constrains action and behaviour (Jernnäs & Linnér, 2019). As such, it crystalises power by promoting or suppressing specific values, identities, relations, and interests (Dryzek, 2013; Jernnäs & Linnér, 2019; Riedy, 2020).

At a lower level of structuration and giving shape to discourses, **narratives** are persistent stories formed by (re)tellings that express shared meanings (Riedy, 2020). They are linkages and spoken expression of ideas 'into explanation and persuasion' (Lowndes, 2018, p. 72). Narratives can be mobilised in transformation processes to: i) change frames by being a counter-narrative to hegemony; ii) form a collective identity via shared purpose and vision; and iii) guide action. These 'narratives of change' may eventually legitimise ideas, persuade actors, and transform practices (Wittmayer et al., 2019). Narratives have also been identified as a 'key political strategy to argue for empowering institutional reforms' (Smith & Raven, 2012, p. 1031).

Narratives of change mobilised in seed system transformations can be understood as part of a long history of utopian thought. Particularly utopia as a form of social change (Martell, 2018), or the very human impulse of visualising something better and developing strategies to get there (Levitas, 2007; Martell, 2018; Sargisson, 2013). These are not blueprints for a better future society, but rather, critical utopias that simultaneously aim to criticise and transform both society and their own ideological underpinnings. They are both provocations that allow people to shift current thinking, and spaces that enable exploring visions of transformed societies (Madeline & Rogan, 2009; Sargisson, 2013).

SGNs and their allies may be deploying 'utopianism as method' or the 'imaginary reconstitution of society' (Levitas, 2007, p. 300). This method operates in two modes: i) reconstructing the implicit vision of good society embedded in political positions; and ii) building alternative societal models. Utopias in this space are not imposed on the unwilling (Levitas, 2007), and are never final, monolithic, or totalising. They are micro-level utopias (Martell, 2018; Wood, 2007), not only projected into the future but occurring today in the cracks of our current systems. They often try to form micro-institutions through praxis in small-scale

experiments (Levitas, 2007; Martell, 2018), are pluralist, open to criticism, and in constant reconstruction (Martell, 2018).

The narratives of food sovereignty, buen vivir, and the new plural left will be analysed using the framework developed by Wittmayer and colleagues (2019) which focuses on three interrelated aspects:

- Content: the rationale, relevant actors, and plot of a narrative, including problem framing, visions of the future, roles, actions and their setting.
- Construction: the ways actors co-create a narrative, the role of technology in its creation/deployment, and its relationship with dominant narratives.
- The role of narrative and the actor's perception of it in the process of social transformation.

This framework is advantageous since it focuses on the process of narrative creation and its role in transformation. Narrative content categories also allow for a clear understanding of change from the perspective of actors, as it establishes the current and desired situations and pathways to achieve change. The purpose of this section is to delineate the contours of each narrative and make explicit their shared ideational elements. More depth in their analysis and spread dynamics is required but exceeds the boundaries of this thesis. As such, this has been considered as part of a future research agenda.

Food sovereignty

Food sovereignty is a contentious concept with multiple definitions. The analysis presented below was developed from limited food sovereignty literature (Bernstein, 2014; Clark, 2016; Constance et. al, 2018; McKay et. al, 2014; Peña, 2016; Peña, 2013; Wittman, 2015). However,

it offers a sufficient understanding of ideational elements for the purpose of this research. The most widespread definition of the term was developed in the Nyéléni International Forum on Food Sovereignty (2007), where it was defined as:

> the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It defends the interests and inclusion of the next generation. It offers a strategy to resist and dismantle the current corporate trade and food regime, and directions for food, farming, pastoral and fisheries systems determined by local producers and users. Food sovereignty prioritises local and national economies and markets and empowers peasant and family farmer-driven agriculture, artisanal fishing, pastoralist-led grazing and food production, distribution and consumption based on environmental, social and economic sustainability. Food sovereignty promotes transparent trade that guarantees just incomes to all peoples as well as the rights of consumers to control their food and nutrition. It ensures that the rights to use and manage lands, territories, waters, seeds, livestock and biodiversity are in the hands of those of us who produce food. Food sovereignty implies new social relations free of oppression and inequality between men and women, peoples, racial groups, social and economic classes, and generations (Nyéléni International Forum on Food Sovereignty, 2007, p. 1).

Content of narrative

Why does the world have to change? (*Rationale*)

The neoliberal food system concentrates power in very few transnational corporations while curtailing possibilities for small-scale producers. Food systems are increasingly unsustainable and unhealthy, leading to wicked problems like soil erosion, water pollution and malnourishment. The current crisis in food systems is caused by industrialism in agriculture (i.e. the green revolution), which has led to genetic modification, unhealthy food and eating habits, food insecurity, and a de-peasantisation of rural areas.

Neoliberalism is also a cause, enacted through austerity measures and global trade policies which led to the liberalisation of food markets and financialisation of food. Concentration of power by corporations, biopiracy and intellectual property rights over genetic material also contribute to the crisis.

The desired future is an overarching vision of feeding the world with small-scale farming. This will be made possible by strengthening peasant models of food production through solidarity-based economic organisation, the promotion of agroecology and other ecological agricultural alternatives. This vision seeks to return control of local food systems to small-scale producers, promoting autonomy in decision-making and revaluing ancestral and traditional food practices.

Who are the relevant actors? (*Actors*)

Rural social movements, particularly peasant social movements, small-scale farmers, peasant and family farms, intellectuals and NGOs are working towards the desired future. It is important to mention the La Via Campesina coalition, as it is the main transnational force behind

the food sovereignty movement. On the other side, transnational Big Ag, neoliberal states, and supranational organisations regulating trade, food safety, etc. are seen as opposing or counteracting desired futures.

How is the desired future achieved? (Plot)

The overarching narrative is one of more horizontal relations or collaborations with nature. Opposition to neoliberalism is important, including resisting globalisation, free trade agreements and challenging international food regulation. The narrative focuses on decentralising power in food systems by maintaining control of food production at local level (territorial self-sufficiency) and transforming state-society relations to influence legislation at local and national level. This includes counteracting or complementing the concept of food security with that of food sovereignty.

Novel state-society relations include more participation in decision-making processes leading to bottom-up agrarian reform. The objective is to develop pro-peasant legislation, leading to more distributive and procedural justice. state-supported food system transformation would lead to the development of food sovereignty legislation including socially just allocations of resources (land and others), state financing of small-scale solidary food production, and protection for alternative practices.

Decentralisation can be achieved through a plurality of local modes of agriculture, which requires more protection of Indigenous and traditional knowledge, as well as more spaces for agroecology and food production alternatives in university training. Strong rural social movements are also part of this transformation, working on gender equity in food production, establishing food production cooperatives, rescuing traditional knowledge, protecting, and sharing seeds.

It is important to point out that the movement for food sovereignty was started by Central American rural social movements. These activities

have taken place over the last 25 years at the local level on small-scale family and peasant farms, as well as in other forms of food production (i.e. artisanal fishing). They have also occurred in social movements and other networks of producers, intellectuals, and activists, as well as in political spaces like assemblies where food legislation is discussed and decided. Mainly in local-level government offices, but also in state-level spaces, as happened in Ecuador and Venezuela.

Construction of narrative

The narrative was constructed from localised concerns to a global debate where multiple actors intervene. Dialogues constantly happen between multiple actors at local, national, regional, and international level. These occur at academic events, seminars, conferences, etc (e.g. 1996 FAO-UN World Food Summit, 2007 International Forum on Food Sovereignty). Narrative construction also happens through the funding of research and publications, political debates, campaigning and legislative activities (e.g. constitutional assemblies). The narrative has also been advanced in spaces of advocacy, protests, and popular mobilisation.

The narrative positions small-scale, peasant family farming as morally and ecologically superior, challenging industrial agriculture due to its negative social and environmental impacts. The narrative frames capitalism as purely destructive, instead of engaging in destruction-creation dynamics. Due to this framing, popular stories focus on conflicts between peasant and capitalist farming, as well as peasant persistence and resistance in a capitalist epoch. These resistances are not only against capitalism but also against developmentalist states which erode localised agroecological practices.

Actors developed a vision for a sustainable food system that promotes harmonious relations between humans and nature. This opens political

spaces of struggle at state level to influence legal frameworks. Food sovereignty challenges narratives of proletarianisation, industrial progress, and globalised free markets as beneficial. Additionally, it questions the benefits of intensive agriculture, agrichemicals, and genetic modification, highlighting their negative impacts on the environment. Critics contend this narrative thread leads to a 'belief in humanity's salvation through small-scale farming' (Bernstein, 2014, p. 1057).

Role of narrative

Food sovereignty worked as an umbrella term that enabled multiple rural social movements to intersect, despite having different agendas. The concept is sufficiently broad to group diverging interests for rural development, providing a frame where actors can come together to challenge current ways of doing things. Food sovereignty galvanised social movements to actively participate in the development of legislation. In Colombia, Ecuador and Venezuela, the concept informs the activities of SGNs and other rural social movements (i.e. land rights, dignification of farming). In Ecuador and Venezuela, the concept was enshrined in legislation and has become a national directive. Additionally, there are multi-scalar efforts to operationalise this narrative through practices enacted by AfroIndopeasant and family food producers across the region and beyond.

Buen Vivir[77]

Buen vivir is often defined as a way of living in harmony with oneself, community, society, and nature (Acosta, 2015; Hidalgo-Capitán & Cubillo-Guevara, 2017; Huanacuni Mamani, 2010; Schavelzon, 2015;

[77] For a deep dive on the concept and its spread see chapter 6.

Walsh, 2009); in short, a plurality of good coexistences (Acosta, 2016, 2021). Generally speaking, buen vivir could be understood as a set of ideas that are simultaneously 'a radical critique to development … and a set of alternative proposals where wellbeing is only possible in socially and ecologically expanded communities' (García et al., 2016, p. 6).

Buen vivir is a discursive innovation (Altmann, 2015; Beling et al., 2018) that does not pursue a return to an idealised past (Chassagne, 2019; García et al., 2016; Gudynas, 2011; Solón, 2018), but looks to the future while conceptualising and building alternative utopias (García et al., 2016; Hidalgo-Capitán & Cubillo-Guevara, 2017). Accordingly, it can be understood as a 'process of collective social innovation' (Benalcázar & de la Rosa, 2021, p. 152); a 'conceptual and affective platform, another way to understand the world, or even other cosmovision' (García et al., 2016, p. 9); an epistemic alternative and possible 'line of flight'[78] from the dominant economic paradigm (Polo Blanco & Piñeiro Aguiar, 2020); or a 'rhetoric-ideational resource that breaks with dominant language and mental models, giving it a subversive political and cultural character facing the advance of a totalising and globalising Eurocentric modernity' (García et al., 2016, p. 15).

Content of narrative

Why does the world have to change? (Rationale)

Humanity is facing multiple crises, particularly environmental, economic, and social. The root of these crises is the colonial matrix of power, the continuation of colonial structures resulting in a racist, industrialist, neoliberal capitalist system that works against nature's health and people's wellbeing. Modernity/coloniality continues to this day as development, which maintains and exacerbates international

[78] As in Deleuze & Guattari's concept 'ligne de fuite'.

power and economic asymmetries. A buen vivir future envisions a biocentric post-capitalist world that embraces plurality, where people live in harmony with themselves, others, and nature.

Who are the relevant actors? (Actors)

There is a heavy focus on social movements as agents of change, especially those that group identities marginalised by coloniality (mainly Indigenous and Afro-Latino populations). Other social movements such as peasant, LGBTQ, feminist, ecologist, worker, and student movements are also working towards this future. More marginally, intellectuals, politicians (mainly from the new plural left), the state, and cooperation agencies are also considered as part of the buen vivir movement. It is important to highlight the role of nature as agent, particularly as Pachamama (Andean deity of nature) who played an important role in Ecuadorian transformations.

Actors who oppose the desired buen vivir future are right-wing politicians, capitalists, Latin American extractivist governments, and supranational entities like transnational corporations and international financial institutions (e.g. World Bank, International Monetary Fund).

How is the desired future achieved? (Plot)

Central to buen vivir is a positioning of nature at the centre of human activities. This would entail a widening of participation to include nature in decision-making and phasing down extractivist economies. Participation should also be expanded to include marginalised actors and towards the establishment of pluri-national states that allow multiple modes of decision-making and diverse economies/modes of production. This includes Indigenous self-determination and the empowerment of social movements, embracing plurality and complementarity.

Some of these events have taken place over the last 15 years and are ongoing. They occur mostly in Abya Yala[79] (especially in Ecuador and Bolivia) but are increasingly being discussed internationally. Events take place in rural, Indigenous and Afro-Latino territories, parliaments, universities, government and cooperation agency offices.

Construction of narrative

This narrative is part of 500 years of Indigenous and Afro-Latino resistance to coloniality in Latin America. Buen vivir positions itself in opposition to hegemonic narratives, including linear progress, perpetual economic development, neoliberal capitalism, racism, patriarchalism, nature as standing reserve, and monolithic states.

Indigenous communities and intellectuals challenged notions of Western sustainable development in the 1980s, aligning with a resurgence of Indigenous social movements in the 1990s, and their positioning as influential political actors. In the last decade of the 20th century, the Quichua neologism sumak kawsay was developed in the Ecuadorian Amazon. The concept spread through social networks, academics, and independent media over fifteen years, until it became a central component of the Ecuadorian and Bolivian constitutional processes. This garnered international recognition for the concept as it continues to transform Latin American society at multiple scales.

The concept was constructed through dialogues between multiple actors at local, national, regional, and international levels. Funding of research and publications were essential as sumak kawsay emerged from such an instance. Academic events, seminars, conferences, among other spaces, as well as political debates, campaigning and legislative activities (e.g. constitutional assemblies) have been important spaces of

[79] Abya Yala is an alternative name for the American continent widely used by diverse Indigenous nations.

construction. As with food sovereignty, the main instance of buen vivir construction might be protests, mobilisation and advocacy by marginalised actors.

Role of narrative

Buen vivir was able to extend beyond the Ecuadorian Amazon and throughout Latin America to inform multi-scale experiments in many countries. This narrative of change is being used by various Indigenous and non-Indigenous organisations and social movements. It has been used in political projects, leading to very impactful implementations in Ecuador and Bolivia. Generally, this narrative is being used by diverse actors across the globe to design and implement alternatives to Western development. Buen vivir works as a flexible vision for the future and a set of loose principles that may be adapted by any community in any context. It positions itself as an alternative, simultaneously criticising hegemonic narratives ascribed to modernity/coloniality while directing the emergence of diverse material micro-utopias.

New plural left

The emergence of a new plural left has been observed in Latin America since the end of the 20th century. It started with a wave of constitutional reforms in the 1990s and continued as many leftist governments gained power from the beginning of the 21st century.

The spread of a new socialism that strived to differentiate itself from 20th century Marxist projects was dubbed the 'pink wave'. In Venezuela, this took the form of eco-socialism, while in Ecuador it was more akin to a post-neoliberal post-development. In Colombia this path is only beginning, as its first leftist president was elected in 2022 through alliances with various social movements. The new plural left seeks to link

social movements, purposefully working towards the inclusion of Indigenous, Afro-Latino, and other marginalised groups to build alternative development regimes. However, these processes generally have not lived up to their promises, being more akin to neo-developmentalist models that end up suppressing radical alternatives.

Content of narrative

Why does the world have to change? (Rationale)

Capitalism is an unsustainable system; it eats itself as it expands and absorbs any alternative effectively nullifying other systems. The model of globalised development advanced by the United States of America after the World War II is unextendible in space and impossible to maintain over time due to planetary biophysical constraints. It also perpetuates colonial asymmetries, maintaining a global division of labour with rich imperial nations at the top.

Capitalism, neoliberalism, and development have produced a devastating ecological crisis. Additionally, the neoliberal state now produces increased levels of inequality and precarisation of life for most of the world's population. In response, the new plural left aims for a post-capitalist or at least post-neoliberal system that puts diverse social movements at the centre of change-production through radical direct and deliberative democracy. The state should be reconfigured to serve the interests of the population through dialogue. This future envisions a multi-polar world order where diversity is allowed instead of homogenising difference.

Who are the relevant actors? (Actors)

The actors working towards this future are new plural left politicians, intellectuals, and especially social movements (including the precariat,

informal economies, religious communities, AfroIndopeasant, and women). Supranational organisations and economic communities of like-minded nations are also included. Opposing actors include supranational entities like transnational corporations and international financial institutions (e.g. World Bank, International Monetary Fund), the governments of rich nations, national-level right-wing politicians, and affluent citizens.

How is the desired future achieved? (Plot)

This future is achieved through a widening of participation and radical democracy (social incorporation and direct participation). There is a need to focus on social wellbeing, fraternity, and solidarity while rejecting capitalist individualism working towards economic alternatives different from communism. This includes a decentring of the industrial proletariat as an agent of change in favour of social movements representing more marginalised actors.

Economies should transition to be more redistributive, moving away from extractivism. New plural left governments need to strengthen relations with like-minded nations and resist/question rich nations and the globalised institutions that favour them. New plural left projects should mobilise decolonial narratives of resistance and use historical symbols or reconnect with pre-colonial history and decolonial stories of resistance to/liberation from colonial oppression.

The new plural left process can trace its origins to the fall of the Soviet Union and the Latin American constitutional processes of the early 1990s. This repositioned the left, which came into power in several Latin American nations in the late 1990s and early 2000s. The movement consolidated as a slew of left-wing governments came to power in Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, El Salvador,

Honduras, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela, among others.

Construction of narrative

This narrative connects to Indigenous and Afro-Latino resistances to colonialism. It frames colonialism as a cultural homogenising project that expands European ways of life globally, while being possible only through the exploitation of non-Europeans. It questions the category of underdevelopment, as it is a consequence of a history of power that has benefited imperial nations. Crucially, it questions development as a scientific form of knowledge.

Faced with the failed promises of neoliberalism, increased inequality, and especially the 2008 economic crisis, alternatives were needed to respond in non-colonial, non-Western, post-capitalist terms. This response aims to be non-monolithic and more a set of plural flexible reactions. As such, this narrative is not openly anti-capitalist, but advocates for post-capitalist or at least post-neoliberal systems. It is a radical departure from Marxist theories of revolution and decentres the proletariat as main change actor. Linear progress and perpetual economic development are questioned, as these are unsustainable and impossible to reproduce worldwide with a fair share of earth's resources. Racism and patriarchalism are openly questioned, as is representative democracy.

This narrative has also spread through dialogues between multiple actors at local, national, regional, and international levels. Research and publications, as well as academic events, seminars and conferences have been important. Political debates, campaigning and legislative activities have been instrumental as evidenced in the cases of Ecuador and Venezuela. Although this has been mainly a top-down effort, it is important to recognise the role of advocacy, protests, and mobilisation

of social movements. After all, this concept is also referred as a 'movimientista left'.

Role of narrative

The new plural left has been positioned as a way to connect diverse social movements with more established political forces. Leftist politicians (both traditional and progressive) have expanded their concerns to include issues of environmentalism, gender, race, and more. This narrative displaces traditional Marxist understandings of a proletarian revolution as a transformative force, favouring the everyday activities of other marginalised communities/networks. Over the last twenty-odd years, it has altered state-society relations, bringing the concerns of social movements to the fore in legislation. This novel political space has also allowed for more intersectionality between seemingly disparate social movement (e.g. alliances between food and gender diversity movements).

Shared transmodern ideational elements

Narrative analysis of food sovereignty, buen vivir, and the new plural left shows that transmodern ideals permeate them. Interconnectedness, diversity, and partnership feature heavily as well as a push for sustainability and an expansion of rights. These narratives also tend to question modernity and Eurocentricity, rejecting absolutist truth claims and the idea of a linear history. Accordingly, buen vivir and the new plural left tend to encourage dialogue between diverse ways of being (including the modern). On the other hand, food sovereignty puts itself in opposition to modern industrial agriculture and aims to feed the world through small-scale farming. Although perhaps not fully transmodern, it encourages diversity in food production beyond industrialism.

These narratives are glocal, emphasise othered ways of being, and move from geopolitics to biopolitics. They are transnational, being reproduced in cyberspace through information technologies to be adapted in local contexts. These narratives take global concerns and agendas and reframe them in local terms involving diverse actors. Participation is paramount, as direct democracy is favoured, inclusion is demanded, and plurality is encouraged. They are utopian, pushing for a post-capitalist or at least post-neoliberal post-development and a wider move towards biocentricity.

Are these narratives part of a new era of human consciousness? That claim might be too bold, but they certainly point to the telling of a new shared story of humanity that integrates the pre-modern, modern, and post-modern.

Intersecting ideational elements of food sovereignty, buen vivir, and the new plural left provided meaning to the process of Andean seed system transformations. Amalgamations between these narratives produced compelling transformative visions and stories of how to materialise them. However, narratives and the diverse coalitions formed around them were not sufficient to transform whole systems. These narratives were constantly affirmed and reproduced in practices. SGNs created alternative micro-institutions through praxis in small-scale experiments that grew to trans-local and transnational levels. In parallel, state practices opened towards more direct participation influenced by the ideals of a 21st Century socialism and the possibility of peace in Colombia. This practice dimension of seed system change is explored in the following section.

Converging practices

Shifting practices and their spread were essential for wider seed system transformations in the region. At its most basic, practices can be

understood as 'the consistent rehearsal of the ways in which [people] do things [in a particular setting]' (Lowndes, 2018, p. 72). This research argues that both sides of the abyssal line experienced changes in ways of doing things leading to transformed seed systems.

Probing deeper into ways of doing, social practice theory (SPT) shifts attention from individuals and their behaviours to socially shared practices as the site of transformative intervention. In SPT, practices are the source and carrier of meaning, language, and normativity (Knorr-Cetina et al., 2001). They are articulations between i) **meanings** - ideas, aspirations, values, symbols; ii) **competences** - shared know-hows, practical intelligibility; and iii) **materials** - technologies, objects, and infrastructure (Maller & Strengers, 2015). These elements travel constantly but are integrated in localised instances. As such, they are generally stable while practices are always in the process of formation, re-formation, and de-formation (Shove et al., 2012).

Practices link with others to form bundles - 'loose-knit patterns based on [practice] co-location and co-existence', and complexes, which are 'stickier and more integrated combinations' (Shove et al., 2012, p. 17). For SPT, change is produced through the intentional shaping, directing, or influencing of practices. This change contributes to a sustainable future by stimulating distributed and coordinated governance efforts through the practice arrangement plenum (Maller & Strengers, 2015). Shove and colleagues (2012) define the tasks of practice governance as:

- Affecting the circulation of materials, know-hows, and meanings.
- Undermining support for undesirable practices.
- Facilitating actors' enlistment/defection from (un)desirable practices.
- Shaping networks through which desirable practices propagate or undesirable practices are kept in check.

- Creating conditions to develop and disseminate desirable practices.

Over the last 20 years, SGNs shifted traditional seed care practices through networked interactions. New flows of knowledge and materials made marginalised practices visible to incumbents while on the other side of the abyssal line, states changed their practices to allow inter-epistemic dialogue with the informal(ised) seed system. New modes of participation were implemented and a more open approach to science was encouraged stimulating the emergence of translation spaces. These practice shifts are framed here as powerful forces in system transformation and are expanded below.

Scaling up seed guardianship

This research argues that SGNs engaged in social practice governance without naming it as such. These networks intentionally shaped, directed, and influenced seed care and exchange practices, ultimately expanding to interactions with the state and broader society (see chapter 3). SGNs effectively shaped trans-local and transnational networks through which desirable practices propagate. In this specific case, desired practices are the conservation, propagation, and exchange of native, creole and landrace seeds according to traditional AfroIndopeasant and agroecological knowledge(s). As SGNs strengthened, network-state and network-society interactions became more relevant, leading to the development of new ways of interacting with these actors.

Meanings ascribed to these practices were explored in chapter 3. Suffice to say, they are a combination of food sovereignty and buen vivir ideational elements that reframe native seeds and associated traditional care practices as futural. The main stories that give meaning to SGN practices are: i) an opposition between AfroIndopeasant and industrial

seeds; ii) seed guardianship as a practice that produces territorial resilience and autonomy in the face of increased dependence on multinational corporations; iii) recentring non-modern agricultural institutions; iv) pursuing agricultural alternatives to industrialised agriculture; v) giving dignity and recognition to farming; and vi) networking as a path to self-sufficiency and food sovereignty.

As part of their networked efforts, SGNs created conditions to develop and disseminate desirable practices and undermined undesirable ones. For these purposes, the networks affected the circulation of materials, know-hows, and meanings. For instance, seed houses materially improve native seed storage, while changing meanings of transgenic seeds as increasing peasant dependence discourages their use. Additionally, SGN events allowed the free distribution of native seeds (materials), the exchange of practical knowledge about cultivation and storage (know-hows), and the spread of narratives such as buen vivir or Andean reciprocal nurturing (meanings).

It is important to highlight the role played by information technologies and social media platforms as part of practice governance. Although not explicitly researched in this project, there is a correlation between the consolidation of SGNs and the spread of smartphones and social media apps (materials). Platforms like WhatsApp and Facebook are mentioned profusely in the interviews as spaces where people connect, knowledge is disseminated, and material exchanges are arranged. In addition to social media, the networks have a very diverse presence online. SGN websites, blogs, YouTube videos, campaign sites, online magazines, reports, and other materials circulate beyond geographical borders producing transnational feedback loops.

Key to this process of transformative practice governance, SGNs did not pursue the dissemination of native seed care *as is* but sought to transform it. This is evident in the myriad publications (materials)

educating guardians on appropriate methods and techniques for seed conservation and evaluation (know-hows) (See Campaña Semillas de Identidad et al., 2017; Grupo Semillas, 2018; Red de semilleros y semilleras, 2017); as well as other materials carrying know-hows and meanings, like publications aiming to develop and disseminate participatory guarantee systems (Campaña Semillas de Identidad, 2018), or promote peasant feminisms (Fondo Accion, 2017).

Participant interviews and SGN publications (e.g. Pérez et al., 2016) also speak of processes akin to citizen science, where AfroIndopeasant actors use sophisticated genetic tests (materials, know-hows) to better understand the purity and quality of their seeds. Additionally, websites (materials) like the Ecuadorian MadreSemilla (www.madresemilla.com) and the Venezuelan ElConuco (www.elconuco.com.ve) aim to become online exchange platforms and marketplaces for seeds and knowledge. MadreSemilla is a particularly salient case as it hosts MOOCs, podcasts, databases, publications, and merchandise (know-hows, materials) aimed not only at financing the Ecuadorian network but recruiting new practitioners of transmodern seed care.

Opening state practices

Over the last 20 years there was also a noticeable shift in the decision-making and research practices of agriculture-related state agencies and high-level governing bodies. Two specific changes are of interest: i) the broadening of participation through implementation of direct democracy, and ii) an openness to include other forms of knowledge in food system design and regulation. It is important to acknowledge again the correlation between these phenomena and the expansion of new plural left, buen vivir, and food sovereignty narratives (meanings).

State-level direct democracy is present in Ecuador and Venezuela, but not in the Colombian case. In Venezuela, the Bolivarian Revolution and

subsequent 1999 constitutional process advocated for street parliamentarism as a way for citizens to become protagonists of democracy. This culture shift called on civil society organisations to draft and submit laws for review by the National Assembly. These processes occurred due to the creation of legal frameworks and a constant effort to disseminate law-making practices throughout the Venezuelan population. In the case of the 2015 Venezuelan seed law, it is important to highlight that street parliamentarism allowed the participation of historically marginalised peoples from rural areas traditionally excluded from decision-making.

In Ecuador, a more direct and deliberative democracy was instituted by the 2008 buen vivir constitution. In this case, legislating by popular initiative became the route by which rural social movements, SGNs, and their allies shifted the rules in favour of transmodern approaches. The 2008 constitutional process was an open and participatory process where broad sectors of Ecuadorian society had a voice, particularly those historically marginalised. Beyond the mechanisms of representative democracy, the Ecuadorian constitution enshrines citizen's rights to participation through direct and communitarian democracy. Any citizen group can create, reform, or rescind laws if they have support from 0.25 per cent of people registered to vote. Direct democracy not only manifests through instruments like popular initiatives, but also in the participatory nature of law-making processes of the post-constitutional legislative boom (e.g. by the COPISA).

Regarding research practices, the signing of a peace agreement between the FARC-EP guerrilla and the Colombian state opened new spaces for peasant and family agriculture. This had direct consequences on the inner workings of the Colombian agricultural research authority (AGROSAVIA), which changed its culture to promote second-order research practices and more horizontal dialogues with rural actors. This

culture shift in AGROSAVIA allowed for the beginning of a co-visioning process that included SGNs and other marginalised food system actors.

In the case of Ecuador, the Ministry of Agriculture and Livestock (MAG) created the undersecretary of peasant and family agriculture, as well as directorates of agroecological and sustainable production and ancestral knowledge. These instances allowed native seeds to become more visible to state actors and implement actions that encouraged informal(ised) seed practices to consolidate and spread (e.g. through support for native seed fairs). Finally, in Venezuela, the 2015 seed law recognised local knowledge-holders (maestres-pueblo) and created a scientific-peasant alliance that develops participatory research from the knowledge(s) and concerns of marginalised food system actors.

Transmodern practice bundles

The transformation of traditional seed care, policy-making, and scientific research practices had a profound impact on Andean seed systems. Non-modern meanings and competences gained more weight in the early 21st Century due to SGNs, social movements, and state actors coming together through transmodern discourse coalitions. New materials accompany these shifts as actors mobilise their creative intelligence to implement visions of a post-capitalist post-development on the way towards buen vivir. This has effectively created practice combinations that while still fragile, might point to the establishment of new ways of doing things in seed systems.

SGNs affected the circulation of materials, know-hows, and meanings associated with traditional seed care. This created conditions to develop and disseminate new practice bundles of seed guardianship, while undermining support for industrial capitalist farming. In parallel, state practices opened new spaces for inter-epistemic dialogue to emerge. This shift was achieved in no small part by pressures from below making

informal(ised) food systems more visible. Additional pressures of decolonial buen vivir, new plural left, and food sovereignty narratives aided the transmodernisation of the state towards participative practices, second order research, and the recognition of plural ways of understanding food and the world.

Through the simultaneous transformation of state practices and seed guardianship both sides of the abyssal line became visible to each other and were encouraged to collaborate producing new articulations. A recognition of reciprocal incompleteness expanded the parameters that define authorship, intelligibility, and purposefulness, effectively opening translational contact zones. This recognition would not have been possible without novel links between materials, know-hows, and meanings to produce new ways of doing on both sides. It is still uncertain if these practices will extend over time and create stickier and more integrated combinations. However, it is certain that system rules have changed, opening the way for stronger transmodern practice complexes.

Changing rules of the game

Previous chapters narrating the empirical level of this research should be considered only a snapshot of ongoing transformation processes as they end with changing rules of the game. Rules are understood here as formal and informal conventions that determine appropriate behaviour and are the basis of exchanges between system actors (Lowndes, 2018). They exist through use and reproduction in practices and can be regulative (e.g. laws), normative (e.g. values), and cognitive (e.g. belief systems) (Geels & Schot, 2007). Crucially, and connecting to previous sections of this chapter, 'narratives are often used to justify the existence of rules [and] rules often formalise well-established practices' (Lowndes, 2018, p. 72).

This section focuses on emerging formal system rules resulting from processes of social-institutional change negotiated directly by communities of actors (Geels & Schot, 2007). Formal rules in a system are formally constructed and recorded, are enacted by actors through writing and formal interpretation, and are sanctioned by coercive action through formal rewards and punishments (Lowndes, 2018). In all three cases reviewed, formal rules were the main arena of contention, as recognition of seed guardianship is seen by SGNs as a necessary condition for the survival of native seeds, family agriculture, and AfroIndopeasant ways of life.

The networks dedicated considerable resources to be included in seed legislation. Reviewed change processes can be framed as informal(ised) system actors moving from being rule-takers to rule-makers. It is important to recognise here that 'actors are not passive rule-followers … but active rule users and makers. [They] use rules to interpret the world, make sense, and come to decisions' (Geels & Schot, 2007, p. 403). However, despite theoretically not being passive rule-followers, AfroIndopeasant actors have been historically marginalised by formal system rules to the point of almost becoming invisible. As many authors contend, seed system rules and food systems more broadly tend towards rendering AfroIndopeasant seed practices illegal (Coscione & García Pinzón, 2014; García López et al., 2019; Gutiérrez Escobar & Fitting, 2016; Santana Garzón & González, 2013; Vargas-Chaves et al., 2018; Hernández Vidal & Gutiérrez Escobar, 2019).

This work deviates from those interpretations to argue that something different but equally damaging has happened in seed systems – relegating native seeds and associated practices to what Santos defined as 'the territory of the lawless, the a-legal, the nonlegal', a manifestation of the abyssal line as it tends to 'eliminate whatever realities are on the other side' (Santos, 2016, Chapter 4). So, while not being passive actors,

it can be said that the informal(ised) seed system moved from a non-legal to a legal space through the opening of translational contact zones.

How did informal(ised) system actors escape this a-legal space? This research argues that transmodern narratives and practices were crucial. Seen through the lens of new institutionalism, Andean seed system transformations can be defined as processes of institutional bricolage, or the patching together of diverse institutional elements (narratives-practices-rules) in the elaboration of new rules. In these processes, institutional entrepreneurs (SGNs and their allies) engaged in intentional design to adapt 'the rules of the game … meet the demands of uncertain and changing environments, and … further their own interests or values' (Lowndes, 2018, p. 70).

The formation of transmodern discourse coalitions while SGN and state practices converged, aided seed guardians in becoming rule-makers. As pointed out by Venezuelan scholars, it might also have to do with a widespread irreverence of the population towards the law and the 'hackability' of political institutions enabled by direct democracy practices (Felicien et al., 2020). Marginalised food system actors were never passive rule-followers as they actively resisted formal rules while coordinating localised informal rules. As described in previous chapters, SGNs complemented their acts of resistance by mobilising creative intelligence to propose novel transformation strategies. This opened translational contact zones where reciprocal incompleteness is recognised, eventually changing the rules of the game.

As a result of the involvement of informal(ised) actors and their allies, Colombia created the Resolution 464 of Peasant, Family, and Community Agriculture (2017), and an ongoing co-visioning process to design a national seed system. In Ecuador, examples include the buen vivir constitution (2008), Organic Law of Food Sovereignty (2010), the COPISA (2012), and Organic Law of Agrobiodiversity, Seeds, and Promotion of

Agriculture (2018). And in Venezuela, examples include the 2015 Seed Law, its directive of instituting the Popular Council for the Safeguarding and Protection of Local, Peasant, Indigenous and Afro-descendant Seed, and a scientific-peasant alliance that promotes horizontal inter-epistemic dialogues with local knowledge-holders.

As has been explained in previous chapters, these new laws and emerging institutions are not a panacea that will solve all food system injustices. However, they might be a step towards a future culture that assumes the best of the pre-modern, modern, and post-modern to produce a pluriversal utopia through horizontal intercultural dialogue. These laws are part of a retelling of human history from those who have been othered by coloniality. Specially by networks (SGNs) that construct their own visions of the future and meta-narratives of social transformation. Crucially, it opens pathways towards food system justice starting from a commitment to epistemic justice – a recognition of coloniality as a structuring force and interculturality as a pathway for the recognition, validation and inclusion of alternative historically marginalised onto-epistemes. A movement from concealing, ignoring, and eroding the non-modern, to a solidarity-based epistemology, where mutual education and critique between knowledge(s) is emphasised while prioritising those least advantaged (Reiter, 2018).

Conclusion

Analysing Andean seed system change over the last 25 years yielded three main sites of transformation: narratives, practices, and rules. This aligns with new institutionalism theory, which understands institutions as 'stable, recurring patterns of behaviour' (Lowndes, 2018, p. 55) articulating those modes of constraint to determine appropriate behaviour and otherwise constrain it.

Regarding narratives, overlapping discourse coalitions formed by connecting three narratives of change: buen vivir, the new plural left, and food sovereignty. The alternative visions proposed by these narratives were a strong attractor in the face of multiple environmental and social crises. Shared ideational elements allowed a variety of actors to join forces and mobilise change in food systems and beyond. The informal(ised) seed system became visible to incumbents and common terms facilitated translation between the modern and non-modern across the abyssal line. Transmodern narratives challenged modern conceptions of the world while making the non-modern legible to modern actors in seed systems.

Regarding practices, there was a convergence between SGN and state practices across the abyssal line. SGNs directed an effort of social practice governance promoting the circulation of new meanings, materials, and competences. This allowed traditional seed care to become a more robust practice plenum capable of recruiting new practitioners while becoming visible to incumbent actors. In parallel, state practices shifted by instituting direct and deliberative democracy processes and opening spaces for inclusive second-order research. This enabled the emergence of translational contact zones, encouraging inter-epistemic dialogues through practice.

Finally, formal rules were the main arena for contention as SGNs strived for the recognition of informal(ised) seed practices. In all three cases, formal rules have changed and keep changing through dialogue, agonism, and antagonism across the abyssal line. The current state of seed legislation in Colombia, Ecuador and Venezuela evidences a shift towards distributional, procedural, and recognitive justice. Moreover, these transformations point to the potential institutionalisation of a transmodern seed system that actively encourages non-modern food practices.

In Ecuador and Venezuela, the state played a preponderant role in legislative change. The constitutional processes in both countries opened a nation-wide, multi-system translational contact zone where historically marginalised actors had equal voice to that of entrenched political elites. It is important to emphasise that these openings were always produced by social movements (particularly rural) by virtue of carrying the constitutionalist presidents to power. In the case of Ecuador, the previous narrative opening of sumak kawsay/buen vivir must be highlighted, as it served as the guiding principle for the 2008 constitution. In the case of Colombia, multiple pressures are bringing both sides of the abyssal line closer (e.g. the FARC peace process). However, there is still no resolution for seed systems as negotiations are ongoing. Despite the monumental work of Colombian SGNs, formal system rules still mostly ignore informal(ised) seed systems.

To conclude, 21st Century institutional change in Colombia, Ecuador, and Venezuela has featured transmodernity in narratives, practices, and rules. This claim responds to: i) an evident push to recentre non-modern ways of being as valid alternatives responding to the current crises; ii) more transcultural and biocentric futures being proposed and mobilised connecting diverse actors to alternatives; and iii) participative processes and second order research being encouraged to produce transmodern devices through intercultural dialogue and agonism.

Crucial to this transmodern turn and the opening of translational contact zones, epistemic justice is emerging. That is, an acknowledgement of coloniality as a structuring force, and interculturality as a pathway for the recognition, validation and inclusion of alternative historically marginalised onto-epistemes. A movement from concealing, ignoring, and eroding the non-modern, to a solidarity-based epistemology where mutual education and critique between knowledge(s) is emphasised while prioritising those least advantaged (Reiter, 2018).

There is sufficient evidence to claim that translational contact zones emerged and a transmodern transition is happening. Processes of seed system change over the last 25 years show varied social sub-systems interacting to produce irreversible patterns of change. Multiple food system actors (SGNs, rural social movements, AfroIndopeasant actors, agribusiness, the state, etc.) have participated in these processes, guided by two opposing visions: the modernisation of agriculture through a green revolution model, and food sovereignty through alternative practices. These processes have been highly antagonistic due to the radical difference of guiding visions but are moving towards more agonism, dialogue and collaboration.

All three Andean seed system transitions have occurred in similar phases: i) a decade-long invisible change in the background as narratives of change consolidated and SGNs stablished as communities of practice; ii) a point of ignition where the process gains momentum, here interpreted as the 2008 Ecuadorian constitution, 2015 Venezuelan seed law, and the 2016 signing of the FARC peace agreement in Colombia; and finally, iii) structural changes becoming visible in new rules of the game and emerging transmodern institutions; which move the system towards iv) a new dynamic state of equilibrium.

The following chapter explores this process through the lens of sustainability transitions theory and its process model, the multilevel perspective giving special attention to power and justice.

8
Transmodern transitions to buen vivir in Andean seed systems

The previous chapter explored narratives, practices, and rules as transformative forces in Andean seed system change. This heuristic allowed for an initial understanding of phenomena but does not sufficiently explain how change happened over time. This chapter frames seed systems as socio-technical systems (STS) to better understand their transformation and will deploy sustainability transitions (ST) theory and the multi-level perspective (MLP) to analyse it.

ST seeks to understand how structural change happens in STS and how it can be steered (Köhler et al., 2018). Transitions are long-term non-linear processes lasting between 25 to 50 years (Grin et al., 2010) that: i) alter the ways in which a STS functions; ii) usually start slowly due to 'multiple sources of inertia'; iii) are polycentric, as 'multiple actors, factors, temporal and spatial scales are relevant for shaping [their] dynamics'; iv) can be triggered or emerge from ongoing developments; and v) are open, path dependent processes with uncertain outcomes (Köhler et al., 2018, sec. 2.3).

In transition processes, sustainability is understood as a moving target and change is planned through 'process-based, multi-scale and systemic approaches … guided by … visions' (Gaziulusoy & Brezet, 2015, p. 558). There are four overarching concepts of sustainability transitions (Grin et al., 2010):

- Co-evolution — the interaction between societal subsystems influences individual subsystem dynamics leading to irreversible patterns of change.
- Multi-level perspective (Figure 8.1) — conceives transitions as interference of processes at three levels: innovative practices (niche experiments), structure (the regime), and long-term exogenous trends (the landscape).
- Multi-phase — the transition over time is a sequence of four alternating phases: i) pre-development phase from a dynamic state of equilibrium in which the status quo of the system changes invisibly in the background; ii) take-off phase, the point of ignition after which the process of structural change picks up momentum; iii) acceleration phase, in which structural changes become visible; and iv) stabilisation phase, where a new dynamic state of equilibrium is achieved.
- Co-design and learning — knowledge is developed in a complex, interactive design process with a range of stakeholders involved through a process of social learning.

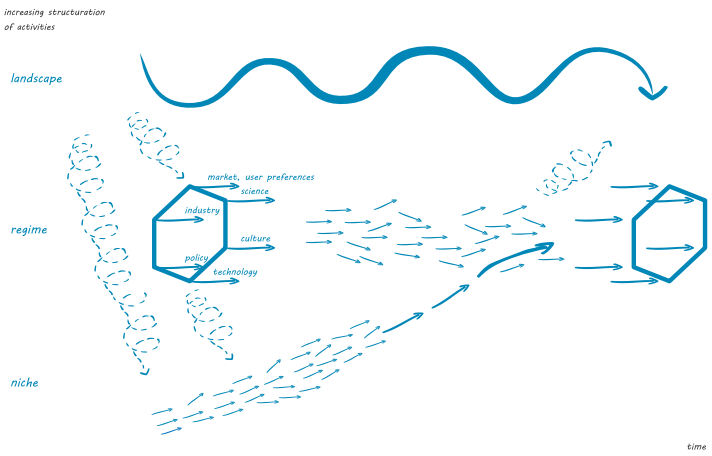


Figure 8.1. The multi-level perspective model. Adapted from Grin et. al (2010)

ST literature has been criticised on several fronts generally related to its engagement with politics, power and justice, the need for more research in poor nations, its innovation and technocratic bias, and questions about its ethics, and inclusion of marginalised actors. Authors have called for deeper engagements with power and social justice issues during and resulting from transition processes (Köhler et al., 2019), as well as more research on the structural power of mindsets, narratives, worldviews, cultural aspects, or paradigms (Schlaile et al., 2021). Additionally, more research in poor countries is needed (Köhler et al., 2019), as existing ST literature seems to not respond well to low carbon contexts in developing nations (Pant et al., 2015).

For some authors, the STS approach might be insufficient to understand transitions in poor nations, as ST is hampered by pervasive notions of Euro-Atlantic development trajectories and development through technology transfers from rich nations (Wieczorek, 2018). This has been associated with a lack of critical engagement in initial ST theorisations with 'the unsustainability of [development] models … rooted in capitalist modernity' (Feola et al., 2021, p. 1). The modern bias in ST theory also produces 'scarce consideration to normative and ontological pluralism' (Feola et al., 2021, p. 3), which has been noted elsewhere as a 'lack of attention to social difference (i.e. ethnicity, class, gender)' and ethical aspects in transitions, 'revealing a moral vacuum in [ST] research' (Köhler et al., 2019, p. 16).

ST has also been criticised for not responding properly to agrifood transformations (Wieczorek, 2018), as well as not attending sufficiently to social and organisational innovations common in these systems (Ollivier et al., 2018). Despite all these valid criticisms, this chapter will argue that both ST and the MLP are useful to understand the dynamics of change in low-carbon food systems, as long as coloniality, the abyssal line, and existing transmodern hybrids are recognised.

Andean seed systems offer an interesting challenge to ST. Seeds are an unsettling technology - In scientific and corporate hands, they are genetic material and sterile commodities subject to intellectual property rights, in the hands of seed guardian networks, they can be living beings worthy of spiritual reverence that should circulate freely. Seeds as technology also unsettle knowledge categories. If seeds have been nurtured by humans for millennia, haven't they been technologies since pre-modern times? If this is the case, then traditional knowledge(s) have been essential in creating and maintaining agrobiodiversity. However, current agricultural framings, suffering from an industrialist bias, see native seeds as naturally occurring materials to be appropriated and commodified by corporate science.

As explained in previous chapters, very active and robust AfroIndopeasant and family agricultural institutions have been generally ignored and informalised by incumbent food system actors. In the context of Andean seed systems, science-society interactions for effective change management towards sustainability necessarily include these transmodern ways of being. Cases in Colombia, Ecuador, and Venezuela show how innovative transmodern knowledge or othered sciences are mobilised by seed guardian networks to interact with society and the state. Their purpose, to be recognised and be provided with a levelled playing field for their co-existence and competition with modern industrialised agriculture.

This chapter uses the lens of ST to analyse the transformation processes of three Andean national seed systems elaborating on issues of power and justice based on previous theorisations (Avelino, 2017; Avelino & Rotmans, 2009, 2011; Avelino & Wittmayer, 2016). Most recent developments on power have been consolidated in the power in transition framework (POINT), where power is understood as 'the

(in)capacity of actors to mobilise means[80] to achieve ends' (Avelino, 2021, p. 16). There are three types of power in transitions:

- Reinforcive power – the capacity of actors to reinforce and reproduce existing structures and institutions.
- Innovative power – the capacity of actors to create new resources.
- Transformative power – the capacity of actors to develop (re)new(ed) structures and institutions.[81]

Regimes are spaces of reinforcive power, niches are spaces of innovative power, and niche-regimes are spaces of transformative power. The landscape is a global space that exercises both reinforcive and transformative power. These types of power can engage in different dynamics with one another at the same and/or different levels of the MLP. Power dynamics may include mutual dependence, one-sided dependence, independence, cooperation, competition, coexistence, synergy, antagonism, and neutrality (Avelino, 2017).

Power mobilised through narratives and discourses is of particular interest to this research. It can be defined as ideational power, or the capacity of actors to influence the beliefs of others by using ideational elements[82] (Carstensen & Schmidt, 2016). Actors exercise power through reasoning and argument to achieve their goals in three ways:

- Power through ideas — capacity of actors to persuade others to adopt their worldview.
- Power over ideas — capacity to impose ideas or to resist the inclusion of alternative ideas. This can happen as: i)

[80] These resources can be mental, human, artifactual, natural, or monetary (Avelino & Rotmans, 2011).

[81] For instance, new legal structures, physical infrastructure, economic paradigms, or religious ideology.

[82] For example, discourse, symbols, myths, narratives, collective memories, stories, frames, norms, grammars, models, and identities.

powerful actors impose their ideas; ii) powerless actors shame others into conformity; and iii) actors resist considering alternative ideas.

- Power in ideas — capacity of the established hegemon to control the production of subject positions, and of institutions to constrain actors' consideration of ideas. This can be achieved through depoliticisation of ideas so that they become embedded in society, thus structuring thought at the expense of other ideas (Carstensen & Schmidt, 2016).

From this conceptual framework, this thesis seeks to contribute to discussions on the decolonisation of ST literature and its application in food system transformations. These strands of research are young and still in construction but have stablished research agendas (El Bilali, 2019; Hopkins et al., 2020; Ghosh et al. 2021; Hebinck et al., 2021; Arora & Stirling, 2023). It is important to emphasise that the cases reviewed in this work are critical, extreme, or deviant in ST literature. However, it is precisely their strangeness which allows for reflections on the modern/colonial aspects of transitions and how to transcend them.

The chapter will first describe the landscape, regime, and niche levels of Andean seed systems to then focus on niche-regime interactions emphasising issues of power and justice. It must be recognised that this thesis suffers from a niche bias by focusing on seed guardian networks (SGNs) as agents of change. This is common in ST and agrifood transitions literature and there are calls to transcend it (Melchior & Newig, 2021). However, a niche focus is important here to highlight the profound onto-epistemic differences in transmodern contexts. Regretfully, accounts of industrial/business actors and their role in this transition are lacking. Despite these gaps, the thesis aims to contribute to agri-food transitions and decolonisation by calling on researchers and practitioners to acknowledge the abyssal line in food system regimes, the

emergence of transmodern niches in the peripheries, and the importance of inter-epistemic translation guided by principles of epistemic justice.

A multi-level reading of Andean seed system transitions

Seed system transitions observed in Colombia, Ecuador and Venezuela have been long-term and non-linear open path-dependent processes. They emerged from ongoing developments at multiple scales, occurring in hyper-localised seed houses, regional and national territories, and at transnational scales. They moved slowly for the first decade (1991-2001) of a 30-year period and have accelerated massively over the last seven years (2015-2023). Additionally, these change processes involved multiple actors (e.g. AfroIndopeasant farmers, NGOs, social movements, governments, Big Ag companies, etc.) in tension over policy, business, science, culture, and technology. Ultimately, this transition altered the ways in which socio-technical seed systems function as new rules emerged that might allow for an expansion of native seed use and related knowledge/practices.

Reviewed Andean seed system transitions align with the phases proposed in ST literature. This research frames 1992 as the start of the predevelopment phase, where the status quo changed invisibly in the background with the emergence of buen vivir, the consolidation of neoliberalism, and corresponding resistances in the region (mainly Indigenous and peasant). The take-off phase can be situated between 1999 and 2005, as the Bolivarian Revolution in Venezuela kickstarted the multinational pink tide[83] and SGNs emerged in the region. The transition accelerated in 2015 as the Venezuelan seed law was approved, continuing up to 2022 with the co-creation process for the Colombian national seed

[83] The pink tide refers to a wave of left-wing governments in power in Latin America.

system. The stabilisation phase is yet to come, since despite the approval of multiple progressive agricultural laws over the last seven years, marginalised food system actors feel their position is constantly threatened by the interests of Big Ag.

Seed systems have transitioned over the last 30 years picking up momentum since 2015. Although it is hard to predict if this will lead to irreversible patterns of change, state-society relations have been fundamentally altered leading to the creation of novel policy mixes for more transmodern seed systems. This section will describe this transition using the multi-level perspective (MLP), a process theory developed by ST scholars. Power mobilisation and power relations will be added to the analysis of each level.

The MLP states that transitions in socio-technical systems occur as the result of interactions between processes at different levels (Fastenrath & Braun, 2018; Köhler et al., 2019): a macro-scale landscape (global trends, cultural paradigms, transnational actors, and agreements); a meso-scale regime (dominant structures, culture and practices, existing actors and networks that want to maintain the status quo); and micro-scale niches (the sites for radical innovation, technologies, practices, and actors that are peripheral to the regime). For a transition to occur, niches articulate to landscape pressures on the regime. This destabilisation and/or alignment between the different levels leads to the emergence of empowered niches (defined as niche-regimes). While the niche-regime becomes more powerful, the regime weakens leading to transformations at the meso-scale. Niches can also be absorbed, combined with, or develop a symbiotic relation with the regime (Grin et al., 2010).

Landscape forces

The landscape is a global space that exercises both reinforcive and transformative power. As such, pairs of reinforcive/transformative macro-trends will be described in this section. These trends can also be understood as equivalent to institutionalised and alternative discourses. For Simoens and colleagues (2022), the landscape level is characterised by meta-discourses or deep-rooted values and assumptions. The authors understand these landscape-level meta-discourses as 'building on values and assumptions that are unchallenged and often perceived as common sense in more than one system' (Simoens et al., 2022, p. 1845). The empirical evidence points to strong and fixed abstract ideas shared in various socio-technical systems that have been institutionalised from challenging stablished meta-discourses. As such, the crisis of modernity, Transmodernity, post-capitalist alternatives, buen vivir, and a new plural left are included here. As recognised by Simoens and colleagues (2022), alternative discourses can arise from longstanding narratives reproduced by specific discursive agents. In this case, AfroIndopeasant actors, leftist politicians…etc.

In chapter one, this research situated Andean seed system transitions as part of two broad macro-trends: The **crisis of modernity** and the emergence of a new cultural paradigm in **Transmodernity**. Western onto-epistemologies appear to be in crisis, and it is becoming increasingly clear that the material intensity of life in rich nations is impossible to sustain and expand. The impacts of the ecological crisis are more evident than ever at global level while social inequality is rampant. coloniality was stablished as the structure fuelling these crises, defined as the

> 'layered intersection of anthropocentric, androcentric, heterosexist, rationalist, Euro/Western-centric, modern/colonial, racialised, industrialist/developmentalist,

> capitalist and ableist systems of power' (Figueroa Helland & Lindgren, 2015, p. 438).

This research ascribes to the position that there are no modern solutions to modern problems as modernity itself is the problem. As such, it positioned the emergence of Transmodernity as a counter-macro-trend that pursues decoloniality to achieve a more plural way of understanding reality and history from non-modern perspectives while maintaining active dialogues with modernity. It is important to emphasise that Transmodernity is an umbrella term that encompasses multiple intellectual projects including the work of Barfield, Dussel, Eisler, Grossberg, Luyckx Ghisi, Rodriguez Magda, Venn, Wilber, and others (Ateljevic, 2013; Blaser, 2009). This research also includes alternative visions and critical transition studies as part of the transmodern project such as degrowth, buen vivir, post-development, deep transitions, great turning, and age of Sustainment, among others (Swilling, 2020).

Neoliberalism has been widely mentioned throughout the research and is here positioned as another macro-trend. The neoliberal narrative can be summarised as a commitment to maintaining economic/financial/profit/shareholder value growth in a context of private ownership of capital, and advocating for individualism, freedom, and competition with minimum state intervention thus encouraging separation over connectedness (Riedy, 2020; Kallis et al., 2018). Neoliberalism is also faced with a counter-macro-trend in a very robust **post-capitalist, post-development, degrowth, swaraj, buen vivir** movement that attempts to find alternatives to the neoliberal narrative. These movements are also often decolonial and manifest in this Andean transition as buen vivir and a **new plural left**. Although still marginal when compared to other globalised trends, their growing influence and impact in the region positions them as macro-level forces.

Buen vivir posits that humanity is facing multiple crises, particularly environmental, economic, and social. The root of these crises is the continuation of colonial structures resulting in a racist, industrialist, neoliberal capitalist system that works against nature's health and people's wellbeing. Buen vivir strives for a biocentric post-capitalist world that embraces plurality, and where people live in harmony with themselves, others, and nature. Buen vivir went from being a highly localised Indigenous Amazonian concept in the early 1990's to a transnational movement that has influenced state-level policy in several countries.

The new plural left or movimientista left emerged in Latin America at the end of the last century as a deeper articulation of social movements and the state. This type of left-wing politics frames capitalism as unsustainable, perpetuating colonial divisions of labour, and increasing inequality and precarisation through neoliberalism. Accordingly, it aims to develop and implement a post-capitalist or at least post-neoliberal system, with social movements at the centre of change-production via radical direct and deliberative democracy. These movements are not labour-focused but expand their concerns to food, water, preservation of nature, gender equality, and other issues.

The **multidimensional crisis of the dominant agrifood system** and its unsustainability is now widely recognised (McGregor, 2021; Rawlinson, 2021; Wojtynia et al., 2021; El Bilali, 2019;). As part of this macro-trend, some authors argue that there is a new agrifood regime[84] at play (Levidow, 2015) and that agroecological transitions are currently underway (Elzen et al., 2017; Ollivier et al., 2018). In Andean seed systems, this macro-trend is best exemplified by the pervasiveness of food

[84] To clarify, Levidow's use of the term regime comes from political economy and not ST.

sovereignty narratives contesting power concentration in food systems due to neoliberal dynamics.

Food sovereignty envisions a world fed by small-scale farmers through a strengthening of peasant production models and solidarity-based economies. This shift includes a promotion of agroecology and other ecological agricultural alternatives, as well as a revaluing of ancestral/traditional food practices and increased control of local food systems by small-scale producers promoting autonomy in decision-making. It is also important to mention that the United Nations declared 2014 as the international year of family agriculture leading to increased research and policy shifts in favour of these agrifood systems. Furthermore, the period between 2019 and 2028 has been declared as the United Nations decade of family farming (FAO, 2021).

It is also important to mention the macro-trend of **global digitalisation and spread of mobile devices** as it clearly aided in the establishment of SGNs, enabling trans-local linkages, and facilitating learning and activism. The influence of these landscape forces on niche formation cannot be overstated. SGNs emerged as a response to neoliberalism, particularly the implementation of globalised seed legislation and introduction of transgenics. These developments were interpreted by marginalised food system actors as a threat to their way of life. Accordingly, they organised in physical and virtual networks that mobilised buen vivir and food sovereignty narratives to validate their practices and reframe them as a futural force instead of obstacles to progress. In parallel, buen vivir and a new plural left hybrids opened spaces for alternative development visions at national level inclusive of historically marginalised actors. These landscape forces were deliberately mobilised by niche actors to recruit others, articulate diverse causes, and eventually open decision-making spaces to create new system rules.

Transmodern hybrid seed regimes and the abyssal line

The field of sustainability transitions defines a regime as a dominant set of structure, culture, and practices (Ceschin, 2014; Grin et al., 2010). This interpretive analytical concept (Fastenrath & Braun, 2018) has been used in transition studies and transition management processes at national, regional and sector scales. A regime is composed of six mutually reinforcing processes (Köhler et al., 2019):

- Knowledge, capabilities, and employment of various actors relevant to the maintenance of existing systems.
- Technical infrastructures and institutions that have developed over time to service those systems.
- Economies of scale and markets of incumbent systems.
- The social significance of these systems and their links to political power.
- Mutually reliant clusters of technologies used by these systems.
- Everyday practices and lifestyle values that have come to rely on these systems.

Regimes are not monolithic as they are often sets of coexisting structures responding to different logics and expectations (Wojtynia et al., 2021). Homogeneous conceptualisations of regimes may not be generally applicable in developing nations, where regimes have been found to have a high degree of non-uniformity (Köhler et al., 2019). ST literature in developing countries provides apt descriptions of these regimes, generally characterised by having a 'weaker state apparatus, less efficient bureaucracies, higher levels of political and economic instability, less transparency in legal proceedings and enforcement of legal frameworks, and relatively high levels of economic and social inequality' (Hansen et al., 2018, p. 199). These regimes are inscribed in struggles over limited resources, being composed mainly by primary

sector activities with low levels of industrialisation and relying on foreign resources (financial, technological, knowledge, etc.).

These types of regimes are also described in the literature as highly heterogeneous, hybrid or multiple, often using the formal and informal dipole to account for difference. This multiplicity and the formal/informal institutional divide are conducive to non-egalitarian regimes where distrust is widespread. In developing societies, informal institutions play a bigger role, as exemplified by most people working in informal economies or institutional reliance on clientelism. In these regimes, informal governance is usually 'strong, pervasive and highly resilient, especially in the face of systemic weaknesses of the formal governance regime' (Hansen et al., 2018, p. 200).

Andean seed system regimes as transmodern hybrids

Agrifood transitions literature often mobilises the regime concept when analysing cases but seldomly defines it concretely (Melchior & Newig, 2021). This thesis described Andean seed system regimes as overlapping hybrids of formal and informal(ised) sub-systems, each with its own seed types, practices, associated knowledge, values, (in)formal rules, and technologies (See chapter 1). While there are few instances of collaboration, both sub-systems are mutually dependent as, for instance, formal systems use native germplasm while informal(ised) systems respond to formal rules and often use industrial inputs (including certified seeds).

Such processes of regime hybridisation have been described elsewhere as taking place in the acknowledgement of diversity and divergence, everyday exchanges, knowledge production, exchange and circulation, and rules of the game and institutions (Balanzó-Guzmán & Ramos-Mejía, 2023). Adean hybrid seed regimes are consistent with descriptions of food systems as complex, multidimensional, diverse, and

with different levels of formality, or as assemblages of parallel systems serving different producers and consumers (Leeuwis et al., 2021). These descriptions also align with reported difficulties establishing 'fully coherent regimes or groups of individuals who share expectations, beliefs or behaviour' (Wieczorek, 2018, p. 208) in developing contexts.

Definition of Andean seed system regimes as hybrid, stems from the high percentage of national food provision coming from small-scale, family, and peasant agriculture. According to Salcedo & Guzmán (2014), close to 80 per cent of agricultural holdings in Latin America correspond to family farming.[85] These units as part of total national holdings, amount to 78.4% in Colombia, and 84,5% in Ecuador. As such, this work deviates from most literature on agrifood transitions by making a distinction between a *global food regime* and the particularities of *Andean food regimes*.[86] By shifting the lens from global to regional post-colonial/poor contexts, traditional agriculture can also be characterised as bundles of stable and locked-in institutionalised practices responding to informal rules.

The global agrifood regime and modernity/coloniality

In the literature, the dominant global agrifood regime is recognised as heterogeneous (Maye, 2018) but is generally defined as 'neoliberal, productivist, and industrial agribusiness supported by political incentives and focusing on markets' (Melchior & Newig, 2021, p. 5). In

[85] Family farming has been defined by the FAO as 'a way of organizing agriculture, livestock, forestry, fishing, aquaculture, and pastoralism, which is managed and operated by a family, and above all, depends predominantly on family labour by both women and men. Family and farm are linked, co-evolve, and combine economic, environmental, social, and cultural functions' (Salcedo & Guzmán, 2014, p. 26).

[86] For a similar distinction in another geographical location see the study on the Hungarian context where Balázs & Pataki (2018, p. 43) see a 'dual (bipolar) economy'.

chapter 1, this was framed as the formal sub-system, here described as a global regime composed of

> large scale, (inter)national, corporate businesses, … largely oriented to maximizing profit and shareholder value … dominant trade policy focus[ing] on international and national formal markets and value chains, and [a neoliberal] dominant political doctrine, with the state largely facilitating private business and competition in open markets, rather than protecting local economic systems that cannot compete with global players … The existing regime is largely based on mainstream Western scientific knowledge, in which other forms of knowledge are excluded (Leeuwis et al., 2021, p. 768).

This dominant Western scientific episteme directly influences system rules and is connected to the agricultural knowledge system (AKS), or the 'formal set of institutes and actors charged with fostering innovation, and captur[ing] the stable actor networks, which support agricultural innovation and learning' (Ingram & Maye, 2017, p. 36).

As elaborated in chapter 1, we live in transmodern times where modern and non-modern worldviews co-exist and constantly hybridise. However, the global agrifood regime mostly responds to a modern/colonial worldview, defined here as the 'layered intersection of anthropocentric, androcentric, heterosexist, rationalist, Euro/Western-centric, modern/colonial, racialised, industrialist/developmentalist, capitalist and ableist systems of power' (Figueroa Helland & Lindgren, 2015, p. 438). Post-development scholars refer to this hegemonic system as the One-world World, defining it as 'industrialism, capitalism, modernity, (neo)liberalism, anthropocentrism, rationalism, patriarchalism and secularism' (Escobar, 2015, p. 14). Recently, ST scholars have conceptualised 'colonial modernities' as six interwoven

dimensions of political-ontological struggles: Assumptions of comprehensive superiority, appropriation of cultural privileges, assertions of military supremacy, enforcement of gendered domination, extension of controlling imaginations, and expansion of toxic extraction (Arora & Stirling, 2023, p. 2)

This universalising force has its roots in the Enlightenment project and was consolidated by science, law, the market, and the state as civilising forces that transformed infantile savages (peripheral communities) to Westernised subjects (labour force/consumers). Growth is its main purpose, always pursuing the opening of new markets for material consumption. This is the space of the individual without society, homo economicus, consumers, transnational corporations, free trade agreements, patents, digital rights management, Euro-centred white superiority, big extraction, productivism, high energy and high-pressure manufacturing, etc. In this view, humanity-as-one or the global village are only possible through Westernisation (Sachs, 2010).

The non-modern in Andean agrifood regimes

AfroIndopeasant, small-scale, and family agriculture have always been an important part of Latin American food systems. This is evidenced by the large number of family agriculture holdings that currently produce almost (and often more than) half of food in the region. As such, in Andean countries, the dominant global agrifood regime hybridises with family agriculture. As described in chapter one, this subsystem refers to small-scale farmer-led customary farming that is unregulated or loosely regulated, is dependent on seed saving practices and trust-based community exchanges sustained by family, peasant, Afro-Latino, Indigenous, small or medium scale farmers.

This non-modern pole of the regime cannot be defined in simple terms as it is plural and highly diverse. However, some

conceptualisations can be mobilised to better understand it. Post-development studies would define them as place-centred, community- and culture-based notions of wellbeing that have less material notions of prosperity (Sachs, 2010). These have a lot in common with what Tsing (2015) calls pericapitalist spaces, sites where communities thrive in precarity being simultaneously inside and outside capitalism. Spaces that are part of the no man's land left by decades of (mal)development which transformed territories globally through the constant scalability of progress (Sachs, 2010).

These spaces are important for sustainability transitions because they can produce innovative transmodern hybrids to resist developmentalism as it deteriorates their capacity to subsist (Martinez-Alier, 2014). Additionally, increasing awareness of Western civilisation's material intensity as a cause of climate chaos positions these spaces as important to transcend the crisis. For Ceschin (2014), only socio-technical systems that use less than 90 per cent of the resources currently consumed in rich industrial contexts can be considered sustainable. If this is the case, non-modern ways of being are at the frontlines of environmentalism, and associated knowledge(s), narratives, and practices are a guiding force for sustainability transitions.

Despite being positioned as a transmodern alternative to modernity/coloniality, this thesis problematises the definition of traditional agriculture as innovative only by virtue of being peripheral to the global agrifood regime. This stems from the transmodern framing of this thesis which seeks integration between the modern and non-modern avoiding (non)modern fundamentalisms. On an empirical level, the distinction is also made due to the clear mismatch between SGN innovations and stablished ways of doing in the informal(ised) seed sub-system where actors also seem to maintain a status quo (See chapter 3). It is clear that innovative socio-technical arrangements can emerge from the non-modern pole of the hybrid agrifood regime. However, many of

these spaces also evidence lock-in either by maintaining customary practices and forms of governance or (mal)adapting to the global agrifood regime.

It is important to re-emphasise that the non-modern pole of the hybrid regime is actively marginalised, meaning that possibilities to express actor's narratives and affirm their alternative life projects are extremely limited (Milojević & Inayatullah, 2015). The informal(ised) seed sub-system is still perceived as an obstacle for modernisation, and Indigenous, small-scale, peasant, and family agriculture actors are generally excluded from decision-making. As such, power asymmetries between formal and informal(ised) seed sub-systems persist, especially as the 'corporate food regime pushes farms everywhere to adopt intensi[ve] production methods, thus generating environmental harm, social inequalities and conflicts, especially in low-income countries' (Levidow, 2015, p. 78).

To clarify, positioning mostly non-modern hybrid ways of doing as part of the regime is not a condemnation of these practices as stuck in pre-modernity, neither it is a call to align them to the modern/colonial global agrifood regime. Rather, it is an acknowledgement that the non-modern also needs to innovate and transform in transmodern terms to destabilise modern/colonial ways of doing. These innovations must emerge from the autonomous will of the communities involved ideally pursuing transmodern multi-actor inter-epistemic dialogues with modernity.

Non-modern ways of being can be generally framed as seeing humans as part of nature, spaces of communities, situated culture, plural knowledge(s), Indigenous knowledge(s), solidarity, association, craft, refurbishment, collaborative decision making and action, subsistence, eco-sufficient modes, agroecology, permaculture, informal economies, black markets, piracy, technological disobedience, swaraj,

frugal/grassroots/inclusive innovation, metabolic value, meta-industrial labour, etc. Some of these characteristics are certainly features of AfroIndopeasant and family agriculture. However, this thesis argues that these stablished ways of doing are not always innovative as they often aim to preserve tradition and a particular status quo by resisting change or (mal)adapting to the global agrifood regime.

Seeing the abyssal line in the Andean seed system regime

Seed systems were defined in chapter one as intertwining and overlapping formal and informal sub-systems that constantly adapt to each other's pressures. This thesis probed this formal/informal divide using a decolonial lens which uncovers the colonial matrix of power as a structuring force for regime heterogeneity in poor nations. It has been argued that it may be important to distinguish a global agrifood regime from food regimes of post-colonial nations, as regime variability and niche/regime distinctions stem from their position in the colonial matrix of power. This does not exclude framings of regimes in developing nations as being politically and economically unstable, unequal, corrupt, prone to cronyism, and other issues. Rather, it is an attempt to explain the deep causes of those characteristics to attain a different perspective on what are arguably manifestations of more complex phenomena.

Andean seed regimes are composed by modern and non-modern (transmodern) hybrids that are always in flux (See Figure 8.2.). Each pole has distinct discourses, practices, institutions, rules, networks and organisations, and each maintains their own version of a constantly shifting status quo. As evidenced in this research, the modern core mobilises technoscience and law to expand and promote industrial seed production; by contrast, informal(ised) non-modern system actors maintain their knowledge(s) and practices, often resisting legislative and other changes from both the core and innovative transmodern initiatives (e.g. SGNs). Seed regimes are thus divided by the abyssal line and marked

by abyssal thinking impeding the co-presence of modern and non-modern poles and stifling learning in non-colonial terms (Santos, 2016).

Figure 8.2. A visualisation of hybrid regimes as overlaps between modern and non-modern worldviews

This interpretation of the regime level in Andean seed systems does not seek to underplay the immense power asymmetries between the modern and non-modern poles. Modern/colonial structures have been naturalised over the last 500 years, while their periphery is framed as an absolute deviant other: ignorant, inferior, local, particular, backward, unproductive, and lazy. The non-modern has effectively become invisible, inaudible, and illegible to the core, framing transmodern innovations as utopian eccentricities or threats to societal progress. Ideational power is mobilised by the modern hegemon to control the production of subject positions and institutions, constraining which ideas are considered by actors. This even affects disempowered informal(ised) system actors which resist considering alternative ideas (e.g. Andean reciprocal nurturing) and shame others into conformity.

While informal(ised) system actors are constrained and disempowered by the structural power of coloniality, formal system

actors are empowered and enabled as they mobilise reinforcive power to strengthen the structure. Although formal system actors also mobilise innovative and transformative power by fostering moderate niches (e.g. development of transgenic seeds), they still reinforce modern/colonial structures. Informal(ised) system actors are further disempowered due to other forms of exclusion that marginalise them (e.g. poverty, lack of access to health and education, etc.). Disempowerment also occurs through their disqualification, the destruction and erosion of their social practices, and the invalidation of their knowledge through epistemological racism and control. Despite informal(ised) actors having managed local agrobiodiversity for centuries, they are framed as ignorant and backward because they operate outside of the boundaries of modern technoscience. This constitutes an epistemic injustice that has harmed generations of peoples since colonial times.

The constantly reinforcing modern/colonial power structure influences supranational actors (e.g. World Bank, big transnational seed corporations), and policy instruments (e.g. UPOV, TRIPS). These in turn exert power over governments globally, and influence universities and other formal knowers. At lower levels of these nested power relations, large- and small-scale food producers are subjected to this normative power through national seed legislation and normativity. This global system of power-over relations remains mostly intact, as it is vast, highly interconnected, and corporate actors can mobilise more resources.

For instance, they have a better position in decision-making due to access to monetary resources. Additionally, these companies mobilise human resources by employing many people with high levels of education and proficiency in Western codes, facilitating cooperation with influential actors in rule-setting. These actors also mobilise mental resources through scientific epistemic superiority, narratives of capitalist superiority, marketing and lobbying to assert their positions. Industrial production of artifactual resources like certified seeds,

agrichemicals, and other inputs deployed via vast and complex global supply chains also grant them power.

Supranational agencies, big transnational seed corporations, neoliberal governments, universities, and other formal knowers constantly form reinforcive power coalitions mobilising mental, artifactual, human, natural, and financial resources. Power of elites, agenda-setting, and preference-shaping manifest in multiple ways in the regime. The agro-industrial bias has been mentioned extensively as it is pervasive in agenda-setting and preference-shaping by incumbent actors. The agenda of change has been set for many decades by incumbents with modern/colonial framings, excluding AfroIndopeasant actors, small-scale family farmers, and organic and agroecological producers. Their issues are intentionally kept off the agenda as they are framed as obstacles to progress that should industrialise or become part of the agricultural labour force.

Formal and informal(ised) seed systems co-exist, compete, and antagonise with each other. Tensions between regime poles are multifaceted but occur mainly at epistemic level (technoscientific knowledge vs. traditional knowledge), and in law arising from what is considered legal, illegal, and what is kept in a non-legal space. This research argues that informal(ised) system actors also mobilise reinforcive power by maintaining tradition or conforming to the global agrifood regime by virtue of their own autonomous decisions or by the extreme pressures brought upon them by modernity/coloniality. As such, informal(ised) system actors 'may also be a source of technological or epistemic lock-in … because of risk aversion or actions of some powerful merchants of doubt' (Ollivier et al., 2018).

Despite the persistence of coloniality and its resistance to transmodern innovation, the non-modern pole of Andean seed system regimes has seen the emergence of a novel innovative space in seed

guardian networks. SGNs are peripheral to both modern and non-modern worldviews in the hybrid regime. They develop knowledge for the preservation and spread of native seeds according to non-modern values while integrating modern knowledge and technology. As expressed by research participants, seed guardians are often seen as weirdos, radicals, or black sheep by their peers and other social movements, in a similar vein, incumbent modern actors marginalise them by framing them as ignorant. This research argues that seed guardians are a particular type of transmodern knowledge-holder. Through their articulation in trans-local networks, these knowers have effectively created an innovative niche space that has played a key role in Andean seed system transformations.

Seed Guardian Networks: A transmodern niche

Niches in ST literature refer to innovative practices peripheral to the regime. Actors at this level form constellations of structure, culture, and practices that eventually cluster and are empowered to transform the regime (Grin et al., 2010). Since most of ST focuses on market-oriented innovations (Hossain, 2016), niches tend to be defined as protected spaces (usually by the state and innovation policies), created by technology pioneers and entrepreneurs, and interacting multidimensionally with the regime through various actors (Köhler et al., 2019). Niches have two interrelated levels: i) A local niche, grouping local initiatives developing innovations dependent on local conditions, and ii) a global niche, emerging institutional field, or proto-regime, which refers to a community with shared rules exchanging knowledge and resource flows countervailing the regime (Smith & Raven, 2012).

Three simultaneous processes combine for the development of a niche (Smith & Raven, 2012): First, **shielding** path-breaking innovations from selection pressures of the regime related to i) industry structures, ii) dominant technologies and infrastructures, iii) the stablished

knowledge base, iv) markets and dominant user practices, v) public policies and political power, and vi) cultural significance of the regime. Second, **nurturing** innovations through the building of actor networks, articulating their expectations and those of external actors, and aiding broad learning processes related to multiple socio-technical dimensions. Finally, **empowering** innovations so that they become competitive in regime terms allowing shields to be removed. Empowering can occur to 'fit and conform' (being competitive under regime terms) or 'stretch and transform' (restructuring the selection environment).

Path-breaking innovations emerge in niches but are always connected to existing regimes and landscape developments. Niche actors react to variables at these levels to produce appropriate responses connected to user needs. The emerging innovation is eventually used by small groups of people, leading to the creation of a dedicated learning community that strengthens the practice and stabilises rules. Finally, the innovation is widely diffused and can compete with the regime (Belz, 2004).

Second-order learning and networking (specially outside of niche spaces) have been identified as critical for niche development (Maye, 2018). Successful niches diffuse socio-technical practices in three ways: i) replicating small projects within the niche, ii) recruiting more participants through project scale-up, and iii) translating niche ideas to incumbents (Seyfang & Haxeltine, 2012).

Probing the literature, SGNs can be defined in myriad ways. They are akin to 'alternative food networks' or 'civic food networks' (Megyesi, 2017). They can be framed as 'reflexive localism' since they advance sustainability through the protection of endangered food, biodiversity, and local traditional knowledge (Levidow, 2015). They could also be understood as 'sustainable materialist social movements' which focus on replacing unsustainable practices with alternative ones, producing sustainable material flows and institutions often including the non-

human (Schlosberg, 2019). For Truffer and colleagues (2015), these innovations could be framed as alternative milieux in radical politics, new social movements, alternative pathways, or alternative spiritualities and lifestyles. SGNs can also be defined as 'frugal innovation, grassroots innovation, and inclusive innovation which utilise local assets and involve Indigenous knowledge systems located outside R&D laboratories' (Hansen et al., 2018, p. 199).

SGNs as grassroots networks are akin to niches 'in that they operate on the margins of conventional agriculture, mainstream public funds, and institutional support frameworks' (Maye, 2018, p. 333). These grassroots socio-technical arrangements have been generally neglected in ST literature (Hossain, 2016), leading to calls for adaptation of ST concepts to these transformative alternatives or finding other conceptual frameworks that might suit them better (Seyfang & Longhurst, 2016). For this reason, chapter seven explored these spaces through a heuristic of narratives, practices, and rules inspired by new institutionalism. However, keeping in line with the socio-technical focus of the present analysis, SGNs will be framed here as grassroots innovations (GI), or

> innovative networks of activists and organisations that lead bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities involved. In contrast to the greening of mainstream business, grassroots initiatives tend to operate in civil society arenas and involve committed activists who experiment with social innovations as well as using greener technologies and techniques (Seyfang and Smith 2007, 585).

GIs are a bottom-up approach frequently led by partnerships between communities and nonprofits (Hossain, 2016). They are socially orientated

innovations operating in structures owned by communities, guided by shared values and culture instead of profits, and dependent on voluntary work, grants, and mutual exchange. Regretfully, niche formation and growth in disadvantaged civil society contexts and how GI niches pursue broader influence over regimes has not been sufficiently explored (Lai, 2023; Seyfang & Longhurst, 2016). The next sections attempt to contribute to this deficit by describing SGNs as a GI niche that was eventually sufficiently empowered to change seed system rules.

SGNs *as grassroots innovative niche spaces*

Seed guardian networks (SGNs) were described in detail in chapter three and will be analysed here as niche grassroots innovations. SGNs defend the rights of peoples to produce, store, improve, exchange, and trade seeds according to non-modern narratives and practices. They can be described as diverse, decentralised, place-based, trans-local, and horizontal coalitions of people and organisations committed to native seed care in transmodern terms. SGNs have created assemblages of innovative practices peripheral to the hybrid regime and have been empowered to become key players in national seed systems.

The SGN niche emerged from landscape pressures and issues in the hybrid regime. At landscape level, the global spread of neoliberalism resulted in real and perceived threats to the subsistence of marginalised actors from seed legislation and other forces. On the other hand, the spread of decolonial and buen vivir narratives as well as mounting evidence of the detrimental impacts of industrial agriculture led to the consolidation of a global food sovereignty/agroecology movement.[87] At regime level, issues relate to the persistence of a formal/informal divide due to the abyssal line leading to actor marginalisation, political shifts

[87] It is important to emphasise that this is but a recent development in a 500-year long resistance to coloniality by AfroIndopeasant actors in Latin America.

towards a new plural left, and the spread of information and communication technologies (ICT), among others.

The SGN niche emerged from civil society (sometimes in collaboration with nonprofits), as non-hegemonic pioneers (e.g. AfroIndopeasant actors) transmodernised their practices while maintaining connections to non-modern values. These pioneers feel peripheral to both the modern and non-modern regime worldviews as they are shunned by their peers (e.g. peasant neighbours) and hegemonic actors (e.g. seed scientists). The niche is transmodern as it engages in dialogues with modernity to transform traditional seed care practices, improving seed technology in non-Western terms by ascribing to alternative visions of what it means to live well (buen vivir), and produce tasty, healthy, and culturally relevant food (food sovereignty).

This description is consistent with framings of Global South GIs as combining local necessities with post-development discourses (Smith & Seyfang, 2013). Effectively, the SGN niche goes beyond the (re)production of innovative practices to also create 'different senses of self, social networks, knowledge production, and post-capitalist economic practices' (Lai, 2023, p. 3). The niche connects to alternative narratives emerging as a reaction to meta-discourses (Simoens et al., 2022). As such, SGNs are more akin to radical niches, which exercise power challenging dominant macro-trends while strengthening counter-macro-trends (Avelino, 2017). The SGN niche challenges notions of development as technological transfers from rich to poor nations, showing that localised Global South knowledge(s) actively participate in the production of sustainable futures.

Niche formation and development

Regarding niche formation dynamics, novel framings of seed care practices started as local initiatives (e.g. transgenic free territories)

which eventually expanded and transformed through the formation of (trans)national networks. SGNs consolidated via emergent bottom-up processes led by committed groups of people (including many volunteers), sometimes aided by national and international nonprofits. Accordingly, it is glocal in nature as it links with Indigenous, Afro-Latino, rural and other social movements across the region, mobilising cyberspace to co-produce and disseminate knowledge, and advocate for change.

This is consistent with descriptions of other food system GI groups as self-organising and emerging from bottom-up processes instead of top-down technology implementations (Ingram & Maye, 2017). It also aligns with recognition of steering groups playing a critical role in GI niches (Feola & Nunes, 2014), and networking as an important step for 'upscaling and transcending the local milieu' (Hossain, 2016, p. 977). It is important to highlight that SGNs built networks of outliers to both the formal and informal(ised) seed sub-systems. As such, they challenge established ways of doing things across the hybrid regime effectively crossing the abyssal line.

GIs need constant support as they face a range of challenges related to formation and diffusion. Maintaining a protected space is especially difficult (Maye, 2018) due to lack of political capital and funding (Lai, 2023). GIs also engage in internal ideological conflicts and find it difficult to connect with skilled people (Hossain, 2016). Additionally, GI emergence within an unsustainable regime threatens its viability and diminishes possibilities to diffuse counter-hegemonic ideas (Seyfang & Haxeltine, 2012). Although SGNs also faced similar challenges, this research argues that all three niche development processes (Shielding, nurturing, and empowering) are found in SGN trajectories.

Shielding of this niche space was championed by niche actors in what can be framed as a hostile environment. Selection pressures of the global

agrifood regime include an overarching industrialist bias, heavy emphasis on scientific knowledge for food production, and increasing control of supply chains by few transnational seed corporations. Additionally, non-modern seed care practices and SGNs were mostly kept in an a-legal space by incumbents, exposing actors to high uncertainty due to increased legislative pressures.

These pressures were not enough to undermine the niche as SGNs kept sharing knowledge and recruiting new practitioners across local and national borders through social media and other strategies. The decentralised, trans-local, and virtual nature of these networks allowed them to be flexible and convene/disperse as needed. Place also played an important role in shielding, as experimentation happened in marginalised spaces (i.e. rural AfroIndopeasant territories). Geographically, poor nations are unable to assert state power homogeneously, leaving vacant spaces where legislation is difficult to enforce. This allowed niche actors to challenge global seed legislation from their own framings of what is (un)just, perhaps also motivated by an irreverence towards the law.

SGNs nurtured their innovations through network building, articulating expectations, and co-learning. As authors suggest, GI growth and development is connected to building social links, increasing numbers of network actors, and engaging in peer-to-peer trans-local learning processes that eventually create coalitions (Feola & Nunes, 2014; Hossain, 2016). SGNs benefited immensely from the spread of ICTs which allowed them to connect with other outliers that shared their same values and interests on native seed preservation. This was complemented with face-to-face local, national, and international events which allowed greater cohesion.

Alignment of expectations and visions occurred through the organic formation of discourse coalitions around narratives of food sovereignty

and buen vivir. These narratives appear to be sufficiently broad to allow multiple perspectives and agendas to coalesce in defence of native seeds. Discourses are important in transitions as they give shape to the socio-political legitimacy of niches (Geels et al., 2008). Some features of SGN narratives are: i) eco-centricity (e.g. by framing seeds as living agents); ii) plurality (e.g. by its mobilisation of peasant feminisms, and alignment with gender diversity social movements); iii) sovereignty/resilience in the face of increased market monopolisation, and iv) sentipensar or corazonar, which refers to thinking with the heart, or a deep engagement with the senses, intuition and emotional intelligence (Fals Borda & Moncayo, 2015; Guerrero Arias, 2012). As such, they are antiracist, inclusive, and push for post-capitalist futures.

ICTs played a crucial role aligning visions as online posts, chats, magazines, and videos communicated SGN expectations to internal and external audiences in real time. These instances of communication with wider audiences have been shown to be critical for niche emergence and development (Ingram & Maye, 2017). As Hess (2014) points out, shared frames and discourses allow cross-movement solidarity, which was essential in these cases for the transformation of national seed laws.

Be it about improving seed quality, legislative changes, or peasant feminisms, co-learning is a fundamental part of the SGN niche. This process is continuous and occurs at trans-local scale, iterating learnings from localised farmers and scaling them to large virtual networks. Learning spaces are opened in face-to-face encounters like seed fairs, but mainly occur in online forums, podcasts, and other digital media. Since SGNs seem to be peripheral to both formal and informal(ised) seed systems, their learning processes can be framed as 'creative destruction' where 'old knowledge and ways of learning are discarded in favour of new approaches or recombined with new ideas or processes ... [where] peer-to-peer knowledge dissemination complements a process of

dis/aggregation, re/consolidation and de/standardisation' (Feola & Nunes, 2014, p. 247).

Alternative agrifood niches tend to develop 'their own distinctive knowledge systems (KS) and collaborative modes of learning in the absence of support from the formal Agricultural Knowledge System (AKS)' (Ingram & Maye, 2017, p. 36). This also seems to be the case with SGNs as they challenge the AKS advocating for inclusion of their plural knowledge(s) through transmodern dialogues. Despite SGNs having limited access to scientific knowledge and expertise, they also connected with sympathetic professionals in different spaces who share similar values (e.g. technicians with agroecological leanings). This is consistent with findings by Hossain (2016) and Gupta (2012), which show that learning from traditional knowledge-holders is essential and dialogues between formal and informal science are imperative for GI.

Niche shields have not been removed as SGN actors feel constantly threatened by incumbents, be it by virtue of their asymmetrical influence in decision-making or their appropriation of alternative narratives. However, empowerment has occurred through the (re)positioning of seed guardianship as a practice and seed guardians as a particular type of transmodern knowledge-holder. The re-framing of their practices as future-making instead of regressive pre-modern residues has led to better self-esteem and assertiveness of niche actors. This re-valuing of their role in society produced the momentum necessary for the niche to influence wider system rules.

The cases reviewed show that capacity building is essential for transformation. Much of the energy of SGNs has been directed at empowering marginalised actors by shifting their narratives, creating communities of practice, and showing them how to mobilise politically. The novel concept of seed guardianship allowed for a reframing of seed care practices otherwise understood as obstacles to progress. In this

manner, niche innovations become competitive in non-modern terms as they transcend the abyssal line and offer transmodern answers to regime issues and landscape pressures. As such, the SGN niche influences the global agrifood regime through a stretch-transform pattern creating capabilities and attracting resources that 'empower participation in political debates over the future shape of institutions and regime selection pressures' (Smith & Raven, 2012, p. 1031).

SGNs actively participated in processes that changed the rules of the game to include non-modern values, narratives, and practices while pursuing dialogues between traditional knowledge and modern science. Niche activities are directed towards stretching the hybrid regime by transcending the abyssal line. This allows the non-modern to be seen by the modern pole and stablish new rules allowing more equal opportunities for transmodern practices. However, as Seyfang and Longhurst (2016) have found, most GI niches seek to influence the regime to co-inhabit that space without replacing it. This appears to be the case with SGNs as they do not seem to pursue a dismantlement of industrial agriculture but rather a more levelled playing field for competition.

SGN niche diffusion

Over time, protected GIs contribute to global niches and are taken up by regimes. However, they might need to drastically shift stablished financial and legal structures to successfully diffuse (Hossain, 2016; Seyfang & Longhurst, 2016). GIs easily diffuse geographically since they are low-tech, accessible, and empowering (Seyfang & Longhurst, 2016). In addition to geographical spread, diffusion requires GI niches to communicate effectively with external audiences, often aided by niche adaptation or regime shifts (Maye, 2018). However, translation of GI niche ideas to incumbents is challenging since their values, ideas, and practices are generally widely divergent from the regime (Maye, 2018; Hossain, 2016; Seyfang & Haxeltine, 2012; Seyfang and Longhurst, 2016).

Intermediaries can play a central role in translation by moving from internal networking, systematic shared learning, visioning, and expectation-management towards external networking (Seyfang & Longhurst, 2016). Due to their horizontal nature, many SGN actors unknowingly served as niche intermediaries by connecting projects, negotiating interests, and establishing priorities to create a common vision (Kivimaa et al., 2019). However, special recognition needs to be given to SGN steering groups who played a key intermediary role between the local and global niche by fostering network cohesion, seeking funding, connecting with allies, and sharing knowledge between (trans)national networks.

The SGN niche is trans-local and transnational, which aligns with other niche processes observed in poor nations (Truffer et al., 2015). SGN niche innovation is non-Western and non-state driven, emerging at the grassroots level from social movements and localised (eventually trans-local) communities. In the cases explored, the SGN niche developed new transmodern resources, structures and institutions that diffused geographically as it consolidated. SGNs are mostly fully horizontal networks that disaggregate and come together emergently and flexibly.

As recounted by research participants, one of their intentions is to reach unsupported seed carers in remote places. As such, collaboration happens physically and virtually across national borders and consists mainly of knowledge exchanges between niche participants. The possibility of maintaining constant connection over long distances contributed to vision-building and discourse co-creation which have been identified as critical for diffusion (Schiller, et al., 2020). Ultimately, niche actors were able to exercise ideational power through narratives and the formation of discourse coalitions, which in this case are bricolages between food sovereignty, buen vivir, and new plural left framings.

As Seyfang and Longhurst (2016) put it, place matters in GI diffusion. In the case of SGNs, these places can be described as vacant rural spaces where the state has diminished influence.[88] These topographies are home to peoples that still hold non-modern values, and are not conducive to the production of large-scale agrifood products (e.g. soy or cotton). Despite financial limitations and state abandon (or perhaps because of it) the networks exercised prefigurative power by mobilising multiple resources. For instance, artifactual resources by designing and building seed houses, organising seed exchanges, and producing digital databases. Mental resources as exemplified by SGN publications, social media presence, and dialogues between niche actors. And human resources in a plurality of actors including AfroIndopeasant, agroecological and organic farmers, allied nonprofits, academics, and other allies.

Niche mobilisation of prefigurative power can also be considered countervailing power as it contests modern/colonial seed system framings. The transmodern practices and narratives of SGNs challenge the formal seed system both practically and epistemically. This challenge removes power from formal system actors allowing for more equal power relations in the system. However, including SGN values, framings, and concerns is no easy task since they are widely divergent from those of the modern regime. Ideas like seeds as living beings or a commons, reciprocal nurturing practices, biopiracy, transgenic prohibition, and many others unsettle modern/colonial frames. This research argues that SGN niche upscaling contributed to the infiltration of these issues in hegemonic agendas, opening cracks in the formal system, and resulting in transformed state-society relations.

[88] In some limited cases SGN spaces have special laws as exemplified by Indigenous territories or *resguardos*.

Despite emerging from a marginalised space by modernity/coloniality and having considerably less resources, the niche has been able to diffuse by exercising prefigurative, countervailing, and transformative power in transmodern terms. This niche was not protected by the state or policy but by internal actors through networking, vision building, and discourse coalitions. There is still a long way to go for the SGN niche to fully challenge Andean seed regimes and the global agrifood regime. However, it has transformed system rules to hopefully begin the kick-off phase.

This shift has been enabled by the opening of translational contact zones by intermediaries allowing innovations to be anchored to the regime. As described in chapter one, in these translational contact zones both modern and non-modern worldviews engage in dialogue and creative tension (agonism) to explore configurations of novel structures, institutions and practices. In the case of seed system transitions, these translational contact zones allowed for more protection of the transmodern SGN niche through legislation and new state-supported institutions as described below.

SGN niche interactions with the state

This research has argued that protection and diffusion of the SGN niche occurred largely due to the activities of network members without state support. AfroIndopeasant and family farmers, nonprofits, academics, and other professionals unsettled current ways of doing in the hybrid regime while shielding, nurturing, and empowering the niche. However, GI literature emphasises that support in the wider regulatory and sociopolitical context is needed for GIs to have broad and sustained influence (Seyfang & Longhurst, 2016). Additionally, the state in its regulatory function is often mentioned as a crucial actor for the protection and nurturing of niches in ST literature (Johnstone & Newell, 2018). Accordingly, this section describes the shifting relationship

between the SGN niche and the state as a crucial part of Andean seed system transitions.

Following theorisations by Johnstone & Newell (2018), this thesis adopts a relational understanding of the state as being enmeshed in broader social power relations including with global-scale actors (e.g. IMF, World Bank). These relations both constrain and enable sustainability transitions through the formation of coalitions to either maintain incumbency or transform systems. As such, the state is not monolithic and is immersed in 'shifting historical alignments of actors and networks vying for [its] support' (Johnstone & Newell, 2018, p. 76). It is important to point out that neoliberalism has discredited the role of the state in food provision and that the post-colonial and economically disadvantaged position of the countries studied situates them in asymmetrical global power relations. Despite these barriers and the state's role in maintaining incumbency, its relationship with marginalised food system actors has effectively transformed.

This research argues that shifting state-society relations are product of landscape pressures like decoloniality, the multidimensional crisis of agrifood systems, and the consolidation of a new plural left. The alignment of these macro-trends with the innovative alternatives developed by SGNs allowed for their inclusion in food system agendas. The SGN niche took advantage of direct democracy initiatives in Ecuador and Venezuela from the late 2000's. However, it was almost a decade after their foundation (2014-15) that the networks achieved specific support from state actors. The governments of Colombia, Ecuador, and Venezuela mobilised innovative and transformative power in the early 21st century to design novel transmodern seed policies. These laws further empowered SGNs and other alternatives leading to reconfigured geometries of power in seed systems.

This section focuses on 'conflicted political fields … in which coalitions mobilise to support, block, or modify ST policies' (Hess, 2014, p. 279). Two power coalitions were identified empirically in the transition process as they appear consistently in the data:

i) Transnational seed corporations, their national representatives (i.e. industry guilds), neoliberal government actors, and formal knowledge experts.
ii) SGNs, other social movements (e.g. rural, ethnic, gender, student), government allies, nonprofits, and alternative knowledge experts (e.g. agroecology).

Echoing findings by Hess (2014), key mechanisms of mobilisation in Andean seed transitions included: i) grassroots mobilisation in which social movements form coalitions in support of ST policies, and ii) regime mobilization by organized agents against ST policies, as incumbents prefer less disruptive transition pathways (Lindberg et al., 2019). Collaboration between industrial seed companies and SGNs is absent in this process, as SGNs see corporations as competition at best and a threat to survival at worst. Processes of regime resistance have not been sufficiently explored as the focus was on transmodern openings. This research gap will be part of a future research agenda attempting to understand the positions of incumbent industry actors and their allies.

Translational contact zones

This research has framed seed systems as transmodern hybrids between modern and non-modern worldviews where technoscientific and traditional knowledge collide. In such hybrid socio-technical systems the extent of conflict begins where 'performative embedded practices from one or other "side" of the hybrid system are able to deploy (more or less conscious) forms of epistemic violence' (Balanzó-Guzmán

& Ramos-Mejía, 2023). A decolonial lens on Andean seed systems reveals these violences as epistemic control, the disqualification of social agents, and the destruction of social practices.

The stablished hegemon of modernity/coloniality, the global agrifood regime, and the agricultural knowledge system have naturalised technoscientific, industrialist, and capitalist food production and control the production of subject positions accordingly. This structuring reinforcive power comes at the expense of plural alternative ideas of food production and exchange. Academics, technicians, politicians, and other hegemonic actors impose these ideas over system actors and resist the inclusion of alternatives, as evidenced by resistance to include SGNs in policymaking. Additionally, other powerless actors (e.g. family farmers) shame seed guardians into conformity by framing their practices as eccentricities. Despite these barriers, SGNs have been able to persuade others to adopt their visions by mobilising power through ideas. These have been framed here as hybrid narratives between food sovereignty and buen vivir, that when combined with new plural left framings lead to the emergence of inter-epistemic dialogues with the state.

In the case of early 21st century Andean seed system transitions, niche and landscape pressures on the regime facilitated the creation of translational contact zones where both sides of the abyssal line can engage in creative tension as a result of translation - A polycentric living process where reciprocal incompleteness is recognised allowing the expansion of the parameters that define authorship, intelligibility, and purposefulness (Santos, 2016). The concept of translational contact zones has been selected here as it attests to the massive divergence between knowledge(s). However, ST literature has also theorised similar spaces as user assemblages or interaction arenas (Kivimaa et al., 2019). Literature on knowledge in organisations has also been mobilised by ST scholars to better understand the absence of common knowledge at the

boundaries between different knowledge domains referring to inter-epistemic exchanges as boundary processes or boundary work (Ingram & Maye, 2017).

The opening of multi-actor translational contact zones was essential for Andean seed system transitions. In Colombia, the co-creation of a national seed system was kickstarted by government actors with a systemic approach inclusive of informal(ised) system actors. In Ecuador, the COPISA brought together system actors for a long-term, nation-wide co-creation process to develop food system legislation. In Venezuela, SGNs mobilised street parliamentarism to assert their narratives/practices as a response to a proposed seed law. This research has argued that these were no mere diversity, equity, and inclusion initiatives or generic co-creation processes but rather highly contested inter-epistemic exchanges articulating diverging worldviews.

In these translational contact zones, marginalised non-modern epistemes were mobilised to transcend the scientific and legal abyssal lines. Consensus and conflict in these spaces has been explored in chapters four to six with greater emphasis on conflicts arising due to incompatibility between the modern and non-modern. For instance, the pervasive narrative of native seeds being of low quality, which negates the non-modern care that goes into them. Despite such narratives still permeating seed systems in the region, active listening has occurred on both sides of the abyssal line expanding the parameters that define authorship, intelligibility, and purposefulness.

The functioning of these translation processes has not been sufficiently explored in this research. However, it is important to point out that they are not only the result of one or two years of co-creation events, but rather the result of many years of ideational elements articulating in novel narratives leading to the formation of broad discourse coalitions. These narrative fields, materialised in technologies

and practices, unsettle the stablished hegemon making the non-modern visible and allowing for more horizontal dialogues in the system. As such, ideational power is of great importance in this transition since knowledge is both an object of change and an instrument enabling change.

Translational contact zones allowed for new transmodern configurations of the epistemic and legal landscape. For instance, in Venezuela the scientific-peasant alliance is being implemented, encouraging inter-epistemic dialogues. In Ecuador, the ministry of agriculture created the undersecretary of peasant and family agriculture, a directorate of agroecological and sustainable production, and a directorate of ancestral knowledge, which are fostering further dialogues between technoscience and othered knowledge(s). In all three cases reviewed, SGNs and the informal(ised) seed regime are on their way to, or have shifted from being kept in a non-legal space to being recognised in policy frameworks. Additionally, they are now recognised as valuable knowledge-holders in national seed systems.

Despite transmodern practices having better footing in Andean seed systems, informal(ised) system actors are not fully satisfied with the results of translation. SGNs keep pushing for more space for their practices and narratives in seed systems, resisting narrative appropriation by incumbents, and pushing to limit the expansion of Big Ag by maintaining the prohibition of transgenics or creating buffer zones between those seeds and native crops. On the other hand, formal system actors constantly seek to dismantle the laws in Ecuador and Venezuela to further their industrialist agenda and undermine non-modern knowledge. This shows the difficulties of achieving transmodern stabilisation and the need for constant translation across multiple abyssal lines (epistemic, scientific, legal).

Intermediaries across the abyssal line

Some actors have been instrumental for the creation and maintenance of translational contact zones. For instance, SGN steering groups and particularly members engaging in advocacy, sympathetic academics and technicians working in agroecology or social sciences, allies in government agencies and other social movements, as well as government actors open to alternative ideas. In ST literature, these types of actors have been framed as boundary spanners, knowledge or innovation brokers, systemic intermediaries, or innovation intermediaries (Steyaert et al., 2017 AT book; Ingram & Maye, 2017).

These transition intermediaries are defined as 'actors and platforms that positively influence sustainability transition processes by linking actors and activities, and their related skills and resources, or by connecting transition visions and demands of networks of actors with existing regimes in order to create momentum for socio-technical system change, to create new collaborations within and across niche technologies, ideas and markets, and to disrupt dominant unsustainable socio-technical configurations' (Kivimaa et al., 2019, p. 1072).

Intermediaries are match-makers forming connections within niches and between niches and regimes. They cross spatial and administrative scales fostering change and facilitating support in multiple contexts (e.g. policy, market). They are important for networking, forming alliances, negotiation, and translation processes addressing knowledge gaps and shifting people's interpretative frameworks. These actors are not neutral as they are immersed in power relations of the system and have strategic objectives connected to the problem space (Kivimaa et al., 2019; Steyaert et al., 2017 AT book; Hossain, 2016).

Kivimaa and colleagues (2019) have identified several types of intermediaries and affirm that absence of one type may severely hinder

transitions. Consistent with their findings, many intermediaries in Andean seed systems are unaware of their intermediation, and although this research has not sufficiently mapped the 'politics at play', it has framed intermediary normative positioning as modern and non-modern. Intermediary types will be connected here with functions and outputs of intermediation proposed by Steyaert and colleagues (2017) to better understand their role in Andean seed system transitions.

First, systemic intermediaries pursuing whole system change with an explicit transition agenda operating across all MLP levels. SGN steering groups, intellectuals, and new plural left politicians play this role as they pursue eco-socialism, buen vivir, food sovereignty, agroecological transitions, and more direct democracy. They engage in boundary work on problem definition framing existing systems as unsustainable and stimulating reflexive consciousness leading to new interpretative frames. They also network and mobilise resources to transcend current ways of doing, problematizing current deliberative arenas and pushing for more participatory processes. This enhances collective action capabilities, opens space and time for deliberation, builds a shared understanding of the situation, and ultimately changes values and interests while transforming identities and social asymmetries.

Second, regime-based intermediaries are bounded by prevailing socio-technical regime characteristics but are mandated to promote transitions. These are civil servants usually working in agrifood related agencies which changed their problem frames due to policy implementations. In the case of Colombia, the peace process with the FARC guerrilla leads to the creation of laws to promote family agriculture producing a culture shift in AGROSAVIA. In Ecuador, the buen vivir constitution and following legislative boom pursues food sovereignty at national level. In Venezuela, the eco-socialist Bolivarian revolution mandates more direct democracy and agroecological transitions. Regime-based intermediaries opened new spaces of deliberation to co-

create knowledge, networking with a wide range of actors to iterate between goals and means of action, explore controversies, and reduce uncertainties leading to stabilised agreements and out-scaled/up-scaled outcomes of action.

Third, niche intermediaries advance activities of and experiment within a particular niche trying to influence the incumbent system. SGN steering groups and their allies in academia fulfil this role by strengthening seed guardianship conceptually and technically. These actors are central nodes in the networks and have a broad view of their operation. They find problems and mobilise resources to solve them often through knowledge co-production. They convince people through pedagogy not only of engaging in seed guardianship, but also the value of feminist farming or non-human inclusion. These actors build shared understandings of seed systems, enrol stakeholders, enhance niche capabilities, and take ownership of action. SGN niche intermediaries iterate constantly between goals and means of action, reduce uncertainties, fears, resistances, and contestations by exploring controversies leading to stabilised agreements and out-scaled/up-scaled outcomes.

Fourth, process intermediaries facilitate niche projects 'often without explicit individual agency or agenda, but in support of context-specific (project-based or spatially located) and/or external (niche, regime) priorities set by other actors' (Kivimaa et al., 2019, p. 1070). Individual seed guardians and communities often fulfil this role as their seed houses and guardianship activities are highly localised. They develop these projects using online guidelines and connecting to the knowledge base of the networks. There are also regional steering groups which coordinate projects at local level and articulate in national steering groups to elevate local concerns to the global niche. Some government actors also play a role as process intermediaries as they advance national food sovereignty and inclusion agendas by promoting context-specific

priorities (e.g. the Ecuadorian directorate of agroecological and sustainable production supporting local seed fairs). These intermediaries network, engage in problem finding/solving, co-create knowledge by mobilising ideational resources, and enhance collective action capabilities.

Fifth, user intermediaries translate new technologies to users. Although both regime and niche intermediaries are increasingly convinced of the importance of native seeds, SGN steering groups have played a key role in user intermediation. These actors have been exploring partnerships with local chefs, consumer groups, and other food system actors to make native seeds and food products more widely available and recognised. This has led to the publication of catalogues, cookbooks, podcasts, and other media aimed at convincing people on the value of native seeds and change user values and behaviours.

Intermediaries have been essential for Andean seed system transition processes, especially as it pertains to the opening of translational contact zones. Systemic and regime-based intermediaries played a key role in opening transmodern inter-epistemic dialogues by problematizing current deliberative arenas and pushing for more participatory processes. These intermediaries were able to recognise reciprocal incompleteness allowing the expansion of parameters that define authorship, intelligibility, and purposefulness. As such, they were able to cross the abyssal line 'navigating between different social worlds where values are at stake' (Ingram & Maye, 2017, p. 44)

Transmodern policy mixes emerging

According to Eckersley (2021), despite increased research on politics, power, and policy, the primary unit of analysis in ST is still the transition of socio-technical systems and not the mutual transformation of states and societies. This research has given special attention to shifting

relations between society and the state leading to novel policies since 'changes in policies … and changes in socio-technical systems are highly interdependent' (Lindberg et al., 2019, p. 1). As such, this section deals with emerging policy mixes as part of Andean seed system transitions as they may signal the beginning of a take-off phase for transmodern agrifood transitions in the region. This is by no means an exhaustive analysis of policy mixes but a general overview of their significance for Andean seed systems.

A policy mix generally refers to the combination of several policy instruments and their interaction. These may include policies that support niche innovations but also those that weaken the regime or discontinue technologies (Johnstone & Newell, 2018; Rogge & Reichardt, 2016; Lindberg et al., 2019). Rogge & Reichardt (2016) see policy mixes as a combination of the three building blocks:

- **Elements** include i) a policy strategy which combines quantified ST policy objectives and plans for achieving them, and ii) instruments which are concrete and interacting tools or governance techniques to address policy problems and achieve objectives. These can be economic, regulation, and information instruments for technology push, demand pull, or systemic concerns, among others.
- **Processes** of policy making and implementation to solve societal problems where the government is the primary agent making decisions. These include problem identification, agenda setting, policy formulation, legitimisation and adoption, implementation, evaluation or assessment, policy adaptation, succession, and termination.
- **Characteristics** describe the policy mix in terms of consistency (alignment of policy mix elements),

> coherence (synergic and systematic policy processes), credibility (extent to which the policy mix is believable and reliable), and comprehensiveness (how extensive and exhaustive it is).

Lindberg and colleagues (2019) suggest two dimensions to analyse the politics of sustainability transition pathways: i) degree of sustainability or the degree of ambition in the promotion of environmental sustainability by actors/policies, and ii) degree of disruption or the level of disruptive system change targeted by actors/policies. Johnstone & Newell (2018) suggest moving policy mix analysis from a historical and evolutionary perspective to how particular ideologies of, and approaches to regulation are circumscribed in the broader political economy.

In Colombia, free trade agreement negotiations with the USA, Canada, and the EU in the early 2000s led to a ratification of UPOV 91 and the creation of Resolution 970 (2010) which stablished requirements for seed production and commercialisation. This instrument was inconsistent, narrow, and lacked coherence leading to a lack of credibility by informal(ised) system actors. Neoliberalisation of the food system was also a top-down process implemented without proper consultation with family agriculture actors. This led to widespread resistance to these policies culminating in the termination of resolution 970 to be replaced by the more coherent Resolution 3168 (2015). The peace process between the Colombian government and the FARC-EP guerrilla led to a peace accord signed in 2016. This instrument prioritised rural reform and connected to narratives of buen vivir leading to the creation of Resolution 464 for peasant, family, and community agriculture (2017). This resolution opens more spaces for agroecology, plurality, and inter-epistemic dialogues while hinting at food sovereignty and buen vivir framings. Although no seed-specific policy instruments have emerged in

the last decade, a co-visioning process is currently underway for the design of a national seed system (2018-2023).

In Ecuador, the 2008 buen vivir constitution transforms the state to pursue post-capitalist alternatives in harmony with nature. As part of the strategies to achieve this, participatory democracy and food sovereignty were pursued. In 2010, the organic law of food sovereignty was approved to promote agroecological, organic, and sustainable agriculture, this law privileges small producers, promotes the recovery of agrobiodiversity and associated ancestral knowledge, and promotes dialogues between knowledge(s). These policies mandated the creation of the Plurinational and Intercultural Conference of Food Sovereignty - COPISA (2012). This participatory space allowed multiple food system actors across the country to co-create a food sovereignty legal framework. Crucially, the 2017 Organic law of agrobiodiversity, seeds, and promotion of agriculture emerged from COPISA. This law recognises the role of native seeds and associated ancestral knowledge, sustainable agriculture, and peasant families in the Ecuadorian seed system. It provides clear definitions of seed types and practices offering a coherent description of a hybrid conventional/non-conventional seed system operating under principles of interculturality.

In Venezuela, the 1999 Bolivarian constitution reframed the state as eco-socialist. It included the pursuit of food sovereignty, as well as direct democracy strategies to open participation in policymaking. The creation of the 2015 Seed law was a contentious process with three different drafts being produced by the National Assembly, industry actors, and informal(ised) actors. Processes of popular debate or street parliamentarism led to a hybrid seed law that recognises and promotes the formal and informal(ised) seed system. This law is comprehensive and coherent as it defines each system, seed types, and practices in excruciating detail. The law proposes the creation of a Popular Council for the Safeguarding and Protection of Local, Peasant, Indigenous and

Afro-descendant Seed, and a scientific-peasant alliance to promote knowledge exchanges between technoscience and traditional knowledge(s). Crucially, it recognises local knowledge holders as maestres-pueblo who play an important role in the national food system.

Andean seed system policymaking and implementation processes have identified a hybrid transmodern regime with highly divergent worldviews, values, narratives, and practices. Accordingly, the process set agendas to transcend the abyssal line and include historically marginalised actors. This was not only a state-led initiative as informal(ised) system actors fought along the way for true inclusion of their agendas. Connecting to new institutionalism, these processes can be framed as institutional bricolage, where niche and regime actors become institutional entrepreneurs and engage in collaborative activities of institutional design (Lowndes, 2018). These processes have been aided by translation as described by Santos (2016), an irreverence towards the law from informal(ised) actors, and the 'hackability' of state institutions in direct democracies.

Policy formulation has been generally participatory leading to increased legitimisation. However, implementation and adoption has been less than stelar due to economic slumps and regime-level tensions over visions in national food systems. Additionally, navigating the need for economic growth and transmodern/post-capitalist framings leads to difficulties aligning policy mixes. As was pointed out by Johnstone & Newell (2018), more powerful ministries handling trade, industry and finance reinforce competing and less sustainable pathways effectively undermining transmodern transitions. Additionally, the cases show no signs of regime-weakening policies as they allow the operation of a hybrid seed system. Measures like the prohibition of transgenics have been backtracked or kept in a grey area effectively keeping the formal seed system intact.

The laws in transitions are not neutral as they embody and reinforce class interests (Johnstone & Newell, 2018). Despite keeping the formal seed system intact, emerging policy mixes in Andean countries open possibilities for marginalised actors. This research argues that consistent, comprehensive, and coherent transmodern policy mixes have emerged and are in the way of being implemented to gain legitimacy. However, it is important to recognise that they sit along countervailing policy mixes that seek to maintain the status quo not only in seed systems but of the wider political economy. Although credibility of these transmodern policy mixes is still precarious due to the multidimensional crisis Andean countries face, they are ambitious in the promotion of environmental sustainability by pursuing post-capitalist and buen vivir futures. Despite not disrupting the formal seed system, this research argues that transmodern policy mixes will be disruptive in the long term as informal(ised) system actors are further empowered and more alternative knowledge production and exchanges are encouraged.

Just transitions in Andean seed systems

Latin American seed systems are complex. They touch upon many dimensions,[89] involve multiple actors with diverging worldviews and future visions and emerge from interactions at multiple levels and geographic scales. Engaging with justice in such systems is complicated, as justice itself is a contentious concept (Heyen, 2022).

This research pursues justice engagements from a structural focus and multiple intersecting conceptualisations of justice. A structural focus demands an understanding of structures as dynamic 'forms of organisation that produce social positions and roles, channelling action, and ... circumscribing the possibilities that are open to, accessible by, or closed for people' (Gilson & Kenehan, 2021, p. 10). For McGregor and

[89] For instance, political, economic, socio-technical, cultural, etc.

Kortetmäki (2021), structural injustices emerge when these processes increase the power and opportunities for a group while limiting opportunities to exercise capacities for other large groups. As explored in chapter one, modernity/coloniality is understood here as the key unjust structure. Structural injustices unfold from the convergence of actions by multiple actors pursuing their goals in line with specific social-structural processes (coloniality), meaning that no particular actor can be blamed for them[90] (McGregor; Kortetmäki, 2021).

Regarding multiple conceptualisations of justice, this work aligns with calls to recognise the shortcomings of justice, and move beyond the justice triad - distributional, recognitive and procedural (Anguelovski et al., 2019; Heyen, 2022). Accordingly, food systems are viewed as intersected at multiple levels by diverse justice dimensions:

- Food Justice, or the availability of, and access to healthy and culturally appropriate food, participation in decision-making, and the connection between food and other social justice issues.
- Environmental Justice, or the differential impacts of industry on marginalised communities and their exclusion from decision-making.
- Climate Justice, or the unequal distribution of impacts from climate change and related policies (Gilson & Kenehan, 2021). As was mentioned in chapter one, climate injustice is increasingly being framed as a tension between rich people with high-carbon lifestyles and masses of poor people who are the least responsible for the climate crisis (Morena et al., 2019).

[90] However, this research aligns with the position that past imperial powers and rich majority white nations hold more responsibility than others in current social and environmental structural injustices.

Expanding on these initial justice dimensions, Rawlinson (2021) has drawn attention to our situatedness within transgenerational relations and the ethical implications of this fact, leading to considerations of intergenerational justice that would allow a flourishing existence for future generations. Gilson & Kenehan (2021) also emphasise the need for ecological justice, which is concerned with broader relationships between humans and non-humans, focusing on power and equity. In the context of this work, ecological justice is understood as particularly transformative for the relational patterns established by coloniality.

In all justice dimensions, participation is of great importance. Participative justice deals with the right to participate in decision-making and may be the first step to amend disparities in food systems (Gilson & Kenehan, 2021). This form of justice should balance the need to recognise autonomy and difference while treating all participants similarly. Throughout history, marginalised peoples have been excluded from policy-making processes and have often been subjected to the harm of misrecognition by being homogenised as 'universal persons' (McGregor, 2021, p. 40). Therefore, autonomy and recognition of difference are important. As Loo (2021) emphasises, without autonomy and recognition, pressures over marginalised communities may become invisible and perpetuate dominance under the guise of impartiality.

Just transitions

The concept of a just transition originated in labour movements and frontline communities in the 1970s and has been mainstreamed by the United Nations for more than a decade. However, it has been broadly de-historicised and depoliticised, being now promoted by a wide range of actors without any clear definition (Morena et al., 2019). Whichever meaning is assigned to the term, authors argue that unjust transitions are not sustainable, and ignoring justice issues is detrimental to political support for transitions in general (Williams & Doyon, 2019). As such, calls

for just transitions are increasing across all sectors and scales (Ryder et al., 2021).

But, what constitutes a just transition? For Ciplet and Harrison, a just transition is 'bold and timely sustainability action' with: i) 'decision-making that is representative of impacted constituents'; ii) 'strong recognition of diverse rights and values of marginalised peoples'; and iii) 'equitable distribution of burdens and harms' (Ciplet & Harrison, 2020, pp. 441, 445, 449). For Williams and Doyon, it is about 'considering the harms and benefits of … transitions, critically examining who is (and who is not) part of these processes, who wins and who loses, and recognising the historical exclusion of peoples and worldviews' (Williams & Doyon, 2019, p. 144).

For Swilling and colleagues (2016), a just transition is only possible if the overall goal is human wellbeing (income, education, and health) within a sustainable world (decarbonization, resource efficiency and ecosystem restoration). For the authors, 'the structural transformations needed for a just transition will only be achieved when there is a socio-political regime that rests on a strategic coalition of interests that shares this paradigm, uses state institutions to drive a just transition and adopts an appropriate policy and legislative programme that is aligned with the overall goal' (Swilling et al., 2016, p. 657)

Drawing on Heyen's (2022) justice dimensions of sustainability transitions, a just transition should be mindful of the distribution of causation of environmental problems, environmental goods and bads, and a socio-technical system's benefits and costs. Furthermore, there should be recognition, access to information, decision-making, and legal protection throughout the transition process for all involved. Distribution of benefits and burdens from transitions and policies should also be considered.

Although not directly related to the field of ST, this thesis will draw from reflections of (in)justice in urban greening by Anguelovski and colleagues (2019). This proposal calls for the inclusion of three justice principles: i) antisubordination — preventing harm, reparative and restorative mechanisms, and liberating processes; ii) intersectionality — including multiple concurring identities, and 'subaltern and invisible bodies and practices' (Anguelovski et al., 2019, p. 1752); and iii) relationality — including a politicisation of everyday life, emphasising multiple connections, and developing interventions for other ways of being.

Acknowledging past and present injustices is an essential part of transitioning to fairer futures (Ryder et al., 2021). Accordingly, this thesis framed coloniality as the main source of injustice in the Anthropocene. This overlapping system of power produced core-periphery arrangements transforming othered peoples into invisible, inaudible, and illegible obstacles to progress. Consequently, this research posits a need to frame epistemic injustices as an essential component of humanity's multiple crises. The next section explores this concept and provides a vision of what epistemic justice entails in transition processes.

Epistemic justice

There is a clear intention in just transitions to engage with marginalised peoples by recognising and including plural identities. Authors constantly point to issues of misrecognition, where certain groups are not treated as 'valid and respected members of society' (Ciplet & Harrison, 2020, p. 443), an issue often intensified by legitimating the views of dominant social groups while ignoring others. Indeed, 'sustainability projects and policies often neglect lay knowledge, residents' land use preferences, communities' distinct cultural norms, common use of resources, sacred spaces, and diverse knowledge systems' (Ciplet & Harrison, 2020, p. 444).

In line with these concerns, ST research agendas call for working with non-experts and Indigenous communities as sources of knowledge (Williams & Doyon, 2019), and 'examining which knowledges, practices, or testimonies are allowed to surface and are legitimated – without being captured or co-opted along the way – and which ones remain overlooked or pushed aside' (Anguelovski et al., 2019, p. 1750).

It is important to recognise that this is not only a concern of ST, as engagements with justice are also brought up in broader sociotechnical questions (Moore et al., 2019). Additionally, issues of epistemic injustice have been explored extensively in critical theory, feminism, decolonial and other scholarships (Pohlhaus, 2017). In myriad other fields, the 'ability to be treated equally as a knower … [has] become increasingly recognised as an important aspect of justice' (Byskov, 2021, p. 116).

Along with deepening notions of recognitive and participatory injustices, the concept of epistemic injustice stems from a recognition that 'knowers can be harmed or wronged in their capacity as knowers' (Pohlhaus, 2017, p. 16). These are distinct types of wrongs, where someone is downgraded/disadvantaged as an epistemic subject (Fricker, 2017). Epistemic injustice then, 'is the idea that [people] can be unfairly discriminated against in [their] capacity as a knower based on prejudices about the speaker, such as gender, social background, ethnicity, race, sexuality, tone of voice, accent and so on' (Byskov, 2021, p. 116). One of its main proponents calls for strictness in using the concept only as discriminatory epistemic justice, avoiding its expansion to interpersonal manipulation or 'systemic riggings of the epistemic economy' for instance, in unequal access to education (Fricker, 2017, p. 53).

Engaging with these kinds of injustices can be highly problematic. Pohlhaus (2017) warns of the risk of falling for epistemic relativism, proposing four lenses to understand its different varieties: i) injustices that structure inequitable relations between knowers, and that maintain

epistemes in the service of dominance; ii) relational injustices that hinder epistemic relations and break trust; iii) injustices maintained by epistemic systems working with efficacy; and iv) injustices related to epistemic labour that hinder knowers, devalue certain types of knowers, and extract epistemic labour (Pohlhaus, 2017).

Other authors advocate for an engagement with epistemic injustice at the micro-level of interpersonal relations, defining two types of epistemic injustice: testimonial injustice, as in the shifting credibility of a statement based on prejudice against the speaker; and hermeneutical injustice, as a failure of shared intelligibility (Byskov, 2021; Fricker, 2017). Beyond the different typologies and scales of epistemic injustice, there might be specific conditions that overarch them. For Byskov (2021), someone is unjustifiably discriminated against as a knower if the following conditions are met:

- The disadvantage condition — they must suffer epistemic and/or socioeconomic disadvantages and inequalities as a result of the discrimination.
- The prejudice condition — the discrimination must involve prejudiced (i.e. unfair sentiments about the speaker).
- The stakeholder condition — they must be somehow affected by the decisions that they are excluded from influencing.
- The epistemic condition — they must possess knowledge that is relevant for the decision that they are excluded from.
- The social justice condition — they must at the same time also suffer from other social injustices.

This research is particularly interested in epistemic injustices embedded in political institutions borne by the colonial power matrix. This resonates with framings of 'epistemic contracts' in service of an unjust

social contract where system beneficiaries remain ignorant of unjust arrangements and end up developing 'epistemic arrogance' or 'epistemic laziness' (Pohlhaus, 2017, p. 17). This manifests in many aspects, from Euro-American philosophical traditions that set the bar by which all experiences of reality are measured, to 'racial contracts' creating ideal knowers and sub-knowers, or patriarchy framing women as 'less competent knowers' (Pohlhaus, 2017, p. 17). Pohlhaus defines this as wilful hermeneutical ignorance, 'the propensity to dismiss whole aspects of the experienced world by refusing to become proficient in the epistemic resources required for attending to those parts of the world well' (Pohlhaus, 2017, p. 17).

This work is aligned with the posture that 'there [cannot be] global social justice without global cognitive justice' (Santos, 2016, Chapter Introduction); as such, it wants to give special attention to epistemic justice. This is why this thesis began with a recognition of modernity/coloniality as a structuring force and has explored interculturality as a pathway for the recognition, validation and inclusion of alternative historically marginalised onto-epistemes.

Although there are no set definitions for the concept of cognitive justice, this work deviates from ideas of cognitive justice as 'more equal distributions of scientific knowledge' (Santos, 2016, Chapter 7). It understands epistemic justice as a movement from concealing, ignoring, and eroding non-modern epistemes, to a transmodern solidarity-based epistemology where mutual education and critique between knowledge(s) is emphasised while prioritising those least advantaged (Reiter, 2018). While recognising that it is a slippery slope, it is important to emphasise that this is not a surrender to relativism, post-truth, or alternative facts, but a recognition of different worlds and types of knowledge(s) (Escobar, 2018; Reiter, 2018; Ryder et al., 2021).

Sustainability transitions occur under the overarching structure of modernity/coloniality which restricts the possibilities open to, accessible by, or closed for people. This structure gives increased power and opportunities to those who align with its racist, patriarchal, heteronormative, ableist and capitalist core, while restricting opportunities for all others. In this sense, coloniality is unjust and produces multiple reinforcing injustices. Although no single actor can be blamed for structural injustices, there are some that are more powerful and thus have more opportunities to challenge the structure. As such, this is a call for transitions scholars and facilitators to acknowledge and engage more deeply with this structure.

Regarding justice in seed system transitions, the structure has produced and perpetuated multiple injustices towards informal(ised) system actors. The distribution of benefits and harms is skewed. Informal system actors have only recently been recognised as valuable for the system, and they have been subjected to unfair processes by being placed in an a-legal space. Beyond the distributional, recognitive and procedural justice triad, informal system actors have been constantly excluded from decision-making spaces (participative injustice), and have been heavily impacted by industry (i.e. eroding their possibilities for subsistence) and climate change (environmental injustices). These impacts inevitably lead to intergenerational injustices, as young farmers see no possibilities of living a good life in rural contexts.

Informal(ised) system actors have also been historically harmed in their capacity as knowers; knowers of their territory, their seed rearing practices, and as producers of quality seeds fruit of their knowledge(s). This epistemic harm is multidimensional and stems from prejudices about the knowers that are so entrenched they are framed as obstacles to progress. These peoples also suffer from epistemic and socioeconomic disadvantages that result in multiple social injustices. One of these disadvantages is their exclusion from decision-making spaces

determining how the system functions, thus dealing with benefit and burden distribution. This exclusion happens despite informal(ised) system actors holding relevant knowledge for decisions that directly affect them.

This research argues that SGN niche-led transitions are fair and expand justice possibilities for historically marginalised actors. Transitions observed in Colombia, Ecuador, and Venezuela evidence the recognition of diverse value systems and epistemes and an attempt to kickstart bold sustainability action through novel modes of governance. Although there is no evidence of just outcomes for informal(ised) system actors yet, the process has strived for their recognition, resulting in transmodern legal frameworks that might enable their practices to thrive. This increases legal protection for informal(ised) actors, allowing a better distribution of benefits across the socio-technical system. It is important to recognise that all justice processes produce winners and losers, so a transmodern transition might lead to reduced opportunities for formal system actors.

Andean seed system transitions can also be considered liberating processes, as they clearly see the abyssal line, open translational contact zones, and create transmodern institutions. It could be argued that these processes not only liberate human actors but also their non-human counterparts. Native seeds are recognised and allowed to walk freely without owners, narratives of their agency are reproduced, and care practices towards them are institutionalised and protected by the state. As such, this is also a process that encourages ecological justice by changing power relations between humans and non-humans.

These transition processes have also been highly intersectional. They have led to the acknowledgement and inclusion of plural identities, especially those that have been made invisible by coloniality. Niche dynamics also opened spaces of permanent intercultural dialogue

connecting plural social movements that include gender-based, class-based, and environmental agendas. Accordingly, these transition processes have also been highly relational; from the politicisation of the everyday by seed guardians, to the networked nature of the niche, and developing sustainability interventions that opened spaces for other ways of being.

Andean seed system transitions have been transmodern sustainability transitions. These processes require epistemic justice to open pathways that move whole systems (and hopefully all of society) from concealing, ignoring, and eroding non-modern epistemes, to a solidarity-based epistemology where mutual education and critique between knowledge(s) is emphasised while prioritising those least advantaged. In the cases explored, marginalised actors and their diverse knowledge(s) are legitimated, allowing them to be treated equally as knowers. Although informal(ised) system actors are still weary of co-optation by the hegemon, their narratives and practices are now more protected by the state. This might put a stop to their constant downgrading as epistemic subjects, reducing instances of discrimination.

Transmodern seed system transitions might lead to more equitable relations between knowers, and the mobilisation of othered epistemes towards challenging modernity/coloniality. These processes might also move the system from relations of distrust between formal and informal(ised) actors towards more solidarity and innovation across the abyssal line. The take-off phase of this transition (novel transmodern legislation and institutions) might also recognise, map and value the wide variety of epistemic labour in the system, leading to new practices of knowledge production across the abyssal line. This section has argued that Andean seed system transitions contribute to resolving structural injustices and promote multidimensional justice. Crucially, one of these dimensions is food justice, or 'the adequate supply of and access to decent food but also community autonomy and self-determination and

thus community control over their own food resources and practices' (Gilson & Kenehan, 2021, p. 13).

Conclusion

This chapter has presented an analysis of Andean seed system transformations using the theories of sustainability transitions and the multi-level perspective with special attention to power and justice. This research moved beyond an analysis of transitions as technical artefacts moving across space (Hansen et al., 2018) to include worldviews, narratives, practices, power, and epistemic relations. This analysis suffers from niche bias as it was mainly described from the perspective of SGN actors. However, a niche focus has allowed for deeper engagements with coloniality and understanding grassroots initiatives as innovative key players in transitions.

The cases reviewed challenge convergence and catch-up theories in transitions, showing that alternative socio-technical pathways to sustainable futures are emerging from the Global Souths with radically different values from Western modernity. These transmodern transitions (here guided by visions of buen vivir) institutionalise alternatives to Western development while destabilising modern/colonial structures. The cases also challenge current notions of discursive dynamics in transitions (Simoens et al., 2022), as alternative discourses permeate all levels of the MLP in post-colonial contexts, and disruptive discursive change altering the values and assumptions of meta-discourses emerged from the formation of discourse coalitions between state and social movement actors.

Andean seed system transitions in the early 21st century emerged due to landscape pressures, defined here as three opposing pairs of macro-trends (Table 8.1) accompanied by a rise in digital communication technologies. The regime level in Andean seed systems has been framed

as a transmodern hybrid between modern and non-modern worldviews. Tensions between these worldviews manifest mainly at epistemic level between technoscientific and traditional knowledge, and in law arising from what is considered legal, illegal, and what is kept in a non-legal space.

These hybrids hold disparate (and often opposing) values, narratives, practices, rules, and technological assemblages. This heterogeneity is also divided by the abyssal line which makes the non-modern invisible. The persistence of coloniality in seed systems leads to massive power asymmetries and perpetuates multiple injustices as more than half of regime actors are informalized. It is important to recognise these harms and pursue justice in agrifood systems. However, this research argues that informal(ised) actors cannot be framed as innovative only by virtue of being peripheral to modernity/coloniality, as they also mobilise reinforcive power and may be a source of technological and epistemic lock-in while still holding alternative narratives.

Table 8.1 Landscape forces in early 21st century Andean seed system transitions

Macro-trend	**Counter-macro-trend**
The crisis of modernity and the apparent exhaustion of the modern epistemic paradigm in the face of the climate crisis and its inextricable relation with industrial/capitalist growthism.	The emergence of a new epoch, epistemic paradigm, or culture here defined as Transmodernity. An umbrella term for diverse intellectual projects such as the great turning, deep transitions, age of Sustainment, degrowth, buen vivir…etc.
Neoliberalism.	Pursuit of post-capitalist alternatives.
Crisis of the global Agrifood system.	A new emergent agrifood regime at play (Constance et al., 2018). Perhaps an agroecological transition towards food sovereignty.

In the early 21st century, seed guardian networks were stablished as a response to landscape pressures and the injustices of a constantly modernising hybrid regime. This innovative niche connected diverse actors to reframe native seeds as appropriate technologies developed by grassroots knowledge-holders. Aided by non-profits, these knowers organised in local niches by building seed houses and stablishing local markets where seeds where gifted, bartered, and sold. After some years, local niches went on to connect trans-locally at national and international scales to form vast virtual networks aided by the spread of information and communication technologies. The SGN global niche has mobilised: i) prefigurative power through dialogues between formal and informal science(s), ii) countervailing power by contesting modern/colonial framings, and iii) transformative power as it was able to change system rules.

The SGN niche was not protected by the state or policy as it was kept in an a-legal space. Internal actors shielded, nurtured, and empowered the niche by articulating organically in virtual and physical spaces favouring networking, building visions, and forming discourse coalitions. SGN steering groups played a key intermediary role between the local and global niche by fostering network cohesion, seeking funding, connecting with allies, and sharing knowledge between (trans)national networks. Niche shields have not been removed as incumbents have asymmetrical influence in decision-making and tend to appropriate niche narratives. However, state-society relations have transformed allowing for more inclusion of informal(ised) actors in Andean seed systems. This may lead to the formation of a niche-regime and the kick-off phase of the transition.

This research has argued that translational contact zones emerged allowing for creative tension between the modern and non-modern. These processes of translation have led to the creation of transmodern seed laws that facilitate the implementation of transmodern institutions.

Expansion of participation through direct democracy initiatives was crucial for these processes. In Venezuela via the eco-socialist Bolivarian revolution, in Ecuador due to the buen vivir constitution, and in Colombia as part of the peace accord with the FARC-EP guerrilla. Systemic and regime-based intermediaries played a key role in translation by problematizing current deliberative arenas and pushing for more participatory processes. These actors were able to recognise reciprocal incompleteness allowing the expansion of parameters that define authorship, intelligibility, and purposefulness in seed systems.

Transformed state-society relations and the creation of inclusive transmodern seed policies and institutions signal the emergence of a just transition. There is now a more even distribution of benefits in the socio-technical system, more access to information, open decision-making, and legal protection. Additionally, states now recognise seed guardians as a particular type of knowledge-holder and SGNs as key players in national seed systems. It can be argued that Andean states have enriched the parameters by which they decide what constitutes valid knowledge and what is a knower in the system. As such, epistemic justice is also emerging by moving from concealing, ignoring, or eroding non-modern epistemes towards the establishment of a mosaic transmodern epistemology. This may lead to novel knowledge constellations pushing for more just and sustainable transmodern futures.

Similar to research by Hess (2014), the purpose of this chapter is to draw out broader theoretical implications from a particular type of regional transition. The analysis presented in this chapter integrates decolonial theories with sustainability transitions theory to decolonise the field. As Arora & Striling (2023) emphasise, ST frameworks tend to overlook coloniality when colonial processes should be understood as constitutive of regime and landscape changes. Inequality is also naturalised in Southern regimes by being hidden due to epistemic colonialism in ST (Ghosh, et al., 2021). As suggested by Lai (2023), this

research has situated the grassroots innovations of SGNs in broader capitalist development and colonial trajectories. This resulted in a transmodern interpretation of the MLP framed here as epistemological direct action on existing scholarship geared towards transcending the abyssal line in sustainability transitions.

A transmodern perspective on the MLP uncovers non-modern landscape counter-macro-trends consolidating as social and environmental crises exacerbate across the world. It also evidences the abyssal line dividing a transmodern hybrid regime which effectively renders most of the system invisible. This connects to vast power asymmetries and persistent injustices which harm marginalised actors and stabilise unsustainable trajectories. Finally, transmodern niches emerge as grassroots innovations that hold traditional knowledge in great esteem but pursue dialogues with modern science to produce novel practices. These transmodern niches emerge from the mostly-non-modern side of the regime and shield themselves without direct state support. However, the cases also show that the state plays a pivotal role in transmodern transitions if it enables more direct democracy leading to the emergence of translational contact zones.

Some studies in developing countries have shown that regime instability is a barrier to niche development (Hansen et al., 2018). The cases reviewed show the opposite, as regime instability favoured the emergence of SGNs. Hybrids between industrial and family agriculture overlap and respond to each other's pressures, resulting in heterogeneous technological assemblages, market preferences, knowledge(s), and rules.

Economic pressures and threats to subsistence lead to adaptation and experimentation of the non-modern in this hybrid space. This is aided by an absentee state producing vacant spaces and power vacuums allowing non-modern ways of being to persist. Legislative uncertainty also led to

SGN activism pushing for recognition in emerging system rules. It is important to emphasise that this is not an idealisation of instability, as it comes at a high cost for societies in poor nations. Regime instability stems from unfulfilled social contracts and long histories of oppression but is, in the end, a feature of these societies.

In the cases reviewed the state was both an enabler and an obstacle for niche upscaling. On the one hand, its absence promoted the emergence of solidarity, network formation, and knowledge exchanges in vacant spaces. On the other, it undermined transmodern peripheral niches due to industrialist biases and a developmentalist frame that pushes towards increased participation in global markets. In this often-contradicting scenario, states mobilised their power to transform their relationship with society allowing for broader participation. In the case of Ecuador and Venezuela, direct democracy in the form of street parliamentarism or popular initiatives allowed niche actors to better participate in decision-making. Allies in positions of power (mainly through left-wing governments) also aided niche actors by informing on the agendas being set in spaces of power.

The SGN niche is peripheral to and challenges both the modern/formal and non-modern/informal(ised) regimes. Niche actors constantly described feelings of being outliers to both sides as their practices and narratives were seen either as regressive obstacles to progress by state and industry actors, or as eccentricities by other AfroIndopeasant and family farmers. Niche-regime interactions were generally geared towards transcending the abyssal line, allowing other actors to see alternative and valid ways of doing seed improvement and exchange. It is important to highlight that niche actors do not advocate for a dismantlement of industrial agriculture or formal seed systems, but rather pursue protection from the state via the implementation of egalitarian rules that allow both sub-systems to compete.

ST literature distinguishes incremental innovations that maintain the status quo from radical innovations that seek regime change (Maye, 2018). The transmodern niches described in this chapter are radical innovations that emerged from border thinking, seeking to revitalise subjugated knowledges and reappraise subalternities while allowing integrations with modernity. These transmodern niches disrupt the regime by bringing the two poles of the hybrid closer. This process is neither a surrender to the civilising efforts of modernity/coloniality, nor it is an obstinate effort to maintain peripheral positionalities leading to epistemic and technological lock-in. Bringing the modern and non-modern poles closer means mobilising politically to open translational contact zones. In these novel deliberative spaces, process intermediaries expand the parameters that define authorship, intelligibility, and purposefulness of knowledge, innovation, and technology.

From these descriptions of transmodern regimes and niches, ST scholarship could acknowledge different types of niches: i) modern/colonial niches that pursue transitions only within this paradigm; ii) non-modern incremental niches that pursue a strengthening of non-modern regimes while disregarding modern/colonial ones; iii) radical transmodern niches that seek dialogue and integration only between the non-modern to oppose, debilitate or dismantle coloniality; and iv) radical transmodern niches that seek dialogue and integration between both non-modern and modern poles of the hybrid regime. Some questions emerge from these conceptualisations of transmodern niches:

- How do they mobilise ideational power to influence the cognitive frames of hybrid regime actors?
- How do niche actors create short and long physical/virtual connections between different saturations of the hybrid regime and beyond?

- How do transmodern niches survive and constitute niche-regime configurations when they have no protection from, or are even attacked by modern/colonial actors?
- How do alignment processes occur between transmodern niches and diverse regime worldview hybrids?

The cases explored in this document and the theoretical reflection of this chapter aim to contribute to the literature of transitions in agrifood systems and developing nations, as well as the broader decolonisation of ST. Recent research agendas on ST and transitions in poor nations (Hansen et al., 2018; Köhler et al., 2019; Wieczorek, 2018) suggest the following research pathways to which this research aims to contribute:

- Exploring the operationalisation of inclusive forms of transition, considering marginalised groups such as non-users, non-dominant and non-state-based actors, as well as expanding research on the role of social movements and civil society.
- Exploring distributive and participatory struggles, as well as inclusive, frugal and grassroots innovation.
- Exploring dynamics that mitigate poverty, inequality, and exclusion.
- Reflecting on micro-macro linkages.
- Exploring alternative development pathways and their drivers.
- Reconsidering concepts of stability and homogeneity of regimes, from highly monolithic to highly hybrid configurations.
- Unpacking landscape impacts, how and why actors deal with various developments.

- Defining types of transformative policy that can produce path dependencies conducive to deep transitions.

Regarding research on agrifood systems, El Bilali (2019) has suggested that agency and spatiality in transitions should be prioritised. Accordingly, this research has focused on agrifood sustainability transitions in the Global South, the particularities of Andean seed systems, and the agency of marginalised actors producing change. This research also contributes to three of four research avenues for agrifood transitions proposed by Hebinck and colleagues (2021). It focused on transitions in low- and middle-income countries, it highlighted persistent injustices, inequities, and dynamics of exclusion embedded in agri-food systems due to coloniality, it evidenced strategies towards social justice, equity, and inclusion, and has explored 'telecouplings' or how agrifood systems connect distant places across scales.

This thesis also aims to contribute to increased calls to decolonise transitions research (Hopkins et al., 2020; Doyon et al., 2021; Ghosh et al., 2021; McGowan & Antadze, 2023). It transcended ST framings of informal/formal systems, and old/new technologies coexisting in developing nations to explore coloniality as the origin of the divide. Deeper engagements with hybrid transmodern regimes show that dynamics in poor nations at this level go well beyond clientelism and corruption, responding also to deep divisions between worldviews. Arora & Striling (2023) state that ST has not analysed how 'innovative capacities are appropriated by and centred on privileged Northern settings within modernity' (Arora & Striling, 2023, p. 3). This research has attempted to contribute to this analysis by framing coloniality as an epistemic paradigm and showing how it manifests in transition processes. This research also aligns with calls by Ghosh and colleagues (2021) to develop a decisive critique towards modernity, focus on everyday struggles and nuances of local dynamics, and better understanding informal institutions.

The analysis presented in this chapter demonstrates that sustainability transitions theory and the multi-level perspective are useful to understand the dynamics of change in transmodern socio-technical systems. These theories are applicable to poor post-colonial nations and can aid in the pursuit of deep transitions towards transmodern futures that are more just and sustainable. However, this requires deeper engagements with the history, epistemic and power dynamics of coloniality. It also requires seeing the other across the abyssal line to attend to the emergence of alternatives in marginalised spaces.

Designing and embedding sustainability-oriented projects also requires a capacity to translate or facilitate intercultural dialogues that moves beyond first-world and third-world fundamentalisms. Process intermediaries in transitions should be well versed in translation dynamics and constantly pursue epistemic justice. For transitions to be fair and truly sustainable, criteria of intelligibility, validity, and purposefulness of knowledge must be expanded to include the non-modern. This may allow the emergence of a future culture incorporating the best of the pre-modern, modern, and post-modern to produce a pluriversal utopia.

Conclusion

This research used a decolonial approach to enquire about Andean seed system transformations in the early 21st century. It aimed to describe change and analyse it using a transmodern lens while contrasting it with existing transformation theories. The initial hypothesis was that Andean seed system transformations opened pathways towards buen vivir, as modern elements are destabilised by transmodern innovative practices and macro-level pressures like the ecological crisis and decoloniality.

This research emerged from the personal experiences of the writer working on social innovation in Colombia, a poor and highly unequal post-colonial society that has remained in the peripheries of the modern world system. This peripheral position informed interpretations of the current environmental crisis as resulting from the material intensity of Western civilizatory patterns and the need for more just and sustainable alternatives.

Accordingly, the research directed attention to counterhegemonic narratives of wellbeing and innovative practices enacted on the margins of Western(ised) society. The research aimed to explore emerging transmodern spaces that enabled onto-epistemic agonism between non-modern and modern/colonial worldviews. After some consideration, seed guardian networks (SGNs) were framed as an ideal space to explore, as they were deploying transformative narratives, changing border practices in innovative ways, and challenging stablished modern ways of doing.

The first objective of this research was to engage critically with modernity to uncover the persistence of coloniality. The objective was fulfilled with a literature review exploring theoretical developments by Latin American decolonial option, Transmodernity, and buen vivir scholars. The resulting review was used to analyse the current state of global and Latin American seed systems uncovering how they are marked by the abyssal line and abyssal thinking. Chapter one established modernity/coloniality as that which needs to be transformed since Western onto-epistemologies are in crisis and are inextricably tied to current environmental and social crises. Accordingly, Transmodernity and buen vivir were positioned as desired futures, establishing the decolonial posturing of this thesis and its expected contribution to open spaces of ontological and epistemic pluriversality.

After gaining an understanding of modernity/coloniality and transmodern futures, this research aimed to explore alternatives emerging in Latin America. This proved difficult as the intention was not only to find peripheral or marginalised spaces, but people and organisations that were actively innovating to transcend the abyssal line. These alternatives should be engaging in inter-epistemic dialogues with modernity while maintaining and pursuing non-modern values and visions. After surveying social movements and entrepreneurs in the region, this research focused on intercultural Indigenous universities and seed guardian networks. Indigenous universities are a fascinating case study but connecting with them proved difficult while also raising some ethical concerns. In the end, it was decided to pursue a study of seed guardian networks as they also had a material/technological component at the centre of their transformative efforts.

The third objective of this research was to describe the internal dynamics of seed guardian networks and their interactions with other seed system actors in the region. This led to an understanding of SGNs as horizontal organisations with distributed leaderships, a highly diverse

membership, and transnational linkages. The networks were positioned as spaces of inter-epistemic dialogue where multiple narrative fields interacted. SGNs are a particular type of social movement without clear agendas and programmes in which transformative capacity emerges from material everyday practices.

Regarding their interactions with incumbent actors, the research focused on: i) state informalisation (i.e. making invisible) of traditional seed practices as part of coloniality, and ii) how these networks were able to transcend invisibilisation to become influential players in the creation of seed system rules. Additionally, interactions between seed guardians and other informal(ised) food system actors revealed profound differences between them. This led to interpretations of SGNs as transmodern spaces where knowledge-holders innovate in distinct ways from both the formal/modern and informal/non-modern systems (See chapter three).

The fourth objective was to describe national seed system transformations in Colombia, Ecuador, and Venezuela. Chapters four to six offered thick descriptions of these processes focusing heavily on policy evolution over the last 30 years. In all cases, SGN activities were central to these transformations. In the case of Colombia, a marked divide across the abyssal line preserved tensions between the formal and informal(ised) systems which were exacerbated by the signing of TPAs with several rich nations. These tensions came to a head with an abnormal rainy season coinciding with the implementation of an inconsistent seed law in 2010. After the signing of a peace accord with the FARC-EP guerrilla in 2016, both sides of the abyssal line begin to come closer as timid buen vivir framings lead to more spaces for family agriculture and food sovereignty. This promotes a culture shift in the agricultural research authority (AGROSAVIA) which kickstarts a participatory process to develop a new national seed system.

In the case of Ecuador, the emergence of the Quichua neologism sumak kawsay in the early 1990s opened a space to transcend the abyssal line. This narrative of buen vivir/good living expanded from the Amazon to every corner of Latin America informing contemporary politics in Ecuador and beyond. After decades of political turmoil, a 21st century socialist project emerged aimed at tackling the environmental, social, and political crisis. Once in power, this movimientista left set out to implement a citizen's revolution that overhauled participation and directed political institutions towards post-developmentalism. This produced a buen vivir constitution (2008) that recognised the rights of nature and rights of people to food sovereignty. The post-constitutional Organic Law of Food Sovereignty opened a participatory process inclusive of historically marginalised voices. As a result, the Organic Law of Agrobiodiversity, Seeds, and Promotion of Agriculture was approved in 2017 recognising the role of native seeds and associated ancestral knowledge, sustainable agriculture, and peasant families in the Ecuadorian seed system.

In the case of Venezuela, the Bolivarian revolution was framed as a transition from capitalist extractivism to a participatory socialism where humans and nature coexist harmoniously. The resulting Bolivarian constitution of 1999 was framed as eco-socialist and directed the national food system closer to agroecology and food sovereignty. This opened a space to cross the abyssal line leading to direct democracy processes where informal(ised) food system actors could contribute directly to stablishing system rules.

As a new seed law starts being discussed in 2013, a space of popular debate is opened by informal(ised) actors to include their agendas. In 2015, four drafts of the law are presented to the National Assembly, each including the perspectives of different system actors. Due to pressures from SGNs and other social movements, a law is approved recognising a formal/informal hybrid seed system. This law orders the creation of a

Popular Council for the Safeguarding and Protection of Local, Peasant, Indigenous and Afro-descendant Seed and kickstarts a Scientific-Peasant Alliance which encourages horizontal inter-epistemic dialogues. Crucially, it recognises local knowledge-holders as maestres-pueblo exalting their epistemic value.

The fifth objective of this research was to contrast processes of Andean seed system transformation with existing theories of change. Narratives, practices, and rules emerged from the data as the preeminent sites where change occurred. Accordingly, chapter seven was heavily inspired by new institutionalism which frames institutions as assemblages of narratives, practices, and rules. Chapter seven provided a description of translational contact zone emergence as a process of bricolage that led to changed system rules. To transform stablished ways of doing, institutional entrepreneurs (here SGNs and the state) engaged in bricolage to design new institutions. This neo-institutional analysis was complemented with social practice theory to better understand the scaling up of seed guardianship and the opening of state practices leading to transmodern practice bundles. Additionally, theories of narrative transformation were mobilised to better understand the formation of discourse coalitions through shared ideational elements linking SGN actors and allowing better interactions with the state.

Chapter eight analysed the cases using sustainability transitions theory and its multi-level perspective while integrating decolonial concepts. Despite doubts in the ST research community regarding its applicability to marginalised contexts, this research argues that it can be used to describe the cases reviewed. A multi-level reading of Andean seed system transitions evidenced macro-level trends and countertrends informing change at regime and niche levels. Regarding the regime, it was described as a transmodern hybrid between modern and non-modern worldviews divided by the abyssal line. This hybrid regime conceptualisation problematises notions of all informal(ised)

actors being innovators only by virtue of being peripheral to modernity. Accordingly, SGNs are framed as grassroots innovative transmodern niche spaces which are shielded, nurtured, and empowered from within without state intervention. State-society interactions were further explored to explain the emergence of translational contact zones emphasising the important role played by process intermediaries. The chapter concludes by arguing that Andean seed transitions can be interpreted as just especially as it allowed epistemic justice to emerge.

How did seed system transformations occur in Colombia, Ecuador, and Venezuela in the early 21st century across the abyssal line? This research has argued that it was through the opening of translational contact zones by actors invested in transcending the abyssal line. These spaces for inter-epistemic dialogue emerged from different pressures and opportunities in seed systems, including:

- Macro-level trends related to the crisis of modernity, consolidation of neoliberalism, and the multidimensional crisis of the dominant agrifood system. On the other hand, the emergence of Transmodernity, the pursuit of post-capitalist and post-development alternatives, as well as an agroecological transition towards food sovereignty. All these macro-trends are supported by the global spread of mobile devices and digitalisation.
- Surviving non-modern border practices being revalued and reconfigured by innovative actors engaging in dialogues with modernity and stablishing trans-local networks that attract new practitioners and make visible what was made invisible by modernity/coloniality.

- Shifting state practices towards more direct democracy allowing historically marginalised actors to be part of decision-making processes.
- The articulation of discourse coalitions through shared ideational elements which in this case relate to buen vivir, food sovereignty, and a new plural left. These articulations allowed intermediaries in SGNs and the state to connect and favour systems change.
- A pursuit of epistemic justice, especially by SGNs and other informal(ised) system actors (re)claiming their knowledge as valuable for national seed systems.

The emergence of translational contact zones led to recognition of reciprocal incompleteness, allowing the expansion of parameters that define authorship, intelligibility, and purposefulness. Accordingly, system rules have shifted to allow more space for non-modern and transmodern knowledge(s) and practices. SGNs went from being rule-takers kept in a non-legal space to being rule-makers recognised for their contributions to the system. Their knowledge is now exalted by governments and is often framed as equivalent to modern technoscience. Additionally, new institutions have emerged allowing for more inter-epistemic dialogues between worldviews. As such, the legal and scientific abyssal lines have been crossed furthering epistemic justice in the system. This may lead to a solidarity-based epistemology where multiple knowledges engage in dialogue while prioritising those least advantaged.

It is important to recognise that this research has a positive results bias (Marín & Goya, 2021), as negative aspects of this transition have not been sufficiently acknowledged. Negative issues include the persistence of colonial epistemic asymmetries, as informal(ised) actors are still seen as obstacles to progress in seed systems despite their relevance for food

production in Latin America. Native seeds are still perceived as being poor-quality raw materials ignoring the epistemic labour that goes into their conservation. Additionally, participation and inclusion of marginalised actors in system rules are seen as counterproductive by formal system actors. Transnational corporations still wield enormous power over seed systems and global regulations are still skewed towards industrialism.

These issues and the unrelenting force of modernity put this emergent transmodern transition in a precarious position. However, marginalised actors keep challenging the modern by materialising alternative futures to Western development. Mainstreaming of these alternatives at global scale might be far away, but through their linkage the modern/colonial Anthropocene might be unsettled. This research has argued that transmodern transitions to buen vivir have emerged in early 21st century Andean seed systems. The implementation of new system rules inclusive of SGN concerns stablished a more levelled playing field between formal and informal(ised) seed systems, signalling the beginning of a take-off phase towards pluriversal bio-centric futures.

Hopkins and colleagues (2020) draw attention to the revisionist nature of decolonial approaches to transitions as they usually start from Western modes of thinking. Regretfully, this work may be criticised as such, as it could have used a more explicit inductive approach. However, the researcher considers that transmodern dialogues are important and modern ways of knowing should not be irreflexively discarded in the name of emancipation, liberation, or decolonisation. Transmodernity opens an interesting space for reflection as it intends to move beyond first-world and third-world fundamentalisms. This posture will continue to inform a future research agenda on transmodern transitions to pluriversal bio-centric futures that will prioritise the following items:

- Mapping other transmodern innovative initiatives worldwide with the aim of developing comparative analyses between them.
- Understanding the governance of those innovative spaces, including their upscaling dynamics.
- Observing the emergence of translational contact zones as innovative spaces interact with incumbents.
- Evaluating if transmodern legislative change effectively leads to the stabilisation of transmodern transitions.
- Exploring consensus and conflict dynamics between multiple system actors as they engage in onto-epistemic interactions across the abyssal line.
- Observing these processes through other theoretical lenses and attempting to theorise about them in bottom-up ways.

From a transdisciplinary and integrative approach, this research attempts to contribute to its participants, the field of sustainability transitions, and scholarship on Transmodernity and buen vivir. This document will inform online publications to share results with SGNs via their online magazines, podcasts, and social media profiles. Offering a comparative analysis of three cases of seed system transformations will hopefully aid SGNs in reflecting about their role in transitions. Providing better descriptions of how change happened might also affirm their role as a futural force and allow them to better govern change. These research products can also be used by other civil society organisations pursuing transformations in non-modern terms.

Several publications in journals dedicated to sustainability transitions, Transmodernity, and buen vivir will be developed. All outcomes will provide a narrative of the historical evolution of SGNs as innovative spaces, focusing on interactions with the state to co-produce novel

transmodern legislation. These research products will touch upon the mobilisation of power in the system leading to the creation of translational contact zones that enabled epistemic justice.

This research was framed as a constructive critique to the field of sustainability transitions. Knowledge produced about Global South transitions aims to contribute to the strand of literature of transitions in developing countries. Agrifood system transitions might also benefit from this work. The heavy focus on power and justice also contributes to the field, particularly on the importance of epistemic justice in transitions. Finally, this research can be considered as an additional step towards decolonising the field. The inclusion of concepts like the abyssal line, hybrid regimes between modern/colonial and non-modern worldviews, and translational contact zones, might enable other researchers to study transitions differently.

Research communities working on Transmodernity and buen vivir are also expected to benefit. As Swilling (2020) puts it, post-development and post-capitalist strands of transformations research are accomplished when critiquing current systems or proposing visions but need deeper engagements with how change happens in practice. The case studies presented here are transmodern enactments that elucidate ways to operationalise transitions towards biocentric societies. Sustainability transitions knowledge may be particularly beneficial for trans-development models as they are socio-technical and can only be achieved through inter-epistemic interactions.

This research promotes non-modern visions of sustainable futures created by historically marginalised actors. It advocates for their inclusion in established theories while being mindful of power and justice. The intention here is to advance epistemic plurality in a time where there seem to be no modern solutions to modern problems. As such, this thesis is a device of epistemic direct action, challenging

theories from the experiences of those historically marginalised by coloniality. Hopefully, it has shown that transmodern transitions to buen(os) vivir(es) are desirable and possible to achieve more just and sustainable futures.

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