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Rooting a Successful Model for Agriculture in a Politics of Possibility: The Case of The Land Institute

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ROOTING A SUCCESSFUL MODEL FOR AGRICULTURE IN A POLITICS OF
POSSIBILITY:

THE CASE OF THE LAND INSTITUTE

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Arts and Sciences
at the University of Kentucky

By
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ABSTRACT

ROOTING A SUCCESSFUL MODEL FOR AGRICULTURE IN A POLITICS OF POSSIBILITY: THE CASE OF THE LAND INSTITUTE

This research considers the potential for social movement organizations (SMOs) to bring about a comprehensive transformation to the current system of industrial agriculture by asking, *How can a SMO outside a field of power advance an oppositional model while not being coopted by the dominant system?* In Part One, I provide the background context for agricultural research systems in the U.S., describing the rise of the current landscape setting the national agenda and its consequences. To explain power dynamics, I apply a synthesis of Pierre Bourdieu's and Raymond Williams' relational theory models for considering the trends of dominant, alternative, and oppositional ideas and practices in a field of power. Next, I present Gibson-Graham's "politics of possibility" conceptualization along with a concept I term "liberated ecosystem," to visualize a SMO functioning outside a field of power and investing in a counterhegemonic project. I use the interplay of these concepts to examine the process of pre-emergence, defined as interactional relationships *in some measure* formulating new experiences that are *not compatible* to the dominant position. I contend that cultural work is an important factor in the process of pre-emergence. In Part Two, I pick up on the cultural strategies for pre-emerging social change. I start by introducing the case of The Land Institute (TLI) and then proceed to my methods in which I used a historical, multi-modal framework to analyze the cultural work enacted by activists advancing a progressive agenda for sustainability. I describe each strategic action based on its active making of culture, culture as product, and reception of culture. I conclude that the hegemonic nature of industrial agriculture continues to be alive and well, but SMOs have the potential to challenge the ruling social order through deliberate cultural work. Collective action among activists means moving between a liberated ecosystem and a field of power to create new language and new subjectivities. This research shows that comprehensive transformation relies on activists who sustain a comprehensive shared vision, provide values-based education, conduct place-based research, and gather together to nurture a politics of possibility.

KEYWORDS: social movements; agriculture; relational theory model; cultural analysis; politics of possibility.

Alicia Hullinger
19 April 2017

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LIST OF TERMS

Field of Power

Via Bourdieu (Bourdieu and Wacquant, 1992), this is a conceptualization for an interactional structure of relationships, an arena of struggle, in which actors compete over scarce resources (political, economic, cultural, and symbolic) and legitimacy.

Dominant, Alternative, Opposition

A synthesis of Bourdieu (1992) and Williams (1977), these terms represent the different relational positions in a field of power representing the differences and distances of distribution of resources and legitimacy.

Dominant positions work to reproduce and broadcast legitimate forms of resources while subordinate positions (Alternative and Opposition) work to create new forms of legitimacy. The dominant positions represent variations in maintaining the status quo.

Alternative and Opposition represent a spectrum of transformation. Conceptually, Williams refers to these various relations of transformation as “alternative forms of tradition” or “oppositional forms of emergence.” The subordinate positions represent variations in transforming the field of power.

Cooptation, Incorporation, Mainstreaming

Cooptation and Incorporation are interchangeable terms representing a process for maintaining the dominant position as explained by Williams’ (1977) theory of incorporation. The dominant position maintains power by taking control of meanings and/or practices of a subordinate position, incorporating, or integrating, into mainstream culture. Scholars in the sociology of agriculture use the term “mainstreaming” to refer to the incorporation process. Williams’ emphasis on cultural dynamics is important for understanding the process.

Agro-Capitalist Research Complex

Set of power relations representing the hegemonic nature of state-science-market made up of the United States Department of Agriculture (USDA), Land Grant University System (LGU), and Industry.

Liberated Ecosystem

A concept for analysis to refer to a SMO, including its actors, policies, and institutional practices, that stands outside the dominant system and invests in cultural activities for nurturing a politics of possibility for comprehensive social change.

Pre-emergence

In the social sciences, the process of pre-emergence (Williams, 1977) is initiated by opposition for *partially* articulating new experiences (values and meanings, practices, and

relationships) *not legible* to the dominant in a field of power. Not legible means the dominant position has not taken up or acknowledged the new experiences being set forth by an oppositional position because the new experiences cannot be incorporated into mainstream ideas and practices in a way that maintains or advances the dominant position.

In the natural sciences, “When units of biological material are put together, the properties of the new material are not always additive, or equal to the sum of the properties of the components. Instead, at each level, new properties and rules emerge that cannot be predicted by observations and full knowledge of the lower levels. Such properties are called emergent properties (Novikoff, 1945)” (Lobo, 2008).

We can think of pre-emergence as a process in which new values, meanings, practices, and relationships arise out of interactions inherent in social ecosystems. If successful, then these new experiences materialize to create a larger culture exhibiting properties the smaller and simpler social ecosystems, such as a SMO, do not exhibit.

Productive Activity

Productive activity, productive cultural activity, cultural activity, and organizational activity all mean cultural work. Both social and natural systems function through productive activity, hence, I use these terms synonymously to support the liberated ecosystem concept.

Politics of Possibility

A politics of possibility is Gibson-Graham’s (2006) framework for transformative change. The scholars use the term as a conceptualization for an emerging political imaginary, opposing the hegemonic nature of capitalist economies. The framework is an engagement strategy drawing on a politics of language, a politics of subjectivity, and collective action used by participants to imagine a new social order qualitatively different from the mainstream. The empirical dimensions of a politics of possibility reflect the main strands for social change in the social movements literature, including framing, collective identity, resource mobilization, political opportunity, and collective action.

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1 INTRODUCTION

What do farmer suicides, hunger, and climate disruption have in common? Industrial agriculture. Many scholars maintain that the industrial agricultural system – as a representation of the dominant model for agriculture in the U.S. – is not sustainable, as we see increasing economic concentration¹, food insecurity, and ecological degradation spreading across the world (Altieri, 1998; Godfray, Beddington, Crute, Haddad, Lawrence, Muir, Pretty, Robinson, Thomas, and Toulmin, 2010; Goodman and Watts, 1997; Hurt, 2002; Magdoff, Foster, and Buttel, 2001). These trends have been met by a proliferation of alternatives that are rediscovering, adapting, and developing different approaches to the production, distribution, procurement, consumption, and disposal of food. Yet, research on industrial agronomic practices contributing to unsustainable production continues to significantly outweigh research on alternative models for sustainability (Kremen and Miles, 2012; NSAC, 2016). Non-profit, non-governmental organizations researching and developing progressive solutions to agricultural systems must compete for scarce resources in a field dominated by the interlocking relationship of the land grant university system, government, and industry – referred to here as the *agro-capitalist research complex*. The first part of my research question asks: how does a social movement organization (SMO) outside the agro-capitalist research complex successfully promote a progressive agenda for transforming agricultural systems? I build an argument for cultural-based strategies as the answer to the question.

¹ Farmer suicides across the world, with a high concentration in India, are associated primarily with indebtedness and bankruptcy followed by crop failures (Guillaume, Mehta-Bhatt, and Sengupta; Stone, 2007). Some opponents of genetically modified crops suggest that farmer suicides are a result of structural policies of trade liberalization and corporate globalization and industrial agriculture's technological patenting of seed, chemical fertilizers, pesticides, and insecticides (Kimbrel, 2002; Shiva, 2008).

In recent years, the government has allocated funding, albeit very little, toward partial elements of sustainability, such as organic agriculture. Some scholars (Goodman, Dupuis, Goodman, 2012; Guthman, 2004; Holt Gimenez and Shattuck, 2011) argue that these add-on solutions tend to be incorporated into the existing model, thereby, upholding the status quo. A number of scholars in the sociology of agriculture argue that many alternative models of agriculture have been eroded and unable to fully transform the industrial model of agriculture because the agro-capitalist research complex has been effective, incorporating alternatives through conventionalization or mainstreaming processes (Goodman, Dupuis, Goodman, 2012; Guthman, 2004; Holt Gimenez and Shattuck, 2011). This suggests that a spectrum of resistance in agriculture exists, representing a political struggle over the agricultural system. On one side of the struggle are those who aim to maintain the status quo; on the other side of the spectrum are those who seek to transform the system. A continuum of struggle means that alternatives represent variations in transformation. Scholarship on alternatives in agriculture has analyzed many variations of transformation, including alternative scientific and production principles (Altieri, 1987; Gliessman, 2007; Noorgard & Sikor, 1995), alternative strategies and initiatives (Allen et al, 2003; Buttel, Goodman, and Watts, 1997; Lyson, 2004; Warner, 2007), alternative socio-cultural perspectives (Beus and Dunlap, 1990; Feenstra, 1997; Kloppenburg, Lezberg, De Master, Stevenson, and Hendrickson, 2000), or alterity (Goodman, Dupuis, and Goodman; Hassanein, 1999). The second part of my research question gets at this struggle: how does a SMO outside the status quo promote its agenda without being incorporated by the dominant system? Again, I construct a cultural-based model to solve this research puzzle.

Enter the case for investigating my twofold research question at hand. In 2014, The Land Institute (TLI) organized a special, invite-only, all expenses paid meeting of cross-disciplinary

scientists from across the globe. The purpose of the meeting was to deliberate on the obstacles to scaling up global research efforts for developing a model of alternative agricultural systems that features herbaceous perennial grains polyculture systems². “Watershed moment” became the buzz phrase among the sixty-six scientists at this weeklong retreat, representing a promising era for advancing TLI’s original manifesto of core concepts. Forty years ago, TLI was the trailblazer for initiating this radical research agenda for alternative agricultural systems. Since its inception, TLI has been operating as a non-governmental organization (NGO) struggling against a powerful set of relations³ that work to maintain the prevalent model of industrial agriculture in the U.S. Forty years later, then, the Estes Park event was significant. Expressing a readiness for scaling up demonstrates that TLI has not only persisted under pressure from the dominant landscape, but the organization has expanded both its resources and model for alternative agricultural systems. The case of TLI presents an opportunity for understanding power dynamics: how did this organization arrive at a watershed moment in its history, independent of the dominating system, after all these years? This watershed moment, in which participants are creating new values, meanings, practices, and relationships, is an empirical example of the process of “pre-emergence” (Williams, 1977), in which actors are *in some measure* formulating new experiences *not compatible* to the dominant position. I enter my argument by maintaining that this social movement organization’s (SMO’s) cultural work plays a central role in the process of this pre-emerging watershed moment.

² The underlying assumption for this model is based on Natural Systems Agriculture principles for mimicking nature, a radical application of ecology in the field of agricultural research systems.

³ I refer to this powerful set of relations as the “agro-capitalist research complex.” Well before TLI was established, an agro-capitalist research complex was stabilizing in the United States. By the time TLI was established in the 1970s, three institutional arenas interlocked – land-grant universities, government, and agribusiness as defined on the next page.

Many advocates (see Buttel, 1997) of sustainable agriculture call for new models for agriculture, ranging from full transformation of the system, referred to here as *oppositional* or *systemic alternatives*, to fractional changes, referred to here as *alternative*. Cultural studies scholar Raymond Williams (1977) refers to these variations in resistance as “alternative forms of tradition” or “oppositional forms of emergence.” We can see these forms of resistance play out in agricultural research systems. For example, sustainable agriculture as an alternative to the industrial model of agriculture represents a spectrum of resistance with variations in transformation. This alternative-opposition spectrum of transformation is evidenced by different degrees of agricultural practices from minimal to no-till systems, low input to zero input systems, or cover crops to double-up legume systems. Interpreting Williams, “alternative forms of tradition” represent reforms that do not go far enough to transform the system, whereas “oppositional forms of emergence” signify an entirely new system with the capacity for full transformation.

Little attention has been given to “pre-emergent” forms of opposition, or the processes partially working out new experiences that are not being taken up by the dominant position. Drawing on Williams, the process of production and interpretation of cultural work is continuous, such that “the making of [culture] is never itself in the past tense. It is always a formative process, within a present moment.” (129). This means that pre-emergence, according to Williams, is “active and pressing but not yet fully articulated, rather than the evident emergence which could be more confidently named” (126)⁴.

⁴ For example, feminist scholars confidently name and point to three waves of the feminist movement, representing evident emergence. There is debate on whether or not a fourth wave movement is underway, representing pre-emergence.

Moreover, a review of the literature (Chapter 2) shows that political economic analyses tend to take ideologies as foundational assumptions of the model; thereby, ideas become overlooked in material analysis. My research is a cultural analysis to get at the ideas and practices interacting with political economic factors. In my research, I use a relational framework to synthesize this previous scholarship and present a model based on cultural strategies for transformation. This dissertation reports on research that attempts to provide some answers to the problem of marginalized agendas for social change – an ethnographic study of a social movement organization (SMO) advancing a progressive agenda for transforming agricultural systems.

I present a case of The Land Institute (TLI), a SMO that has been researching and developing a model for sustainable agriculture for the past forty years yet has received little attention from government or industry, the central institutions supporting research and development initiatives, suggesting that the organization has not (yet) been incorporated into the agro-capitalist research complex. Over its forty-year period, TLI has been promoting a progressive agenda for sustainability while steadily increasing resources, gaining more supporters, and receiving more recognition in the field of agricultural research, indicators of early success articulated by scholars studying social movements (Davis, McAdam, Scott, and Zald, 2005; Della Porta and Diani, 2009; McCarthy and Zald, 1977). The aim of this SMO is to transform the current system of industrial agriculture. The holistic, ecological, long-term character of the model at the heart of TLI is qualitatively different from the reductionistic, agronomic, short-term industrial model of current agricultural systems. Selecting a case that has a qualitatively different orientation from the industrial paradigm and has not been mainstreamed

into society at large can help us better understand the process of “pre-emergence”⁵ in which new meanings and values, practices, and relationships take shape outside a field of power.

So how has this SMO with a marginalized agenda been able to achieve continuing success as evidenced by the scaling up of its organizational trajectory, the extending of its social network, and the mounting legitimacy of its science? I argue what I term a “liberated ecosystem” and its cultural work in a “politics of possibility”⁶ (Gibson-Graham, 2006) play a central role in how a SMO functions outside a field of power, creating new values and meanings, practices, and relationships not compatible to the dominant, or mainstream order. In turn, a liberated ecosystem and its cultural work contribute to its success both as an emergent model and agenda for progressive change and as a resistance technique for preventing cooptation. Therefore, creating a liberated ecosystem that invests in cultural work for a politics of possibility is a form of strategy in and of itself. Yet, scholars have overlooked the details of this relational context.

In this dissertation, I set out to illustrate the cultural work as a set of strategies that TLI uses to sustain its vision, organization, progressive agenda, and constituents while resisting incorporation. The results of the study point to four main cultural activities as strategies contributing to pre-emerging social change: creating a shared vision, delivering values-based education, doing place-based work, and gathering together. This study not only adds to what is known about the importance of social movements for social change, but it also provides robust evidence on the significance of cultural work in social change. The findings can be used by

⁵ I use the empirical evidence of TLI (increasing resources, constituents, and legitimacy over time) advancing a progressive agenda outside a field of power as an assumption/indicator for the process of pre-emergence.

⁶ A politics of possibility is Gibson-Graham’s framework for transformative change. The framework is an engagement strategy drawing on a politics of language, a politics of subjectivity, and collective action to counter the hegemonic order.

policymakers and practitioners who argue for alternative approaches to transforming agricultural systems.

In the rest of the introduction, I share the case selection, research proposition, goals of research, methodology, my positionality, and then I end with the structure for the rest of the dissertation.

1.1 The Case

For this research, I selected The Land Institute (TLI) as a case study of a SMO promoting a marginalized, progressive agenda for social change. I approach the scientists, staff, and constituents (also referred to as participants or activists) of TLI as a SMO for sustainable agriculture in the U.S. I view this SMO acting as an oppositional position in a field of power. In this sense, TLI represents an oppositional organization contributing to the process of pre-emergence, partially articulating new experiences that are not legible to the dominant position. I sought out TLI as a potential case because the organization is a case in of itself worthy of study since the site has not been given attention in sociological research. Selection is used to explore two conceptualizations: illustration of pre-emergence as a process and politics of possibility as a counterhegemonic project.

Founded in 1976, The Land Institute (TLI) is a science-based, education non-profit, non-governmental organization based in Salina, Kansas. The mission of TLI is to save soils, protect water, and promote an enduring natural and human community. From the start, co-founder, Wes Jackson⁷, established TLI as a deliberate separation from the land-grant university because, in his view along with a very small but growing population at the time, the university was in cahoots

⁷ Wes Jackson and Dana Jackson were the co-founders of TLI. My research focuses on Wes Jackson who became the sole director of the organization in 1993. Dana Jackson's influence is included as one of the perspectives making up the organization in the early years.

with industry, perpetuating the negative consequences of agriculture. TLI's establishment in 1976 coincides with and reflects the rising environmental movement of that era. Today, the organization is directed by a 17-member board and comprised of approximately 16 research staff, 10 seasonal interns, and 14 staff.

Scientists at TLI are researching and developing perennial grain crops and polyculture farming solutions based on Natural Systems Agriculture principles. This research seeks to develop an alternative, more sustainable form of staple grain crops (such as wheat, rice, and sorghum) by breeding for the trait of perennialism in these annual plants or developing totally new perennial crop species. The plant breeding program at TLI relies on selection, wide-hybridization, and domestication methods, also known as traditional methods in the field, to perennialize staple grain crops that will produce adequate yield in an intercropping, or polyculture, system that includes multiple species of crops. TLI has partnered with scientists from around the world in its research and development efforts. At the forefront of its research domain, TLI has been leading the way in researching and developing perennial grains in polyculture systems since 1977, the year after the school was established and Jackson took a group of students out to the Konza Prairie where he had his epiphany that agriculture is responsible for massive degradation of soil organic matter; he concluded that developing perennial grains in polycultures presents the greatest possibility for agriculture to mimic the regenerative capacity of natural ecosystems, thereby, producing the food we need, sustaining both natural ecosystems and human populations.

1.2 Research Proposition

The overarching question in this research concerns the process of pre-emergence in which a SMO is able to bring about new meanings and values, practices, and relationships that

are *not compatible* to the mainstream culture. By not compatible, I mean, the dominant position has not taken up or acknowledged the new experiences being set forth by an oppositional position because the new experiences cannot be incorporated⁸ into mainstream ideas and practices in a way that maintains or advances the dominant position. How is a SMO able to develop and grow a progressive, “oppositional” agenda for sustainability standing outside a “field of power” dominated by the “agro-capitalist research complex” without being “incorporated?” What does a counterhegemonic project look like on the ground? These are questions and terms I will elaborate on through this dissertation.

Specifically, this study focuses on cultural work as strategies that activists of a SMO use to promote a progressive agenda for social change. I explore the social practices of a SMO against those of the dominant culture. I assume that culture is dynamic and manifests in a social-political-economic context. Following in the vein of Gramsci (2000), I maintain that culture is a key site of political and social struggle. In this study, I use an interpretive approach, drawing on a relational model of power and cultural analysis, to examine the process of pre-emergence. Analysis emphasizes the conditions, interactions, tactics, and consequences of a SMO’s productive cultural activity. I call for a social-ecological imagination to visualize a counterhegemonic project by presenting the term *liberated ecosystem*, defined as a SMO of actors, policies, and institutional practices standing outside the dominant system and investing in cultural work to nurture a counterhegemonic project. I argue that a liberated ecosystem’s productive activity nurturing a politics of possibility is key to the process of pre-emergence for creating new experiences not taken up by the dominant position, thereby, presenting the potential for transformation.

⁸ I use incorporated and coopted throughout to represent a similar process of domination as explained by Williams’ (1977) theory of incorporation (see Chapter 3).

This thesis contributes to knowledge by analyzing the historical trajectory and cultural work of a SMO that has been promoting a progressive agenda for transforming agricultural systems for the past forty years and by determining what type of strategies help to create new experiences that are not being coopted by mainstream culture. I am interested in the ways cultural work can be used to nurture a politics of possibility to create new language and new subjectivity and to inspire collective action for transformation.

I am interested in the ideas and practices that have the potential to change the material conditions of production. Political economic analyses tend to emphasize the material over the cultural forms of society. I view ideology and material practices as a dialectical relationship in which ideas shape material conditions, and in turn, material activities influence culture, together establishing social order.

1.3 Goals of Research

The purpose for this research is to use scholarship as an ontological tool to expose the dominant position, to open up a social-ecological imagination, and to present possibilities for alternative ways of living. Through my scholarship, I aim to open up our understanding for holistic, interconnected ways of thinking, doing, valuing, and relating in order to live more compassionately. My goal is to create a more holistic understanding of the problem of sustainability by looking at the shortcoming of a marginalized agenda. Broadly, I argue that ideas and practices can contribute to sustainability by examining the role of an organization in promoting social change.

One way I aim to create a new understanding of the problem of sustainability is to bond across difference. By this I mean, finding common ground between the social and natural sciences. The problem of sustainability requires an interdisciplinary perspective to get at both the

social and ecological variables interacting in complex systems. I draw on concepts from both the social sciences and ecology, using language to bring together multiple ontologies of social-ecological relationships. Another way to open up our understanding of sustainability is to present an in-depth look at a case that has been addressing the issue for an extended period of time but has not been fully investigated from a sociological perspective.

1.4 Methodology

The overall purpose of this project is to illustrate how activists of a SMO standing outside a field of power are able to promote a progressive agenda without being coopted by mainstream culture. Specifically, my research examines the process of pre-emergence in which a SMO is *in some measure* formulating new meanings and values, practices, and kinds of relationships that are *not workable*, or not “logical” enough for the dominant position to coopt and incorporate into the field of agricultural research systems.

To examine pre-emergence, I conducted a multi-method ethnographic case study of The Land Institute, a SMO of scientists, staff, and constituents working to transform the dominant model of agriculture. An ethnography is an effective method for focusing on cultural phenomenon because the techniques for emersion get at the various, subtle aspects of a culture, including the assumptions, values, behaviors, and symbols of a group. Through drawing on data gathered in the form of interviews, participant observation, and document analysis, I analyze this SMO and its productive activity aimed at nurturing a politics of possibility. By *productive activity* I mean this organization’s historical development and cultural work for sustaining its vision, organization, progressive agenda, and constituents, or philosophy and model for short.

I have chosen The Land Institute as the subject of my study because its work is innovative and considered radical by mainstream logic, pushing boundaries of agricultural

science. TLI is a case that has not received much attention in the social sciences (and the natural sciences for that matter). TLI sees solving the problem of agriculture as a comprehensive way to address democracy, poverty, inequality, food security, and climate change issues to transform society into a more sustainable and just world.

I find Gibson-Graham's conceptualization of a "politics of possibility" (described in Chapter 4) particularly useful for understanding a counterhegemonic project in which participants engage in a politics of possibility, creating new language and new subjects and inspiring collective action, to transform the dominant culture. I present the concept of a "liberated ecosystem" (elaborated on in Chapter 4) to refer to a SMO's complex repertoire of actors, policies, and institutional practices functioning outside a field of power and investing in a politics of possibility for comprehensive social change. I call for a social-ecological imagination to visualize a counterhegemonic project by presenting the term liberated ecosystem, and I argue that a liberated ecosystem's productive activity is a key ingredient for nurturing a politics of possibility, thereby, presenting the potential for transformation.

I argue that we need to know more about the cultural work facilitating a politics of possibility if we are to understand the process of pre-emergence, presenting potential for comprehensive transformation.

1.5 My Positionality

Before I describe what I observed 'out on the prairie' and present to you my argument and evidence, I must take a moment to describe who I am through a reflexive gaze. A reflexive gaze is an internal look at who I am, what I believe, my social position, and my personal biases that have arisen out of my experiences through place and time. Acknowledging my social

position and experiences is an important part of the research process because I ascribe to the argument made by numerous feminist scholars that knowledge is a socially constructed process.

I am a white female pursuing a doctorate in the social sciences while many of my subjects already have doctorates in the natural sciences and tend to be white males. While my white, educated status along with my U.S. citizenship present me with many advantages, I am in a subordinate position to many of my research subjects based on credential, disciplinary, and/or gender status. In my research, I view the subjects as the experts, regardless of social position, since they are the ones who live the everyday experiences. These factors influenced the ways in which I conducted interviews and participant observation. I mostly observed and listened while holding back from inserting my thoughts during participation opportunities.

I enter my scholarship for understanding the social world through an ecological lens. In studying the social world, I take on a systems perspective that assumes emergent, complex, dynamic, and interdependence as key features of relationships. I assume that humans are part of larger ecosystems that are connected within our planetary unit, Earth. In order to live in flourishing communities, Earth – our One Home – needs to flourish. I see the living Earth as the origin of creativity, innovation, and ingenuity.

I am critical of neoliberalism, globalization, and capital accumulation processes that structure mainstream culture. I view the current political-economic system, or modern capitalism, as a primary contributing factor to the increasing inequality, poverty, and ecological degradation across the world. I am also critical of the dominant status of industrial agriculture and agronomy because many of the foundational ideas and practices producing the modern model of agriculture have resulted in negative consequences for both people and planet.

My research looks at alternative models from mainstream culture for managing our One Home, raising questions centered on knowledge, values, practices, and relationships. I believe more people across the world should be experiencing just, equitable, democratic, and sustainable livelihoods. I take on a relational, values-based perspective in which interdependent mutuality is necessary for a just, democratic, and sustainable society. I see food as the common denominator to achieve this vision because we all have to eat. How we approach agriculture and food, the basis for our survival, reflects how we practice social justice and equity issues. I assume that quality of life is based on our interpretations of subsistence as evidenced by our relationship to agriculture and the Earth. Our exploitation of nature through ideas, such as “humans can and should control” nature, is reflected back in our relationships with each other as a human species. Broadly, I am interested in studying ways progressive values can be included in models for agriculture and food systems. I maintain that agriculture and food systems can be a vehicle for bettering the world.

1.6 Structure of Dissertation

In this study, I examine the process of pre-emergence by analyzing a SMO’s productive cultural activity. This dissertation is organized into two parts. In Part One, I present the historical background and theoretical foundation for the case of a SMO. Throughout Part One, I refer to the historical background and theoretical foundation in relation to a review of the literature relating to social movements, sociology of agriculture, and environmental sociology.

Chapter 2 provides background on what I term the agro-capitalist research complex. I trace the origins of modern-day science, specifically agronomy and ecology, to explain the rise of industrial agricultural systems in the U.S. From here, I outline the consequences of the agro-capitalist research complex along with the response. In this chapter, I argue that the

interrelationship of the USDA-LGU-Industry reflects the hegemonic logic of state-science-market that has been increasingly dominating the agricultural landscape across the world, sustaining the unsustainable.

Chapter 3 presents the theoretical orientation for explaining the relationship and mechanisms of power. I use Chapter 4 to present two conceptualizations framing the research. I introduce the concept *liberated ecosystem* as part of my ontological project to open a social-ecological imagination. I draw on Gibson-Graham's "politics of possibility" framework to conceptualize the empirical dimensions of a counterhegemonic project.

In Part Two, I provide the research data of the case study. I start by introducing the setting situating the case of TLI. in Chapter 5. In Chapter 6, I proceed to the methods used for investigating a case study. Following, research data for the narrative is structured based on the major themes from the findings starting with the logic and assumptions informing the SMO's cultural work in Chapter 7. Chapter 8 starts with the first major cultural activity that TLI uses to nurture a politics of possibility: sustaining a shared vision. The next strategy, delivering values-based education, is presented in Chapter 9. Chapter 10 presents the findings for doing place-based work as a cultural strategy. The final significant strategy to the case is gathering together, presented in Chapter 11. In the conclusion (Chapter 12), I offer insight on the prospective future for the SMO and its progressive agenda for transforming agricultural systems.

This study is an effort to show how ideas and practices can contribute to progressive change for a more sustainable society by looking at the role of cultural work undertaken by an organization in promoting social change. The central question is: *How is a SMO standing outside a field of power able to advance a progressive agenda without being coopted by the dominant position?*

PART ONE: BACKGROUND CONTEXT OF POWER DYNAMICS IN
AGRICULTURAL RESEARCH SYSTEMS

2 RISE OF AGRO-CAPITALIST RESEARCH COMPLEX

In this chapter, I provide the background context of the agro-capitalist research complex, first by drawing on the sociological literature to explain power dynamics driving the national agenda in the U.S. Then, I turn to the origins of modern day science to get at the dominant ideas and practices informing the national agenda (agronomy) and the marginalized ideas (agroecology) that have not received widespread support from policymakers. I then consider how the historical context of ideas and practices (culture) reinforces the interlocking power of state, science, and market (structure) I refer to as the agro-capitalist research complex. This power structure comes with big consequences, which is where I turn to next. I end by describing the activist response to the agro-capitalist research complex approach to agriculture.

Power elite analysis – first introduced by Mills (1956) and later elaborated on as a complex by Best, Kahn, Nocella II, and McLaren (2011) – draws on a political economy perspective to explain the concentration of information, wealth, and power among a relatively small but significant set of relations occupying pivotal positions in society. The decisions that come along with these positions have major consequences on social order for the everyday. Those decisions stem out of ideological systems (assumptions, values, beliefs, meanings, practices, and relationships) that shape material production systems of society. Mills conceptualizes the big three hierarchies (state, corporation, and army) as a triangle of power in which political, economic, and military structures operate in unison, influencing all other institutions in U.S. society. The historical development of the modern-day state is intertwined with the historical development of market-based capital, influencing and being influenced by the other. The state and market capital cooperate, establishing mechanisms for achieving mutual goals. Protectionism and capital accumulation go hand in hand. Thus, the role of ideological

systems, or paradigms, plays an important part in power structures.

Best and colleagues (2011) take the power elite framework further by applying the power structure concept to every institutional domain in society, including agricultural research systems. Their argument suggests that industrialization, capital accumulation, and globalization processes have given way to a global industrial complex of power relations, extending to all corners of the world. The pursuit of profit by producing commodities for capital markets has become the prevailing logic in capitalist societies. As a political economic perspective, the analytical emphasis is on material configurations of production, i.e. capital accumulation processes. The underlying ideological logic to maximize profit is a given in this type of political economic analysis – the material production systems drive social order of hierarchical power and inequality. As such, Best argues, various institutions, including science, have been structured according to a capitalist, industrial, and bureaucratic processes necessitating profit, growth, efficiency, mass production, and standardization (Best et al:xvi).

2.1 Origins of Modern Day Science

When we take a step back from the material practices of science (i.e. production for capital accumulation), we can ask what is behind the authority of science as a contemporary institution that influences social order? Scholars of science have linked the origins of modern scientific thought (ideas) to the knowledge construction principles of Francis Bacon, Rene Descartes, and Sir Isaac Newton (Butterfield, 1997; Shapin, 1996; Westfall, 1971). Modern science represents a paradigm shift in worldview from an Earth that is at the center of the universe to an Earth that revolves around the sun, from a social order ruled by religious orthodoxy to a social order ruled by scientific conventions. For the past four centuries, the epistemological and ontological underpinnings of modern science have been shaping how we see

the universe, how we know the universe, and what roles humans and nature play in it. From these three influential thinkers we now have material practices, including the observable, objective, inductive, and certain scientific method; the reductionist strategy for breaking down the whole into its smallest parts and then into isolation; and the mechanical, predictable, and controllable universe. Modern science is informed by reductionist assumptions, drawing on logical positivism while viewing the world as a mechanical entity that is based on certainty, order, structure, and determinism (Merchant, 2005; Woolpert, Slaton, and Schwerin, 1998). Instead of religious authority structuring social order, the Copernican Revolution legitimized scientific authority as the primary institution for knowledge (Bourdieu, 1991). As Herman (1998) suggests, from this Kuhnian paradigm shift⁹ “an ongoing, self-reflective, philosophical meditation on human history [was replaced by] a rationality that could predictably manipulate the regularities of nature” (29).

All this is to suggest, modern-day science is an institution with a particular logic that works in conjunction with the state and the market in the political-economic pursuit of limitless growth and profit. As a scholar of the history of agricultural research systems in the U.S., Dahlberg’s (1986) account of the relationship between science and agriculture is in line with the power complex notion, suggesting that once “science came to dominate the knowledge industry, it spread into all forms of human activity [including agriculture]” (Dahlberg, 1986:368).

Archaeologists and palentologists have traced the origins of farming to around 10,000 years ago when humans first domesticated crops and then livestock; historians have traced the origins of modern-day science to the thoughts of the Enlightenment era about 500 years ago. However, the development of the agricultural sciences is more recent, beginning in the 19th

⁹ Thomas Kuhn wrote *The Structure of Scientific Revolutions* (1962) stating that an epistemological paradigm shift is a fundamental change in the basic concepts and experimental practices of a scientific discipline. The term has since been applied to other contexts, including a change in major thought patterns.

century with Gregory Mendel's genetic work on hereditary and Justus von Liebig's work on plant nutrition through the application of chemicals (Allen, 2003; Brock, 2002). In the U.S. the term "agricultural science" first appeared in the Hatch Act of 1887¹⁰. Science applied to agriculture is a more recent phenomenon that has had a major impact on agricultural systems. In this short period of agricultural science development, power structures via disciplinary status have formed. Disciplines that support the positivist, reductionist, mechanical logic of science have been the ones to rise to the top of the status hierarchy.

The agricultural sciences have been dominated by the disciplines of agronomy and, more recently, molecular biology, as evidenced by the studies on the reported titles of departments, the number of doctorates awarded, academic journals and conferences, and employment opportunities (Huffman and Evenson, 2008; Lacy, 2001). Agronomy is the application of science and technology to the production, improvement, and management of the major food and fiber crops. Agronomic experiments focus on a variety of factors relating to crop plants, including yield, diseases, cultivation, and sensitivity to climate and soil. Throughout the discipline's history, the major goal of an agronomic research agenda has been to increase crop yield (Cornell University, 2016). Many proponents of the Green Revolution claim that increasing crop yield will "feed the world;" however, research has shown that global production systems produce enough food calories to support the current population – the problem of hunger is one of access not necessarily yield (Foley, 2011; Holt-Giménez, Shattuck, Altieri, Herren, and Gliessman, 2012).

¹⁰ The Hatch Act of 1887 disbursed federal funds to land grant universities and colleges with the directive to establish State Agricultural Experiment Stations. The mandate was to develop agricultural industry, to support rural life, and to contribute to the welfare of the consumer.

Based on both agronomic and industrial principles, the agricultural systems model in the U.S. assumes efficiency and productivity values for growth (Danbom, 1979). Agronomic approaches for increasing yield are informed by reductionist, determinist, and positivist perspectives, emphasizing applied over basic science¹¹ (Beus and Dunlap, 1990). Dahlberg (1986) claims that the tradition of agricultural research has emerged out of the disciplinary segregation in modern science, taking on a "scientific" approach and "economistic" approach (397). The scientific approach reflects the training in agronomy, experiment stations, and natural sciences, which uses science and technology to solve problems, assuming universal applicability of technological solutions. Dahlberg links the economistic approach of modern science to the training in economics and management departments, which emphasizes utility maximization and rational choice. Taken together (science and market), what we see is an agronomic-industrial model that is dependent on mechanical and chemical inputs derived from fossil fuels to achieve output goals.

Norgaard and Sikor (1995) suggest that the philosophical roots of modern science informing an agronomic, industrial agriculture is based on atomism, mechanism, universalism, objectivism, and monism. What we see, according to these scholars, is that “The problems of conventional agriculture result from the dominance of these *isms*” (24). The goals and values of both the scientific and economistic approaches that Dahlberg examines and the *-isms* that Norgaard and Sikor identify are in line with the power structure concept. In an industrial agriculture paradigm, efficiency is quantified through the market.

¹¹ “*Basic research* discovers the underlying processes and systems that make a plant, animal, ecosystem, food system, community, or marketplace work...*Applied research* expands on basic research findings to uncover practical ways in which new knowledge can be advanced to benefit individuals and society. (NIFA, 2017).

A dominant way of knowing and doing research excludes other (alternative) ways of knowing and doing, with agroecology as a case of a marginalized discipline in the agricultural sciences. For example, indigenous, or local, knowledge and holistic and systems level research do not receive attention in an agronomic model, but these principles can be found in many ecological approaches, like agroecology. Simply, agroecology is the application of ecology to agriculture.

The disciplinary origins of ecology developed out of botany, co-evolving with “agricultural science,” or agronomy in the late 19th century (Hersey, 2011). A strong connection between ecology and agronomy developed early on in the agricultural sciences. As a way to gain legitimacy as a scientific endeavor, the early ecologists set out to establish the discipline as a theoretical science in order to be distinct from botany. In doing so, early scholars in the field of ecology focused on the theoretical development of the discipline while only making loose connections between applied ecology and agriculture (Hersey).

As ecology developed as a discipline, the meaning of the research shifted. As Hersey notes, applied ecology became associated with ecosystems conservation rather than agriculture by the 1930s. Through authoritative knowledge posturing, ecology and agronomy became polarized. A debate over a “pure” science that produces knowledge (agronomy) versus one that solely applies knowledge (ecology) broke out among scientists. Some agronomists viewed (and still view) ecology as an inferior science that only offers application over theory and descriptive over quantitative methodology.

By the 1960s, the agricultural component of the environmental movement had been dropped from the ecological-based agenda (Hersey). The early debate over authoritative knowledge between ecology and agronomy resulted in agricultural issues falling off ecology’s

primary agenda. Despite overlap in conservation concerns, the alternative agriculture movement, evolved separately from the environmental movement. Instead, the critical sentiments of the period (via Rachel Carson and Wendell Berry) reflect the rising opposition to agricultural science, or agronomy, which was dominating the agricultural research agenda by that time. In contemporary thought, we see that agronomy and ecology got a divorce.

In the divorce, agronomy got custody of the industrial model of agriculture while the ecologists who were still interested in agricultural issues became marginalized, receiving little to nothing. In his historical account of agricultural science, Hersey suggests: “Scientists like Wes Jackson, probably the best-known pioneer in the field of ecological agriculture, have worked well outside the mainstream—with little support from the USDA or land-grant universities” (Hersey, 298). Thus, ecology-based approaches¹² to agriculture have emerged as an alternative to the industrial model of agriculture.

The term “agroecology” was first used in a scientific publication in 1928 (Wezel, Bellon, Doré, Francis, Vallod, David, 2009). Derived from agronomy and ecology, Gliessman (2007) points out that agroecology reflects the complementary tension between ecology (basic scientific study of natural systems) and agronomy (applied scientific practice of agriculture). The term agroecology has multiple definitions along with different objects, concepts, scales, and research methods depending on the context of the research being done. When looking at the multiple definitions and uses of agroecology, the term can mean a scientific discipline, an agricultural practice, or a political or social movement (Wezel et al).

¹² Ecological approaches to agriculture are variously called “alternative”, “low-input”, “sustainable”, “organic”, “regenerative”, “holistic”, “biointensive”, or “regenerative.” While each approach has its own historical context of social relations, “farming with nature” is the primary principle across the terms, promoting biodiversity, nutrient recycling, self-regeneration, healthy soil, water conservation, minimal tillage, and crop-livestock integration. The foundational principle of ecology is the interdependent connection between organisms and their environment (Odum and Barrett, 2005).

For the social movement perspective of agroecology, the term is more focused on alternatives to the industrial model of agriculture. From this perspective, the term means local knowledge, social justice, identity and culture, and economic viability of rural areas. From this perspective, agroecology is about challenging the current power structures of exploitation. Scientists following this perspective suggest that industrial agriculture incorporates agroecology into the prevailing model by using the technical part of the term to make some tweaks to the industrial model while still conforming to the annual-monoculture system and maintaining the dominance of capital in structures of power (Nyéléni, 2016).

A working definition set forth by agroecologist Miguel Altieri (1995) encompasses all three components of the definition, whereby agroecology is “working with basic ecological principles for how to study, design and manage agroecosystems that are productive, natural resource conserving as well as culturally sensitive, socially just and economically viable.” It is this definition that does not necessarily translate into an industrial-model because the multiple dimensions are too complex to fit in a reductionist, universal, standardized model emphasizing profit over people, place, and planet. Altieri and colleagues (1987) look to traditional, indigenous farming systems for insights on the principles and practices for alternative, sustainable agricultural systems. The goal is to move “toward a self-sustaining, resource-conserving, energy-efficient, economically viable and socially acceptable agriculture” (367). Hecht (Altieri, 1995) argues that agroecology is rooted in the knowledge systems of indigenous agricultures, and this way of thinking and doing was suppressed through slaving, colonialism, and positivist science. The scholars are critical of the philosophical roots of an industrial agricultural model entrenched in the principles asserting the superiority of modern science over other types of knowledge.

While some agroecological parts have been incorporated into industrial agriculture (such as low till and cover crops), agroecology does not receive widespread support from the policymakers setting the national agenda for agriculture. On the other hand, agronomy favors rationalizing production principles along the lines of an industrial model driving the agricultural agenda. Hersey (2011) summarizes the conflation of the ends and means in agriculture in a capitalist society: “The chief concern of many who supported agricultural reform in the early twentieth century was for increased productivity to lower the rising costs of food and fiber. Since the pressing concern of agronomists was increased yield, technological and chemical solutions offered more tangible rewards than ecology—or the insights gleaned from a theoretical science of any kind” (313).

2.2 Interlocking Logic: State-Science-Market

From a power structure perspective, the discipline of agronomy supports the state-military-market logic for capitalist profit. Agricultural research systems, then, represent the interlocking relationship between state, science, and market. Specifically, scholars have looked at the interwoven relationship of power in the U.S. that has solidified over time among the government’s agency United States Department of Agriculture (USDA) (state), the land-grant university system (LGU) (science¹³)¹⁴, and industry (market), referred to here as the *Agro-*

¹³ As outlined in the previous section, agronomy dominated the LGU system as the “agricultural science” aimed primarily at increasing yields through the scientific method (Hersey).

¹⁴ The public agricultural research system in the U.S. emerged out of a set of federal legislative acts, starting with the Morrill Act of 1862, establishing institutions of higher education, referred to as Land Grant Colleges or Universities (LGU). Each state received federal funds to set up a “people’s university” with the mandate of teaching science agriculture, and military science. In that same year, the government arm of public research for agriculture, the United States Department of Agriculture (USDA), was instituted. In 1887 the Hatch Act expanded the mission of the universities by establishing State Agricultural Experiment Stations (SAES) under the direction of the LGUs with a mandate to conduct research to develop agricultural industry, to support rural life, and to contribute to the welfare of the consumer. A 2nd Morrill Act was passed in 1890 establishing colleges for blacks. By 1914, the state-science relationship was solidified through the Smith-Lever Act, which authorized the Extension Service

*Capitalist Research Complex*¹⁵. Scholars studying agricultural research systems in the U.S. have both celebrated (Etzkowitz and Leydesdorff, 2000) and critiqued (Best et al, 2011; Busch, 2000) this relationship. Both sides of the debate suggest that the interaction among these institutions along with their reinforcing philosophies is driving the national-global agenda for agricultural systems and the type of research that gets done (or does not get done) (see Frickel, Gibbon, Howard, Ottinger, and Hess, 2009 for the workings of “undone science”).

Adherents to state, science, and market believe that national security set forth by the state, progress attributed by science, and economic competitiveness promoted by industry can be achieved (Etzkowitz et al, 2000; Nordhaus and Shellenberger, 2007). In the early stages of its history, the public celebrated the LGU and USDA for using science and public funds to benefit the public good (Buttel, 2005).

On the other hand, critics suggest that these three prevailing philosophies (statism, scientism, and marketism) in contemporary society represent an overly-deterministic rose lens of moral responsibility (Busch, 2000). Busch (2000) makes an historical argument claiming that today’s social order is a product of the interconnection of the spheres of science, state, and market. He uses historical examples of thinkers (Francis Bacon, Thomas Hobbes, and Adam Smith) to illustrate systems of belief that give rise to a “moral responsibility” for social order via scientism, statism, and marketism. Busch argues that the desire for social order through these systems of belief have turned out undemocratic, self-destructive, and morally irresponsible, citing the negative consequences of the Green Revolution (scientism), colonialism and the

to extend the work of the universities and experiment stations out to the community. This legislation has been significant, mandating that teaching, research, and service in agriculture benefit society at large and distributing federal and state funds to support the research. (See Hurt, 2002 for a history).

¹⁵ I use the term “Agro-Capitalist Research Complex” to represent the political, economic, and scientific power structures making decisions on knowledge generations and innovations in society.

privatized states of the industrialized West (statism), and the Irish Potato Famine and individualized conceptions of property (marketism) as cases in point. Through Busch's account, we can see that the social order agendas represented by the big three institutions overlap to a point of cultural hegemony.

The power structure concept with its prevailing logic is similar to environmental history accounts of modern agricultural systems. Worster (1990) uses an ecological perspective to trace the history of human-nature interactions in agriculture because agricultural production is the intersection of humans and nature. Drawing on Polanyi's "great transformations" concept, Worster distinguishes between traditional and modern agricultural systems. Traditional agricultural systems emerged out of the first agricultural revolution in which the planet's ecosystems were substantially altered by humans. In this model, traditional agricultural systems are characterized as predominately subsistence-based, more diverse and complex, and a source of social stability. Modern agricultural systems represent the second agricultural revolution in which the processes of capital drastically transformed nature. Worster emphasizes that "an entire economy designed according to simplified, idealized model of human behavior...[with] the purpose of freely maximizing personal wealth" incited this revolution (1100). The features of modern agricultural systems include simplification and specialization, as evidenced by monoculture and loss of biodiversity, leading to vulnerabilities in the natural environment. In a capitalist economy, according to Worster, gain is the primary motive; land is commodified through markets; intensification of nature is a means to accumulate personal wealth; and modern science (agronomy and molecular biology) is on the rise as the primary knowledge system.

In the early 1970s, the public agricultural research system¹⁶ in the U.S. started to receive

¹⁶ As a public, federally funded institution, the purpose of the land-grant university (LGU) is to provide public goods to society.

scrutiny for failing its mission to serve the public. Two publications have been widely cited for critiquing the public agricultural research system: *The Pound Report* (National Research Council, 1972) and Hightower's book *Hard Times, Hard Tomatoes* (1972). Serving as an in-house evaluation of agricultural research being conducted within the public LGU system, the *Pound Report* honed in on the traditional, applied, formula funding research. The Pound Committee argued that the public agricultural research system favored applied research targeted at specific agricultural commodities to the detriment of basic research¹⁷ in biology. While the *Pound Report* focused on the type of science being conducted in the LGU system, Hightower's book looked at the relationships along with the productivist policy and ideology informing the agenda for science. As part of the Agribusiness Accountability Project, Hightower argued that the LGU system was serving the interests of industry at the expense of the family farmer and the public good.

Both reports received critical reviews for being either biased or not rigorous enough, so scholars set out to systematically investigate the funding patterns of agricultural research. Findings from this scholarship point to three distinct patterns in funding for agricultural research intended to benefit the public good. First, the source of funding for agricultural research has shifted substantively over the years (Schimmelpfennig and Heisey, 2009; Huffman and Evenson, 2008; Ruttan, 1982). While a federal-state partnership continues to be the primary source for public agricultural research in the U.S., public funds to support agricultural research have been stagnant while private funds coming from industry have been steadily increasing. Second, the type of research getting done has changed. Public funding for basic research has been declining, receiving less attention, while private funds targeting applied research have been increasing

¹⁷ Proponents of public research claim that the complementarity of basic and applied research is an important part of the innovation process.

(Buttel, Larson, and Gillespie, 1990). Third, a changing division of labor between university and industry has taken shape (Buttel et al, 1990; Kloppenburg, 2004; and Sumberg and Thompson, 2012). The university has been carrying out more and more basic research while industry has been conducting more applied research, transforming the university's basic outcomes of research into a product to sell on the market for industry to profit.

In his seminal work, *First the Seed: The Political Economy of Plant Biotechnology*, Kloppenburg (1988) focuses on the relationships that have contributed to plant improvement in agriculture in the U.S. Through his analysis on the development of hybrid corn, Kloppenburg argues that public science has gone hand in hand with industry's capacity to commodify the seed. Kloppenburg's detailed historical account of the agro-capitalist research complex shows how the seed has historically transformed from a public good into a commodity. Private seed companies expanded capacity to produce, market, and sell the new technology as a critical mass of farmers adopted the new technology over conventional cultivars for its superior yield output and better response to fertilizer. Farmers had to buy this new type of seed from seed companies each year because the hybrid vigor meant that saving seed for next year's harvest was no longer possible. Kloppenburg asserts: "the agricultural plant sciences have over time become increasingly subordinated to capital and...this ongoing process has shaped both the content of research and, necessarily, the character of its products" (8).

Kloppenburg's work is in line with scholars suggesting that we are now seeing a "commercialization of science" of academic research in the agricultural sciences (Glenna, Lacy, Welsh, and Biscotti, 2007). These scholars are finding that the shifting pattern between public and private funding sources is associated with the institutional ideologies and policies informing research agendas. Specifically, increasing investment from the private sector has created a

university-industry relationship that centers on a market fundamentalism ideology, emphasizing commercialization priorities while losing site of the LGU's mission to serve the public good. Intellectual property rights and technology transfer policies have become the basis of the relationship between the public and private sectors (Graff, Cullen, Bradford, Zilberman, and Bennett, 2003; Grimaldi, Kenney, Siegel, and Mike Wright, 2009; Pardey, Koo, Drew, Horwich, and Nottenburg, 2013).

Through a case-study analysis of food-related regulatory functions of the USDA, Mattera (2004) links people at the USDA in prominent positions making decisions on policy to industry. For Mattera "industry-linked appointees have helped to implement policies that undermine the regulatory mission of USDA in favor of the bottom-line interests of a few economically powerful companies" (4). Many of the political appointees making high-level decisions on policy at the USDA have come out of the private industry sector¹⁸. Mattera, suggests that the original vision for the government's USDA has shifted away from the "People's Department" to the "Agribusiness Industry's Department" (or "USDA Inc.") (4). Evidence is stacked against the USDA illustrating how the state is in bed with industry.

Through globalization and increasing industrialization, the agricultural sector, including the plant industry, has become more privatized and competitive through consolidation of industries and concentration of assets, mergers and acquisitions, and vertical and horizontal integration (Lacy, 2001). For example, in the plant industry, a burst of private seed companies entered the scene, in turn, mergers and acquisitions ran rampant, and now only a few private seed companies dominate the industry (Kloppenborg). This means that research priorities have

¹⁸ The agricultural industry sector, also referred to as agribusiness, includes seed suppliers, farm machinery companies, chemical companies, distributors, processors, and manufacturers. Critics of large-scale, industrialized, vertically integrated food production distinguish agribusiness as corporate farming from family-owned farms.

shifted to crops that can generate seed sales or variety royalties (Morris, Edmeades, and Pehu, 2006). This shift in funding has raised concerns over the information that is made publicly available, with critics stating that this gives way to increasing secrecy by industry (Lacy).

Comparative analyses have been used to contrast the industrial-agronomic model to other alternative-ecological models. For Weiner (2003), the industrial model of agriculture represents “farm as factory,” while an ecological model sees “farm as managed ecosystem.” One of the main differences is that the factory model produces many externalities while the ecosystem model is self-generating with few externalities¹⁹. Finally, alternative production strategies are termed as trade-offs rather than improvements (e.g. moving towards increased sustainability will have trade-offs in the short-term with a decrease in yields before increasing over the long-term). Viewing strategies as trade-offs means that researchers consider research problems by prioritizing among potentially conflicting objectives. Weiner’s metaphor comparison gets at the different ideologies, or paradigms, informing the models.

Vanloqueren and Baret (2009) offer an analytical and empirical distinction between the two technological paradigms that have influenced agricultural research – that of genetic engineering and agroecological engineering. The scholars link genetic engineering technology, such as Bt resistant and herbicide-tolerant crops, to the scientific paradigm of positivism and reductionism while linking agroecological engineering technology, such as polycultures, to ecology as a holistic scientific paradigm. The scholars argue that genetic engineering has dominated the agricultural research landscape, hindering the development of agroecological technology. In policy documents, the scholars find that science policies are “explicitly and

¹⁹ Looking at the objectives for yield management in the models, industrial agriculture (factory model) aims to maximize short-term yield, whereas an ecosystems model objective is maximum low, flux sustainable yield.

increasingly oriented towards national growth and competitiveness...[and] biotechnologies have been intimately linked with these objectives” (975). Through funding, infrastructure, and workforce training and employment opportunities, genetic engineering has come to dominate the landscape in agricultural research systems, according to the scholars. Other factors influencing the dominant trajectory for genetic engineering include public-private partnerships, public-private division of labor, intellectual property rights, and imbalance in power lobbies.

Through interviews with scientists, Vanloqueren and Baret identify the values and worldviews influencing research problem choice. “Problems such as pesticide risks are acknowledged, but the validity of the model itself – monoculture, reliance on a high level of external inputs such as fossil fuels – is rarely questioned” (977). When looking to the future, the scholars point out, scientists mainly think in terms of the most probably future agricultural systems, not the most desirable future systems: “they seem to forecast future agricultural systems by integrating the most probable economic and political trends” (977).

While genetic engineering fits within current trends of globalization and liberalization of commodity markets, the principles of agroecology challenge the very nature of the current agricultural system dominating the global landscape. Through these comparative analyses, we see that the mainstream approach in agricultural science is parcel of the political and economic trends dominating the field of power. Vanloqueren and Baret call for a “coherent complementarity” between the paradigms instead of one paradigm dominating the landscape while locking out alternatives. Similarly, Louis Hermann Pammel, a botanist at the Iowa Agriculture College in the late 19th century called for a “crop ecologist”, a scientist who finds common ground between agronomy and ecology (Hersey, 2011). These scholars suggest that the

approach in the field of agriculture should not be either/or but should make a connection between agriculture and ecology.

Scholars have written on how the agro-capitalist research complex has played a major role in technological change in agricultural systems, contributing to the logic that headed the Green Revolution resulting in increased productivity in agriculture (Pingali, 2012; Tilman, Cassman, Matson, Naylor, and Polasky, 2002). Green Revolution technologies (high-yield seeds, chemical pesticides, irrigation, on-farm machinery) have been diffused and adopted across the world (Griffin, 1979; Parayil, 2003), becoming a widespread phenomenon that we now talk about a global, industrial agricultural system. Often times, the unintended consequences of these technologies are not fully understood until later after the technology has been fully released into society. The unfolding of global, industrial agriculture has received a range of critiques for its negative consequences, causing serious ecological degradation, economic instability, and social problems.

2.3 Consequences Of Agro-Capitalist Research Complex

Patterns of industrialization, capital accumulation, scientization, and globalization have dramatically altered both people and place across the U.S. after WWII and increasingly around the world. Buttel (2006) claims that the state-university-industry relationship, or the agro-capitalist research complex, is a mechanism for reproducing an “unsustainable” agriculture because the logic, or principles, informing the research agenda is faulty. Prioritizing productivity goals is the prevailing perspective in agricultural research systems, claims Buttel, outweighing principles for sustainability. According to Buttel, the development of mechanization, chemical fertilizers and biocides, irrigation systems, large-scale confinement technology, along with the knowledge necessary to use and manage external inputs, all have contributed to the persistence

of unsustainability, the antithesis of a sustainable agriculture. The agro-capitalist research complex relies on political economic strategies to maintain its power position, including commodity programs, subsidies, foreign aid programs, free-trade policies, and industrial capitalism dynamics, all of which contribute to “sustaining the unsustainable in agriculture” (Buttel).

From normative and activist perspectives, scholars within both the social and natural sciences have been studying the negative consequences of the agro-capitalist research complex, the rise of the alternative agriculture movement, and the comparison between industrial agriculture and sustainable agriculture²⁰ for the past three decades (Allen, Van Dusen, Lundy, and Gliessman, 1991; Altieri, 1987; Beus and Dunlap, 1990; Gliessman, 2004; McMichael, 2009). In 1962, Rachel Carson’s *Silent Spring* sparked a critical awareness of the impact of industrial agriculture on the landscape, while Wendell Berry’s *The Unsettling of America* published in 1977 nurtured the movement for a new agrarianism. By 2005, the international Millennium Ecosystem Assessment declared that agriculture is the “largest threat to biodiversity and ecosystem function of any single human activity” (Millennium Ecosystem Assessment). Meanwhile in 2009, the U.S. government responded to the public’s growing interest for local foods by initiating the ‘Know Your Farmer, Know Your Food’ program as a way to reconnect the producer-consumer relationship.

So, what does “unsustainable agriculture” look like? The food we eat today is mostly produced by industrial agriculture as the dominant food production system in the U.S. and increasingly across the world. Global industrial agricultural systems produce staple grain crops,

²⁰ The agro-capitalist research complex is associated with the principles of industrial agriculture while the alternative agriculture movement is associated with the principles of sustainable agriculture. Variance within the competing paradigms exists. I use agro-capitalist research complex and industrial agriculture interchangeably.

such as corn, rice, and wheat, on almost 70% of global cropland to provide about 70% of human food calories (Alexandratos and Bruinsma, 2012). The industrial model is characterized by annual crops grown in large-scale monoculture systems, heavy use of chemical fertilizers and pesticides, and meat production in confined animal feeding operations (CAFOs). The industrial approach to farming is also defined by its production of only a few staple grain crops that end up as animal feed, biofuels, and processed junk food ingredients. Industrial agriculture is a factory-like model that commodifies inputs and processes, simplifying and standardizing production to accumulate profit. Industrial agriculture has developed an infrastructure to mass-produce a few crops to make a profit off of feeding the world. Yet, people still go hungry, with 795 million people undernourished globally (FAO, 2015).

Constance suggests that the critical sociology of agriculture analyzes sustainability by asking “The Four Agrarian Questions” (2009). The four questions reflect scholarly research and concerns in the field and can be used to define the characteristics of sustainable agriculture and food systems from a sociological perspective. Each question is positioned as an analysis of the relationship between the structure of agriculture and a phenomenon of concern. Each question prompts concern for social, ecological, economic, and/or political issues to be investigated. Since social justice is assumed to be part of each question, then the particular phenomenon of concern comes into the spotlight. Through this critical line of questioning social, ecological, economic, and political factors emerge, representing what scholars conceptualize as the problem of industrial agricultural systems and/or the solution for more sustainable agricultural systems. As analyses show, problems and solutions vary.

In both the critical sociology of agriculture and agroecology literatures, scholars suggest that the higher yields and labor efficiencies of industrial agriculture have come at a cost to

society's social-economic-ecological well-being. The dual goals of industrial agriculture, maximize production and maximize profit, have led to unsustainable practices, including intensive tillage, monoculture, irrigation, chemical fertilizer and pesticide applications, genetic manipulation of plants and animals, and factory farming of animals (Gliessman, 2007).

The Agrarian Question analyzes the relationship between the structure of agricultural systems and the quality of life for farmers and rural communities. In these analyses, we see that the industrial model of agriculture has drastically altered the conditions of rural society. The economic situation of the average family farm has been on a precipitous decline as mid-sized farms disappear being replaced with large industrialized farms (MacDonald, Korb, and Hoppe, 2013). The disappearance of “agriculture of the middle” (Hullinger and Tanaka, 2015) means that fewer and fewer Americans make their living as farmers. This trend has a negative impact on the economies of rural communities because jobs and business opportunities tend to disappear along with the mid-size farms (Kirschenmann, Stevenson, Clancy, Marlow, Simmons, Smith, and Yee, 2013).

Research has shown that large industrialized farms do not provide the same level of benefits in rural communities as mid-sized farms: industrialized farms employ less people per acre than mid-sized farms; they are less likely to purchase inputs locally, siphoning money out of the local economies; areas having more industrialized farms have lower incomes, more poverty and economic inequality, fewer retail businesses, and less money spent in the local community (Union of Concerned Scientists, 2016).

The Food Question analyzes the relationship between the structure of agriculture and the quality of human health. Concerns about the unintended consequences of industrial agriculture are at an all-time high as more and more consumers want to know where and how food is being

produced. Research shows a slew of human health problems associated with the industrial model of agriculture. Synthetic pesticides used in industrial agriculture are associated with an increased risk in certain types of cancers for workers and consumers (Jeyaratnama, 1990). Fertilizer runoff from industrial farms contributes to water pollution, contaminating downstream drinking water supplies (Carpenter, Caraco, Correll, Howarth, Sharpley, and Smith, 1998). The national obesity epidemic is associated with the processed foods derived from commodity crops produced by industrial agriculture that dominate the U.S. diet (Jackson, Minjares, Naumoff, Shrimali, and Martin, 2009). The overuse of antibiotics in CAFOs has contributed to the development of antibiotic resistance bacteria, also a health issue (Consumers Union, 2017).

The Environmental Question analyzes the relationship between the structure of agriculture and the quality of the environment. Along with consumer concerns for food safety and health, increasing concerns for the environment are being linked to agricultural systems. The industrial model of agriculture is considered unsustainable because it depends on nonrenewable resources (fossil fuels) while eroding natural resources faster than ecosystems can regenerate them. Industrial agricultural practices contribute to a host of ecological issues, including air and water pollution, soil depletion, aquifer loss, and biodiversity loss (Altieri, 1987; Gliessman, 2007; Reganold, Papendick, and Parr, 1990). According to the Intergovernmental Panel on Climate Change (IPCC), industrial agriculture is a significant and main contributing factor to the increase of greenhouse gases (Intergovernmental Panel on Climate Change, 2017).

The Emancipatory Question analyzes the relationship between the structure of agriculture and the quality of civil rights. Inequality in the agriculture and food system is evidenced by prevalent hunger and obesity in low-income populations and exploitation of farmworkers (Allen, 2008). The case of pesticide drift into residential areas raises questions of political

injustice because pesticide pollution and illnesses associated with it disproportionately affect the poor and the powerless (Harrison, 2011). *Dispossession* is an historical analysis of the black farmers who lost their land as they were denied loans, information, and access to the programs necessary for survival in a capital-intensive farm structure (Daniel, 2013). The government (USDA) has been implicated in these analyses for working with corporate farmers in the disenfranchisement of vulnerable populations.

Agricultural research systems play a tremendous role in shaping the social-political-economic-ecological landscape. The industrial agricultural model that has been dominating the mental and physical landscape in the United States and increasingly across the world for the past 150 years has run its course – it is simply unsustainable.

2.4 Response To Agro-Capitalist Research Complex

The negative consequences of the industrial model of agriculture, or the Green Revolution technologies, have prompted a response by critics for alternatives. Pimentel (2013) proclaims that an alternative agriculture from the industrial model of agriculture is a necessary and viable option for conserving resources, maintaining rural employment, and minimizing external costs, without loss of productivity. Alternative models, expressed as a social movement, represent a response to the agro-capitalist research complex.

What is alternative agriculture, then? Early scholarship on alternatives in agriculture aimed to describe the characteristics defining alternative. Many scholars compared alternative to industrial agriculture to show a stark contrast between paradigms. Sociologists Beus and Dunlap (1990) argue that the debate between critics and advocates of modern industrial agriculture reflects a conflict between contrasting paradigms: conventional versus alternative. The scholars argue that the conflict emerges from differences in both sociocultural perspectives and scientific

and production principles. Based on document analysis, the scholars identify the major contrasting features between the two perspectives. The key elements of industrial agriculture include centralization of power, dependence on inputs, self-interested competition, specialization, exploitation, and domination of nature. The core features of alternative agriculture represent decentralization of power, independence from external sources, community cooperation, restraint, and in harmony with nature. Beus and Dunlap see this conflict as a struggle over legitimacy in which proponents of alternative agriculture are turning to institutionalization processes to challenge and replace the dominant paradigm, citing the USDA's LISA program (now SARE) as an example (Beus and Dunlap, 1990).

Early on, alternative agriculture was celebrated as the solution to the problems of industrial agriculture. The case of farming systems trial research (Madden, 1986; Rodale, 2011) demonstrates the celebratory approach to alternatives in the natural agricultural sciences literature. In the case of organics as an alternative, supporters had to defend their claims that organic farming was a viable alternative to conventional agriculture because critics claimed that organics could not stack up to the production levels of conventional agriculture. Scientists set out to prove the case for organics by setting up field comparison trials. As more and more farming systems trials were being conducted, more and more results were coming back in support of claims for organic agriculture. At the same time, J.I. Rodale was reaching out to the public through his popular magazine, *Organic Farming*, spreading the gospel on organic. Both the scientific community and the general public were being educated on organic farming practices. This reflects the counter-strategy of the celebratory perspective.

Buttel and Watts (1997) characterize the ideological principles informing the various solutions to the problems of the agriculture and food system. According to Buttel and Watts, the

strategies are oriented towards four types of environmentalism: regulationism/managerialism (centralizing, re-rationalist); preservationism/deep ecology (centralizing, anti-rationalist); alternative-technologism (localizing, re-rationalist); indigenism (localizing, anti-rationalist). The solution orientation that Buttel and Watts find as the dominant perspective stems from the very problem that Noorgard and Sikor point out: science. A regulationist/managerialist approach to change “benefits from the political persuasiveness of using a science-based alternative rationality, and from the strategic emphasis on the high-level national and international arenas of policy and power” (Buttel and Watts:261).

The dominant solution orientation of alternatives represents a need for a reflexive politics approach, as contended by Goodman, Dupuis, and Goodman who take on a critical perspective (2012). For these scholars, assumptions on alternatives in agriculture should not view these solutions as inherently sustainable and just as celebratory approaches imply. The scholars acknowledge processes of contestation, exploitation, and accumulation that can occur when struggling to re-order the material and cultural resources in a spatial division of labor. Evidence validates both celebration and critique, or successes and failures, of alternatives. Recognizing both accomplishments and limitations, the scholars take a both/and approach and view attempts by alternative food movements to change the agriculture and food system as “both representative of the current neoliberal political regime while also being an experiential, prefigurative social movement creating innovative processes of collective learning and grounded practices in particular places” (155). This work is a reminder that alternative does not automatically mean “good” or “better than.” However, neoliberal, globalization, and capital accumulation processes continue to receive a critical eye with little celebration in the critical sociology of agriculture literature.

The National Research Council (NRC), an independent adviser on scientific matters²¹, published *Alternative Agriculture* in 1989, the precursor to defining sustainable agriculture in the 1990 Farm Bill. The report helped to legitimize alternative approaches to industrial agriculture by documenting the scope of systems approaches and alternative practices designed to improve agricultural sustainability. The study featured farmers who had adopted ecologically based production methods and demonstrated success based on economic indicators. According to the NRC, the goals of alternative agriculture are to reduce input costs, conserve the resource base, and protect human health (NRC, 1989:3). The report indicted agricultural policies, specifically those supporting commodities, for inhibiting development and widespread adoption of alternative methods for production. This study gave further scientific and political credibility to the sustainable agriculture movement. However, a more recent report by the NRC suggests that alternatives have had a low rate of adoption because social, economic, and policy incentives discourage farmers from making a transition, and tradeoffs between benefits and costs are not fully understood by farmers (NRC, 2010).

Recognized as the federal authority on agriculture, the USDA characterizes alternative agriculture as a term associated with sustainable agricultural systems (NAL, 2015). According to the USDA, alternative agriculture differs from prevailing or conventional agricultural activities and includes a wide range of practices and enterprises, from non-traditional crops and livestock to recreation, tourism, and food processing to organic farming or aquaculture to direct marketing strategies. The USDA also uses the term to signify “environmentally-friendly” farming practices

²¹ It can be argued that independence is hard to achieve – the writing and editing teams for NRC are made up of people from the scientific establishment. The lead author of this 1989 work, for example, was a LGU agronomist.

and farm diversification approaches. This implies that industrial agriculture is not all that friendly to the environment or diversified in production practices.

Alternative agriculture differs from agroecology, organic agriculture, and sustainable agriculture in that it is not as legitimized through formal mechanisms like these three terms. Agroecology and sustainable agriculture are recognized as disciplines part of departments in universities across the nation; organic and sustainable agriculture are legal terms defined by the USDA. The terms also represent the different networks that have formed in the process of mobilizing knowledge (Fernandez, Goodall, Olson, and Mendez, 2013). Alternative agriculture is more politically charged than sustainable agriculture because the industrial model can incorporate sustainable into its lexicon, whereas incorporating alternative, viewed as a resistance to the industrial model, does not make sense. Yet, sustainable started out and continues to be an alternative to the industrial model, depending on the context.

The word “sustainable” has become part of popular discourse today. While the term has been taking on an everyday quality (to be sustainable is to be part of the trend) the concept is rooted in a political, social movements mindset. The term sustainability comes from the natural sciences discipline of ecology referring to a state or condition that can be maintained over an indefinite period of time. By the 1970s the term was applied to the social dimension through the discourses on development (Du Pisani, 2006). The term can be seen as a paradigm shift from the power complex thinking for progress, growth, and development. Evidence pointing to ecological degradation and a growing gap between rich and poor across all corners of the planet has prompted public concern, asking how humans can live viably in the present and into the future. The term has taken on various interpretations, including perspectives on population growth, resource use, and ecological systems pressures.

Sustainability is a term defined by many, including the international community, drawing on a multitude of concepts, which makes the term ripe for debate. Sustainable agriculture, specifically, developed from the term “sustainable development.” In his historical review of the origins of the concept, Du Pasani suggests that “The concept of sustainable development was a compromise between growth and conservation...The whole debate around sustainable development made it clear that anthropocentric views were stronger than ecocentric views, but that environmental concerns had at least become part of development discourses” (2006:94). This debate centers on what should be the emphasis – humans or ecology – what is the balance between the two. A sustainable approach to development aims for ecological, economic, and social well-being for the present and into the future.

One of the most frequently cited definitions for sustainability is the one outlined in *Our Common Future*, also known as the Brundtland Report commissioned by the United Nations (WECD, 1987). Representing developed and developing countries, the commissioned group assessed long-term environmental strategies at the global level. The Brundtland report established the three fundamental components of sustainable development: the environment, the economy, and society. The report declared that environmental conservation, economic growth, and social equity are simultaneously achievable.

Broadly, the term sustainability is associated with the power complex ideas about progress, growth, and development; the relationship between humans and nature; and the relationship between the developed and developing worlds. While many view progress as a good thing, a small, critical contingency turned to the negative unintended consequences of scientific and technical progress, sparking the environmental movement (see *Silent Spring* in 1962, *Population Bomb* in 1968, *Small is Beautiful* in 1973). Concerns for maintaining living standards

for present and future generations entered the public's mind.

The sustainability concept has been applied to various social systems, including agricultural systems. Sustainable agriculture developed historically as an alternative to industrial agriculture. In his historical analysis of the sustainability movement in agriculture, Harwood (1990) suggests that the key difference between the sustainable and industrial approaches to agriculture is the principles holism versus reductionism. According to Harwood, a holistic approach to agriculture relies on the ecological principles of “diversification, recycling, avoiding chemicals, decentralized production and distribution” (7). Harwood suggests that these ecological principles have been converted into an action plan for sustainability in agriculture. For Hinrichs (2007), agricultural sustainability is a measure of the connection between the material land and the symbolic (and cultural) body: “food can and should be connected to community vitality, cultural survival, economic development, social justice, environmental quality, ecological integrity, and human health” (1).

Ervin and colleagues (2010) suggest that the opposing approaches to agricultural development can be understood through the theories of weak and strong sustainability. The weak sustainability approach to agriculture is based on neoclassical economics assumptions for development, whereas the strong sustainability perspective is grounded in ecological economics presumptions. From a reductionist perspective, weak sustainability relies on capital for development, assuming that any depleted natural resources can be substituted by all forms of capital through simple conversion. This perspective is similar to the interpretations of scholars critical of ecological modernization. On the other side of the spectrum, strong sustainability views complementarity between natural resources and other forms of capital in holistic systems.

In the U.S. context, Harwood outlines definitional trends of the term sustainable agriculture in *A History of Sustainable Agriculture* (1990). He starts by referencing Wes Jackson's articulation of a sustainable agriculture and J.I. Rodale's concept of regenerative agriculture in the early 1980s. Jackson, geneticist and founder of The Land Institute, has devoted his career to transforming agriculture through his research and education program on perennial grains. Natural ecosystems should serve as models for sustainable agriculture since they have stood the test of time, Jackson argues (Jackson, 1980). Rodale founded the Rodale Institute in the 1940s promoting organic agriculture on the premise that healthy soil equals healthy people equals healthy planet (Rodale Institute, 2011). These reference points for sustainable agriculture are based on principles of ecological interaction, framing the understanding for many alternative agricultural groups. An alternative agricultural movement was underway in the U.S. by the 1980s, drawing attention to the ecological principles of sustainability.

This attention did not go unnoticed by the federal government. The USDA cites Wes Jackson, as one of the first published authors to apply the term sustainable to agriculture (NAL, 2015). By 1990, the USDA defined sustainable agriculture in the nation's Farm Bill²².

Agricultural sustainability programs at universities across the nation have been informed by early definitions for sustainable agriculture. Popular definitions of sustainable agriculture being used by the agricultural research community at the time included Altieri²³ (Allen Allen,

²² Under that law, the term sustainable agriculture means "an integrated system of plant and animal production practices having a site-specific application that will, over the long term: satisfy human food and fiber needs; enhance environmental quality and the natural resource base upon which the agricultural economy depends; make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; sustain the economic viability of farm operations; and enhance the quality of life for farmers and society as a whole" (NAL).

²³ Altieri (1987) characterizes a sustainable agricultural system as "self-sustaining, resource-conserving, energy-efficient, economically viable and socially acceptable" (367). Other widely cited agroecologists include Steven Gliessman (2007) and John Vandermeer (1995).

Van Dusen, Lundy, and Gliessman, 1991). Allen and colleagues (1991) examined how some of the early, applied sustainable agriculture programs defined sustainable agriculture. Based on the findings, the definitions reflect concerns raised by the environmental (on-farm conservation) and agrarian (short-term profitability) questions while neglecting the emancipatory and quality (hunger, poverty, health) questions (Allen et al 1991). The implicit assumption within these definitions, claim Allen et al, is that “taking care of the environmental, production, and economic aspects of sustainability automatically takes care of social aspects” (36).

Allen and colleagues (1991) suggest that the assumptions underlying modern industrial agriculture are the same assumptions supporting agricultural policy and institutionalizing educational and research programs in the U.S. A case can be made that applied sustainable agriculture programs have not proliferated to a point to offer an alternative perspective to industrial agriculture. This is important because principles of modern industrial agriculture, or sustainability, frame the way researchers see the world, pose questions, define problems, and set priorities for research. The scholars argue that a more comprehensive conceptualization of sustainability in research and education is needed and can be used to negotiate changes in culture, infrastructure, technology, and policy (Allen et al, 1991). In an effort to prioritize economic, environmental, and social goals equally, the scholars define sustainable agriculture as “one that equitably balances concerns of environmental soundness, economic viability, and social justice among all sectors of society...[and] all species of the biosphere” (37). In this definition, sustainability takes on a whole-systems perspective accounting for complex interactions and various factors affecting both production and distribution along with the larger environmental, economic, and social systems in which agriculture functions.

The National Research Council (NRC, 2010), an independent adviser on scientific matters, published the report *Toward Sustainable Agricultural Systems in the 21st Century*. The NRC views farming systems as a continuum between “ecologically-based” and “conventional-industrial” agriculture. This continuum is made up of a combination of practices, organizational forms, and management strategies. The NRC uses the legal definition of sustainable farming systems as defined by the 1990 Farm Bill. Acknowledging conflict, the NRC states: “different goals can be mutually reinforcing (or synergistic) or present difficult tradeoffs among competing, socially desired outcomes” (28). The NRC evaluates the level of sustainability of a farming system based on robustness; productivity; resources efficiency; and balance of the four goals. We still see that sustainable agriculture represents a moving away from, i.e. alternative, the development of an industrial agricultural model.

In sum, the power-elite is a sociological concept that represents an interlocking relationship of power, driving the national agenda in the name of security through a state-market-military logic. This logic, scholars argue, has seeped into all other institutions ordering society, including the agricultural sciences. As a modern institution, science reinforces the state-market logic by claiming universal knowledge. Modern day science represents a hierarchical knowledge system that values certain types of knowledge over others. Agronomy has risen to the top as the dominant discipline in the agricultural sciences because the principles of efficiency and production reinforce the prevailing industrial-capitalist logic. Ecology-based approaches to agriculture, e.g. agroecology, have been effectively marginalized from the national research agenda because the principles do not sufficiently support the prevailing logic. The agro-capitalist complex is an institutional power relationship tied to the prevailing logic setting the agenda for agricultural research systems in the U.S. The agro-capitalist research complex has been driving

the industrial capitalist agenda for profit via increased efficiency and increased yield. The reductionist paradigm has generated enough negative social-economic-ecological-political consequences to raise increasing concern among the public today. Early on, a critical contingency, referred to as various social movements, including the environmental movement and the alternative agriculture movement, was resisting the prevailing logic by offering alternatives, some of which have been incorporated (see next chapter) while others have been marginalized. Sustainable agriculture, as an alternative to the industrial model of agriculture, has emerged as a response to the problem of agriculture. Agro-ecology represents a disciplinary alternative to the dominant paradigm of agronomy in the agricultural sciences.

In the next chapter, I use sociological theory to explain the relational power dynamics in which the agro-capitalist research complex is a dominating position and social movements, as alternatives, are a subordinating position in a field of power.

3 THE STRUGGLE: DOMINANT, ALTERNATIVE, OPPOSITION

What explains the power behind the agro-capitalist research complex relationship that is “sustaining the unsustainable” in agricultural systems, and how does a social movement organization (SMO) interact with this relationship? We can apply a relational theory of power to see how social, political, and economic institutions interacting with the biophysical environment influence the performance of agricultural systems. At the heart of these institutions are core values, meanings, and practices, or paradigms, shaping the structure, policies, and practices in agriculture. In the following section, I show how the relationship between the agro-capitalist research complex and a social movement organization, such as TLI, is consistent with the relational theory models set forth by Pierre Bourdieu (Bourdieu and Wacquant, 1992) and Raymond Williams (1977). Culture-based strategies for systemic alternatives in agriculture have not kept up with the political-economic based analyses from scholars.

Bourdieu offers a “field of power” framework to make sense of actors and institutions interacting in a structure centered on legitimacy making. Bourdieu’s concept invokes the principle of domination in which actors or institutions compete over scarce resources in a system of position. A field of power reflects interactive processes among actors or institutions struggling to maintain or transform the configuration of resources and legitimate authority structuring the field (Bourdieu and Wacquant). Actors competing (or cooperating) over scarce resources and making different forms of capital²⁴ legitimate characterize a field of power. A field of power is a configuration of hierarchical positions in degrees of the dominant and the subordinate. Power

²⁴ Capital, for Bourdieu, refers to the different forms of assets, including economic, social, cultural, and symbolic. I would add ecological capital to this list to represent the natural resources at stake in a field of power. I tend to use the term resources to refer to capital as another way to use language that gets outside of the dominant capitalist logic.

hierarchies are established when capital (or resources such as products, skills, and discourses) accumulates legitimacy above other resources. Objective relations between the different positions are distinctions among various properties, such as values, meanings, practices, and relationships. Bourdieu's field of power concept helps us understand the structural, interactional dynamics of power.

A field of power, in which capital and legitimacy rank supreme, exhibits a structure based on rules, or a particular logic. Each form of capital has its own rules of acquisition, transmission, and accumulation (Bourdieu, [1986] 2011). Davis and colleagues (Davis, McAdam, Scott, and Zald, 2005) see the processes of economic globalization as the primary process influencing the fields of action for both organizations and movements²⁵. Through capital accumulation and globalization processes, fields have become more and more alike, playing similar logic, interrelating and reinforcing one another (Best, Kahn, Nocella, and McLaren, 2011). The rules of fields in capitalist societies are blurring into a prevailing logic – the pursuit of profit, producing commodities for capital markets. Various hierarchical fields in capitalist societies, Best argues, have been structured according to a capitalist, industrial, and bureaucratic logic that necessitates profit, growth, efficiency, mass production, and standardization (Best et al:xvi). In a sense, fields of power are accumulating fields of power.

The field of power argument is in line with some scholars in the sociology of agriculture who have scrutinized processes of commodification of nature, i.e. the seed, (Kloppenburger, 2004), division of labor between public and private sectors (Kloppenburger), and academic capitalism (Slaughter and Rhoades, 2005). Other scholars analyzing the relationships constituting the agro-capitalist research complex have focused on funding, policies, contracts, patent laws,

²⁵ Bourdieu would argue that these processes can be seen as “a particular instance, historically dated and situated, of the theory of fields” (Bourdieu and Wacquant, 1992:120).

agreements, and intellectual property rights as mechanisms of power of the dominant position (Magdoff, Foster, and Buttel, 2000). As more fields have taken on market models and industrial paradigms, every institution of society has become a political-economic-fill-in-the-blank complex.

One way to understand power is to analyze the direct struggle of a subordinate position. The social relations model of *hegemony* and *counterhegemony* put forth by Raymond Williams (1977) sheds light on a politics of the subordinate. For Williams, power relations as a social process is lived through everyday social experiences and cultural practices. In this model, cultural practices are categorized as “dominant”, “alternative”, and “oppositional.” Cultural hegemony, the dominant way of thinking, valuing, and doing, is etched in common-sense everyday activities. The dominant position is effective, hegemonic, dictating the ruling definition of the social, exhibiting a central system of meanings, values, and practices (Williams). Hegemony is an ongoing process, requiring constant articulation and re-articulation to maintain its position.

Conceptually, Williams refers to the various subordinate relations aiming to transform the dominant culture as “alternative forms of tradition” or “oppositional forms of emergence.” The dominant positions represent variations in maintaining the status quo; the subordinate positions denote degrees in transforming the system. The dominant culture controls and directs society through institutionalized structures, holding pivotal positions to make decisions. Oppositional forms, such as a social movement organization, intentionally confront and threaten the dominant ideology, while alternatives “can be accommodated and tolerated within a particular effective and dominant culture” (Williams, 2005:39). Williams refers to the accommodation of alternatives into the dominant culture as a process of “incorporation.”

Some scholars in the sociology of agriculture argue that many alternative models of agriculture have been eroded and unable to fully transform the industrial model of agriculture because the agro-capitalist research complex has been effective, incorporating alternatives through conventionalization or mainstreaming processes (Goodman, Dupuis, Goodman, 2012; Guthman, 2004; Holt Gimenez and Shattuck, 2011). This suggests that an alternative-oppositional spectrum of agriculture exists, representing a political struggle over the agricultural system. Scholarship on alternatives in agriculture has analyzed many variations of transformation, including alternative scientific and production principles (Altieri, 1987; Gliessman, 2007; Noorgard & Sikor, 1995), alternative strategies and initiatives (Allen et al, 2003; Buttel, Goodman, and Watts, 1997; Lyson, 2004; Warner, 2007), alternative socio-cultural perspectives (Beus and Dunlap, 1990; Feenstra, 1997; Kloppenburg Lezberg, De Master, Stevenson, and Hendrickson, 2000), or alterity (Goodman, Dupuis, and Goodman; Hassanein, 1999). This alternative-opposition spectrum of transformation is evidenced by different degrees of agricultural practices from minimal to no-till systems, low input to zero input systems, or cover crops to double-up legume systems.

Many advocates (see Buttel, 1997) of sustainable agriculture call for new models for agriculture, ranging from full transformation of the system, referred to here as *oppositional* or *systemic alternatives*, to fractional changes, referred to here as *alternative*. For Allen and colleagues (2003), oppositional represents deep structural, political economic change in the system. Evidence for oppositional initiatives, for the scholars is in the framing of: “their engagements in terms of changing the structural relationships that characterized and supported industrial agriculture while also seeking innovative strategies to organize the production, exchange and consumption of food in alternative ways” (Allen et al:73). Long-term

sustainability, from this perspective, is possible if existing social relations are radically transformed (Holt Gimenez and Shattuck, 2011; Mancus, 2007). An oppositional movement is based on transformative goals of environmental sustainability, economic viability, and social justice and has the capacity to supersede the hegemonic powers of capitalism.

This means that alternative approaches do not necessarily go as far as oppositional stances in changing the current socio-political-economic system. For example, Allen and colleagues (2003) point out that alternative approaches use personal, relational, and entrepreneurial market initiatives that increase consumer choice but do not make systemic transformation. Alternative approaches are in line with reformist trends (Holt Gimenez et al), expressing a variation of the ruling, dominant position. While the reformist trend seeks alternatives to address social and environmental issues, improvements sought can be incorporated into existing market structures ensuring the continuation of the dominant position in a field of power.

While opposition is an initiative independent of the dominant logic, this opposition can take place within the dominating system. Oppositional relations, such as a social movement organization, represent “formations” that are in an “emergent” relationship to the dominant position (Williams, 1977). An oppositional organization has the potential to present “new meanings and values, new practices and kinds of relationship” (Williams:123). New experiences, not legible within the dominant tendencies, create new material and cultural forms. Williams posits that “no mode of production and therefore no dominant social order and therefore no dominant culture ever in reality includes or exhausts all human practice, human energy, and human intention” (125). Hegemonic formations can be disturbed and challenged because no consensus can ever be complete. Counterhegemonic projects, then, represent a challenging

position to complete hegemonic realization. Opposition is an emergent form with ideas and actions that counter the common sense, taken-for-granted worldview. The women's and labor movements represent historical examples of the emergence of opposition.

Suggesting that the processes of emergence are important to study, Williams points to “*pre-emergence*, active and pressing but *not yet fully articulated*, rather than the evident emergence which could be more confidently named” (emphases added, 1977:126). As a reflection of the process of pre-emergence, counterhegemonic projects partially articulate new interactions through cultural forms, such as language, images, symbols, rituals, and institutions, not legible to the hegemonic culture. The counterhegemonic nature of an SMO can be a benefit to the organization because the dominant culture is not able to see the possibility for another vision of the everyday – the dominant culture focuses on upholding its vision and incorporating alternatives that complement its vision.

Based on the social relational models of both Bourdieu and Williams, a social movement organization plays in a field where it occupies a subordinate position to the dominant. Both Bourdieu and Williams emphasize social relations constituting processes that establish or maintain material and cultural forms. More attention needs to be given to oppositional struggle aiming to transform the status quo. A relational investigation of power using cultural analysis emphasizes the social conditions that produce different meanings, values, relationships, and practices (Williams)²⁶. We can look at the mechanisms of struggle for both the dominant and the subordinate to understand the processes for maintaining position or for liberating new position.

²⁶ For Bourdieu, a politics of the subordinate is a subversion strategy that aims to transform the system of authority. Dominant positions work to maintain legitimate forms of capital while subordinate positions work to create new forms of legitimacy to reposition the field. Bourdieu's relational investigation of power focuses on the distribution of capital in the field. I use relational theory more in line with the cultural analysis of Williams focusing on the cultural forms and the making of cultural forms.

Close attention to materials gathered through ethnographic fieldwork can indicate the ways in which counterhegemonic projects are able to advance a progressive agenda without being incorporated.

3.1 Mechanisms of Struggle: Maintaining Dominant Position

Struggle represents a recursive countering between dominating and dominated. In the process of struggle, the dominant field of power resists field contestation from social movements, or the subordinating position, to maintain the status quo. In a field of power, the dominant position is bolstered by capital and legitimacy. So we have to look beyond structural resource mobilization perspectives (McCarthy and Zald, 1977) to understand the underlying mechanisms of contestation from a dominant position. How is the dominant position upholding its legitimacy and maintaining access to resources? Resources and legitimacy continue to favor the dominant position because the dominant position draws on ideology and incorporation, specifically conventionalization and mainstreaming processes, as mechanisms for maintaining power.

Williams (1977) defines the concept of ideology as “a general term to describe not only the products but the processes of all signification, including the signification of values” (71). For Williams, ideology is a way to understand signification as a social process: “Vološinov, for example, uses ‘ideological’ to describe the process of the production of meaning through signs, and ‘ideology’ is taken as the dimension of social experience in which meanings and values are produced.” (70) This definition of ideology as a social process of production connects the material and the cultural dimensions that tend to be separated in Marxist interpretations of ideology as a superstructure. Ideology is a material social process, dialectical, between product and general processes of ‘culture’ and ‘language’ (71). Ideology in this sense is a social ordering

mechanism. Thus, power structures, or the dominant position in a hierarchical field, must propagate ideology to maintain position. The process for maintaining hegemony is continual, creating and recreating itself to adapt to new threats to dominance.

Using a power structure perspective, Bonds (2011) shows how knowledge-shaping processes are an elite strategy to influence environmental policy. For example, environmental policy defines the levels of acceptable pollution – the policy itself is based on information shaped by the elite. Bonds depicts four mechanisms of legitimacy that shape knowledge: information suppression (secrecy), knowledge contestation (discredit), knowledge production (promote), knowledge administration (select). Through the case of rocket fuel contamination of groundwater at military bases, elites draw on strategies to achieve their primary goal – to maintain power. Dominant organizations, Bonds argues, have a greater capacity to produce knowledge because they have the resources and/or legitimacy to organize, forming power networks, and to influence policy. The knowledge-shaping process is a way for power networks to enact legitimacy. Elites use scientific, economic rationality to legitimate a particular type of knowledge that serves their interests. Bonds concludes that the military-industrial complex is a power network that used knowledge-shaping processes to influence the final reference dose the EPA settled on in its nationwide policy.

A global governance framework (Clapp and Fuchs, 2009) depicts three dimensions of dominating power: instrumental power, or direct influence; structural power, or broader influence for setting agendas and rules; and discursive power, or communicative persuasion. Applying this framework to sustainable agriculture, Constance (2010) argues that agri-business uses these three forms of governance to influence standards for sustainable agriculture. He compares government-led and private-based programs in position to set and certify standards of

sustainable agriculture in the U.S. Agri-business tactics include communicating through the farm press (discursive), using national campaigns to discredit low-input practices (instrumental), and establishing collaborative relationships with LGU administrators (structural). Constance argues that agri-business uses the debate over the definition of sustainability to its advantage. What this case shows is that the dominating position is more effective than the subordinate position in using framing strategies to structure the field. Through discursive power, according to Constance, agri-business frames sustainable agriculture in a way that serves the interests of agri-business, framing alternative as “low yield, low income, mass starvation, and the destruction of agricultural industries” (Constance, 2010:51).

Williams (1977) refers to the process of incorporation as a political and cultural mechanism of the dominant order. Incorporation works as a process in which the dominant system reinterprets, dilutes, and discriminates between what to include and what to exclude in the mainstream order (123). The dominant is invested in maintaining the status quo. Through incorporation processes, the dominant position selects certain meanings and practices from the subordinate, resistant position. The dominant position then adapts these meanings and practices into a form that benefits the existing power relations. In this sense, cooptation²⁷ is a strategic process for maintaining the dominant position. From a cultural perspective, meanings and practices that the dominant can convert in a way that upholds its position, or maintains the status quo, are susceptible to incorporation, whereas ideas and practices not compatible to the dominant can withstand cooptation. Cooptation is conducive when the dominant can control and benefit

²⁷ I use Williams’ theory of incorporation to represent cooptation. I use the terms incorporation and cooptation interchangeably as a process. For another theory of cooptation, see Phil Selznick’s (1949) seminal work on the relationship between the Tennessee Valley Authority’s behavior and its grassroots ideology. Here, I use Williams’ theory of incorporation to frame my research because it is more useful for explaining cultural dynamics.

from experiences, or values, meanings, practices, and relationships. A subordinate position promoting opposition to the dominant can maintain an independent and robust way of thinking and doing by keeping its original experiences, i.e. those not compatible to the dominant, intact. Being intentional in upholding new experiences and committing to its origins, a subordinate position can protect itself from cooptation or incorporation. Intentionally creating new experiences through cultural-based strategies enables an SMO like TLI to promote its progressive agenda. At the same time, TLI's oppositional ideas and practices enacted through its cultural approach avert cooptation pressures from the dominant position.

Similar to incorporation, the conventionalization thesis (Guthman) and mainstreaming (Goodman, Dupuis, and Goodman) concept used in the sociology of agriculture all describe the process of struggle for maintaining the dominant position in a field of power. The conventionalization thesis is a critical analysis of alternatives in agriculture, first applied to organics by Guthman. Her thesis assumes that organic agriculture is not exempt from the structural dynamics of the world food system. The conventionalization thesis asserts that organic agriculture has increasingly taken on the structure and ideology of mainstream industrial agriculture. Regulatory and marketing conditions allow agribusiness to accumulate more power and profit, thereby, co-opting the organic model and incorporating/transforming it into the conventional model. Small-scale participants are being pressured to adopt industrial-style practices in order to stay afloat in a competitive, "get big or get out" landscape. Intensification, appropriation, and valorization processes of innovation in capitalist agriculture are being replicated in the organic agriculture model (Guthman).

Conventionalization represents the struggle of capital restructuring processes. From this (relational) perspective, the dominating position (agri-capitalists) encounters a challenge from

the marginalized position (organic agriculture) and presents a counter-challenge. This counter-challenge includes incorporation processes. Competition over scarce resources, including land, labor, and ground rent, along with legitimacy, through regulation and marketing codifying value, is the name of the game.

Mainstreaming is conceptualized as a shift toward the hegemonic project of capitalism. Alternatives are being co-opted, or incorporated, into the dominant position. Mainstreaming in the abstract, as a process, linked to the particular, as an agent, decision-making reveals the relational dynamics vying for hierarchical positioning in a field of power. Scholarship emphasizes the process while not giving as much attention to the relational dynamics and hierarchical positioning. One could ask, what type of ties do various relations have to the different institutions that are part of the field of power? In five case studies of food-sector policy set by the USDA, Mattera (2004) identifies the connection between USDA and industry and calls out the USDA decision-makers by name. Mattera's analysis of policy illustrates that "the movement between government and industry is truly a revolving door" (28). This biographical approach takes accountability to a personal level.

For Holt-Gimenez and Shattuck (2011), mainstreaming is a reformist initiative within the corporate food regime²⁸, or a capitalist hegemonic project initiated and upheld by the ruling, corporate class. Mainstreaming is characterized by corporate expansion and consumer-choice politics. The aim of the regime is to uphold the status quo by reproducing the corporate food regime. As a weaker version of the neoliberal trend within the corporate food regime, the

²⁸ Drawing on food regime analysis, the scholars state that the current corporate food regime is defined by the "unprecedented market power and profits of monopoly agrifood corporations, globalized animal protein chains, growing links between food and fuel economies, a 'supermarket revolution', liberalized global trade in food, increasingly concentrated land ownership, a shrinking natural resource base, and growing opposition from food movements worldwide" (111).

reformist trend seeks alternatives to address social and environmental issues as long as any of these improvements can be incorporated into existing market structures ensuring the continuation of the corporate food regime. Mainstreaming initiatives include Corporate sectors of Fair Trade, Organics, Local Foods, and Sustainable Development. Supported by a food security discourse, this trend advocates consumer choice as a way to make change. As a market mechanism, the consumer choice assumption is a persuasion tactic to get industry to act accordingly. This model is oriented toward state-led development, public financing for agricultural development, self-regulation, and third-party certification.

Goodman, Dupuis, Goodman (2012) use the case of fair trade to illustrate mainstreaming processes. Initiated as an alternative to global, industrial, commodity agriculture, fair trade emerged as a moral economic model based on price parity. The scholars use a historical, cultural-material approach to understand how Fair Trade has created different “subjects and spaces of ethical consumption” over time. Mainstreaming, for Goodman, Dupuis, Goodman, represents an increasing in the mutually reinforcing dynamics of marketization and commodification. A neoliberal, capitalist, consumerist, hegemonic logic reinforces mainstreaming processes. Starting out as an alternative and moving into the mainstream signifies a shift in position, what Goodman, Dupuis, Goodman refer to as “embodiments” of fair trade (211). Mainstreaming, a process of incorporation, obscures the original articulations that formed the base of fair trade’s historical activism for an alternative model and becomes adapted in a way that benefits the existing power position.

All this to say, more attention needs to be given to the emergent, oppositional struggle for a new social order that gets outside of the capitalist logic of expansion through reduction – maximizing profit, minimizing cost in which exploitation justifies the ends. Emergent,

oppositional struggle happens outside the market. The goal is to shine a light on pre-emerging energies that have the potential to even the playing field so there is less of a struggle.

3.2 Mechanisms of Struggle: Opposing Dominant Position

Social movements engage in resistance, or opposition. Opposition is conceptualized as the ideas and actions that counter the common sense, taken-for-granted worldview. Analyses of strategies and tactical repertoires help to illustrate opposition through collective action (Carmin and Balseer, 2002; Minkoff, 1997).

The debate about alternatives for transforming the dominant, industrial systems of agricultural production has circulated within many scholarly fields. Within the sociology of agriculture, scholars have explored the role of biotechnology, organic production, local foods, and fair trade in shaping alternatives (Ervin, Glenna, and Jussuame, 2010; Goodman, Dupuis, Goodman, 2012; Guthman, 2004; Hendrickson and Heffernan, 2002; Raynolds, 2000).

Meanwhile, environmental sociology scholars have focused on preservation, conservation, and modernization which have fueled debates on management and governance of resources (Buttel, 2002; Mol and Spaargaren, 2000; York, 2004).

The case of open source seed in agriculture is an example of social movements bargaining²⁹, using the rules of the field to reposition the hierarchy. Kloppenburg (2014) looks at how contestation turns the “master’s tool” of the agro-capitalist research complex on its head. The dominant position uses the legal system, or technical strategies for upholding intellectual property rights, in effect commodifying the seed, benefiting the dominant position. An organized group of public and private plant breeders, farmers, and sustainable agriculture advocates are

²⁹ Bargaining for capital accounts for the relations of repositioning, or “position taking” (Emirbayer and Johnson, 2008). Repositioning is a change in the volume of capital and/or a change in the composition of capital. To yield dominance is to yield volume of capital and/or principles of legitimacy.

turning to “open source” as a legal tool to decommodify the seed, benefiting the subordinate position. This strategy promotes sharing rather than restricting access to germplasm to restore seed sovereignty to farmers and the public. Kloppenburg suggests that open source as an approach to resistance “offers at least the prospect of a shift from continuous defensive actions to the creation of a positive, relatively autonomous space in which capital might be effectively prohibited – by its own rules – from trespassing” (1243). However, Kloppenburg finds an internal struggle that is a potential barrier for the group. Contradiction is reflected in different goals, interpretations of vision/mission, positions on GMOs, positions on reward system, and levels of trust in initiative among the group members. Here, we see how cultural work is part of position-taking in attempts to restructure capital while re-interpreting the rules of the field. Even within a social movement, subcultures with unique ideologies and value systems can take shape.

The social movements literature has theorized on strategies for mobilizing social action that lead to transformation. Three of the frameworks relevant to the analysis of social relations of power where social movements in a field contest dominant power are resource mobilization (Edwards and McCarthy, 2005), framing (Benford and Snow, 2000), and coalitions (Caniglia and Carmen, 2005). Scholars tend to analyze social movements to better understand how they survive, thrive, or die (Zald and Ash, 1966). I outline these perspectives below so I can pick up on the concept of pre-emergence as a process and not an outcome and the role of cultural work as a strategy in social movements.

The underlying assumption of the resource mobilization perspective is that society is based on an unequal distribution of resources (see Jenkins, 1983; McAdam, 1982; McCarthy and Zald, 1977; Tilly, Tarrow, and McAdam, 2001). Control of and access to resources varies across and within social groups. The aim of resource mobilization theory is to understand “how groups are able to

overcome prevailing patterns of resource inequality in their efforts to pursue social change goals” (Edwards and McCarthy, 2004:116). This framework assumes that resources facilitate or constrain social movement activity. From a resource mobilization perspective, social movements and movement organizations use strategies and tactics to mobilize resources and coordinate collective actions (by members and sympathizers) to change (or resist change of) an identified problem (McCarthy and Zald, 1977). This framework assumes that power differences exist because resources are unequally distributed throughout society. Contextual factors, such as the broader historical, structural, and cultural conditions, tend to be included as a background description. Scholars tend to emphasize the direct, measurable impacts of movements on political issues and overlook the expressive, ideological, identity-shaping, and consciousness-raising dimensions of movements.

As the leading social-psychological approach to social movements, framing gets at the meaning work, or “the struggle over the production of ideas and meanings” (Snow and Benford, 1992:136). Framing is viewed as one of a range of activities that social movements do on a regular basis in order to mobilize collective action. As a shaping process, framing creates patterns of perception and interpretation. A framing perspective offers insight into the ways proponents and opponents use discourse as a strategy for mobilizing collective action to advance a particular agenda. Framing is a vocabulary that social movements scholars use to interrogate the discourse embedded in mobilizations. This vocabulary draws on Goffman’s (1974) framing analysis perspective to explain the interpretive schemata and the processes that mobilize collective action. Framing is an interactive process that incorporates interpretive and ideational elements in reality construction (Snow, 1986). Frame analysis explains how social experience is organized by language through a system of codes and interactions. Frame analysis of social

movements can be used to unravel the subjective interpretations and motivations that organize social experience and guide action of individuals and organizations. A frame is both a noun (product) and a verb (active process) that structures knowledge. Framing can be used to analyze the production of social formations (discourse, identity, institutions, and representations) and the interactive, epistemological processes of knowledge construction.

The research on elite power networks is similar to the study of coalitions or networks in social movements. Both perspectives see network building as a strategy to build political capacity. Elite power networks represent the dominant position, while coalitions in the social movements literature tend to reflect the subordinating position. To solve the food crisis, according to Holt-Gimenz and Shattuck (2011), a “convergence of diversity” is necessary to oust the current corporate food regime (134). A convergence made up of strategic alliances between progressive and radical trends has the capacity “to address the immediate problems of hunger, malnutrition, food insecurity and environmental degradation, while working steadily towards the structural changes needed for sustainable, equitable and democratic food systems” (132). Similarly, Faber argues that “to organize and mobilize the resources needed to eradicate these environmental and public health threats” and “to constructing a more inclusive, democratic, and proactive environmental politics in the United States” (Faber, 2008:222).

Despite much excellent work by scholars, such as Buttel, Goodman, and Watts (1997) and Busch and Lacy (1983), on the momentum and organization of agricultural research and institutions in the U.S., scholars working in this field have yet to thoroughly examine the importance of an SMO’s cultural work nurturing a politics of possibility. These works tend to overlook theoretical questions related to the process of pre-emergence, or the conditions for advancing a progressive agenda while resisting cooptation by the dominant position in a field of

power. In the next chapter, I introduce key concepts to help understand the nature of the SMO advancing a progressive agenda, including: cultural work as a strategy, a politics of possibility as a counterhegemonic project, and a liberated ecosystem as a concept to help bridge the social and the ecological.

4 A LIBERATED ECOSYSTEM AND ITS POLITICS OF POSSIBILITY

This study aims to better understand the process of *pre-emergence*, defined as the conditions for advancing a progressive agenda without being coopted by the dominant position in a field of power. As a way to understand the process of pre-emergence, I use Gibson-Graham's (2006) conceptualization of a *politics of possibility* to present the empirical dimensions of a counterhegemonic project in which participants intentionally draw on a politics of language, a politics of subjectivity, and a politics of collective action to imagine a new social order qualitatively different from the mainstream. I present the term *liberated ecosystem* as a concept for analysis to refer to a SMO's complex repertoire of activists, policies, and institutional practices standing outside the dominant system and engaging in *cultural activity*³⁰ for nurturing a politics of possibility for comprehensive social change. In what follows, I first situate the role of cultural work in collective action for social change. Then, I define the different dimensions of the liberated ecosystem concept and the politics of possibility framework that are the basis for my argument. I call for a social-ecological imagination, and I argue that a liberated ecosystem's productive cultural activity investing in a politics of possibility is central to the process of pre-emergence in which new values and meanings, practices, and relationships are being formulated in some measure yet not workable to the dominant in a field of power.

4.1 Previous Literature: Cultural Work

Scholars studying social movements have had plenty to say about collective action for social change. Previous research on SMOs focuses on the resources, political opportunities,

³⁰ I use productive activity, productive cultural activity, cultural activity, and organizational activity to all mean cultural work. Both social and natural systems function through productive activity, hence, I use these terms synonymously to support the liberated ecosystem concept.

framing discourses, or identities as ways for emerging, developing, achieving success, or hitting upon failure. These approaches are used to examine characteristics, tactics or strategies, resources, and goals of SMOs, to compare the structures, functions, and processes of SMOs, to look at the role of coalitions in survival rates and mobilization, and to identify the discourses framing grievances (Benford and Snow, 2000; Brulle, 1996; Carmen and Balser, 2002; Dreiling and Wolf, 2001; Edwards and McCarthy, 2004; McLaughlin and Khawaja, 2000; Minkoff and McCarthy, 2005).

The sociological literature on SMOs and agricultural research systems gets at the knowledge production processes among scientists as agents. For example, scholars have examined the role of leadership in strategic capacity of social movements (Ganz, 2010); the role of emotions in scientific performance (Parker and Hackett, 2012); the role of social characteristics of agricultural scientists, structural aspects, and extra-organizational factors in research problem choice (Busch and Lacy, 1983); the role of the sense-making process in the selection of strategic repertoires (Carmin and Balser, 2002); and various aspects of knowledge production in academic and scientific fields (Kurzman and Owens, 2002; Lacy, 2001). Little attention has been given to the conditions for pre-emerging social change in which activists use cultural work to nurture a politics of possibility as a key factor for advancing progressive ideas.

TLI has secured more resources, extended its constituent base, and gained increasing legitimacy for its science in the field of agricultural research systems. So, what is TLI doing to build capacity that contributes to successful outcomes? What accounts for a SMO's ability to promote an oppositional agenda without being coopted, or incorporated, into the dominant position? Emphasis on the conditions for *pre-emergence* is at the heart of this research. Here I pose the questions: what is TLI's productive activity? What are the inputs being used for? Partial

articulations of new values and meanings, practices, and relationships are not legible for the dominant to *incorporate* into the *mainstream culture* because TLI functions as a *liberated ecosystem* investing in *cultural work* to nurture a *politics of possibility*. By identifying TLI's productive activity, we can start to see the process of pre-emergence.

Cultural work represents the assumptions, values, behaviors, and symbols of a group (Eyerman and McCormick, 2015). Culture shapes our political, economic, social, and ecological lives. Culture plays a central role in creating and contesting social, economic, and political values and meanings. Culture is a contributing factor in maintaining, intensifying, or diminishing social order. When addressing issues of hegemony, cultural work is important. Narrow definitions of culture emphasize issues of lifestyle, identity, or self-expression, focusing on a particular area of society, such as art, music, theatre. Broad definitions of culture consider all areas of society as symbolically mediated. In a broad definition of culture, meanings cue behaviors. I take on the broad definition of culture in which the narrow definition is one of the many parts constituting culture.

A systemic view of culture via Clifford Geertz (1973) describes the relationships within a cultural system and emphasizes patterns of action. Swidler (1986) suggests that culture is a "tool kit" of rituals, symbols, stories, and worldviews. Groups, such as a SMO, use their cultural toolkit to construct strategies of action. In this sense, Swidler views culture as performative, this means SMOs use cultural models to present new experiences. This performative perspective represents the transformative nature of culture because actors enact new ways of being through symbols and behaviors, or ideas and practices.

Culture is an iterative process of shaping and being shaped by groups, such as a SMO. This means cultural work produces and is an expression of ideas and practices, or symbols,

meanings, artifacts and behaviors. Ideas and practices are collaborative human artifacts that are both process of interactions and product of interactions, actively making form and being form. Because culture is an interactive process, ideas and practices can be taken up by the broader culture in which new routines for the everyday become institutionalized. I argue that cultural work fosters possibility for oppositional visions to flourish and not be coopted, or incorporated into the dominant way of thinking, doing, valuing, relating.

Cultural analysis of what is happening on the ground is an interpretive endeavor (Geertz). In cultural analysis, we can look at the products, or artifacts, of human activity to understand the ideas and practices of a particular group or society at large. These products, or cultural forms, can be objects or patterns of behavior. Process goes into product, meaning the active making of a cultural form is also part of that cultural form. As Williams (1977) points out, form is a relationship, a dialectical process between the production and the product, or the active making of form (“shaping impulse”) shaping and being shaped by the defining characteristics and rules of form.

Cultural processes shape values and meanings, practices, and relationships while positioning a SMO in a hierarchical field of power. Certain ideas and practices hold greater weight than others. Cultural analysis can be used to compare the ideas and practices that are establishing and maintaining the dominant discipline of agronomy, which informs the hegemonic processes of industrial agriculture, and the marginalized discipline of ecology informing the counterhegemonic processes of TLI. A multitude of interactive cultural processes go into socially constructing a particular way of thinking and doing. Analysis frames elements of cultural processes and their role in constituting a SMO as a counterhegemonic project. The methodology is designed to analyze cultural processes of meaning construction.

Drawing on Williams' application of Gramsci's hegemony and counterhegemony concepts for relational processes, I draw on cultural analysis to untangle the cultural activity of TLI along with the principles of vision and division relating to the dominant discourse perpetuating exploitation and inequality in agricultural research systems. At the same time, analysis proposes alternative processes for practicing economy. Cultural analysis is both a critique of political economy and a visioning practice advocating for alternatives. Since language is a mechanism for establishing and maintaining hegemony, then ideas matter in this approach to analysis.

4.2 Politics of Possibility

A counterhegemonic project aims to institute a different social order, reconfiguring the field of power. Gibson-Graham's elaboration of a politics of possibility is a helpful starting point for understanding the potential for social change. A politics of possibility presents alternatives to exploitative economic practices of capitalism. For Gibson-Graham (2006), a politics of (economic) possibility is an emerging political imaginary that takes place in the here and now, pressing against the hegemonic nature of capitalist economies. Gibson-Graham orient their analytical framework in a political praxis of possibility that calls attention to 1) language, 2) subjectivity, and 3) collective action strategies. These core elements of their project reflect their normative agenda to interpret processes of exploitation and to transform economic processes. Gibson-Graham's framework is steeped in postmodern critical theory³¹ in order to evaluate

³¹ Postmodern critical theory politicizes social problems by focusing on local manifestations rather than broad generalizations. Critical theory is focused on language, symbolism, communication, and social construction. Critical realism, associated with Roy Bhaskar (1975), is another critical perspective that focuses on the nature of science, emphasizing the distinction between epistemological and ontological questions along with the significance of objectivity for a critical project directed at positivism. I follow in the vein of Gibson-Graham's critical theory as an ontological project directed at capitalism by critiquing the agro-capitalist research complex while examining strategies cultivating a politics of possibility.

principles and practices for cultivating a politics of transformation. The scholars critique the capitalist logic while examining counterhegemonic projects that have the potential to present a new social order – one that is more equitable, democratic, and sustainable.

Language is a way to both express experience and create experience. Through language, everyday reality is produced out of categories of thought and action. Categories of understanding tend to reproduce the objective structures of the social field. A politics of language rests on the assumption that ideas matter. Ideas not only influence the way an individual goes about their everyday, but ideas shape social order. For example, Weber's *The Protestant Ethic and the Spirit of Capitalism* (1905) thesis links the religious ideas of groups such as the Calvinists to the emergence of the spirit of modern capitalism.

Language is not merely a method of communication but also a mechanism of power for expressing worldviews. In this sense, language is political, so a politics of language is a struggle over meaning – establishing and maintaining a dominant worldview or challenging a worldview. As a medium for expressing worldviews, language is used to influence thoughts and behaviors. As a tool of power, language is used to make decisions, to control resources, to control values, and to control behavior. Language can be used to express meaning in a way that excludes possibility for all other meanings. Through opposition, language can be used to express multiple possibilities of meanings.

Language is a strategy for social change. As a conceptualization strategy, language can be used to undermine discursive hegemony. For Gibson-Graham (2006), a politics of language intentionally presents new discourses as a way to transform the hegemonic order. Through language, Gibson-Graham use their scholarship to challenge the dominant discourse of capitalist

Unlike Gibson-Graham who direct attention to material (economic)-based strategies, I focus on cultural-based strategies for transformation.

globalization. Drawing on feminist politics, they queer capitalism in order to undo a unified, singular totality – that of commodity, market, and capital (253). The scholars point to how a counterhegemonic project can challenge discursive dominance by reading for difference – or identifying qualitative differences between the dominant and subordinate positions.

A language politics produces the conceptual elements for innovation. Language politics challenges us to rethink our frames that shape our world perspective. Language can be used to help us imagine something different. For Gibson-Graham, language matters in the cultivation of an economic imagination. Language can be used to develop different narratives.

When we take language for granted, with the mainstream meaning for the everyday, we lose sight of our tacit agreement to the exploitation taking place under the dominant worldview. We must question capital, market, commodity, profit, neoliberal, and economics while at the same time present new language as a way to imagine possible alternatives to the current social order.

A politics of the subject is an interactive process between individuals and others for recreating the historical, political, material, and cultural processes and structures of human experience. At the same time, subjectivity embodies the cognitive, emotional, and moral dimensions of agency. This means, for Gibson-Graham, that the subject is “both powerfully constituted and constrained by dominant discourses, yet also available to other possibilities of becoming” (xxxvi).

A politics of subjects offers a new mode of being as a way to challenge the pressuring of the hegemonic form of being. Subjectivity politics promotes conditions for new views, experiences, values, knowledge, qualities, relations, and attributes of the self (Gibson-Graham). For Gibson-Graham, new forms of subjectivity emerge out of new practices of both thinking and

feeling. Engaging in new practices of the self is about finding alternative ways of being. For example, a values-based scientist who practices ecology represents an alternative subject to the values-free scientist who practices agronomy.

Subjectivity is about the nature of self and experience. Cultivating subjectivity and ethical thinking promotes new practices of self. New subject positions become available through political struggle. But a politics of subjectivity is not merely about subjects opposing the dominant order but also about subjects envisioning and creating a non-dominant order. For Gibson-Graham, the scholars emphasize economic subjectivity. The aim is not to replace one dominant order with another but to create community economies where “being in common” is a central feature to social order (Gibson-Graham). Creating communities that are “being in common” is about subjects coming together into the world and not about an abstract singularity of ‘I’ or ‘one’ who ‘knows.’

A politics of the subject can be extended to account for the reciprocal relationship between humans and the world, i.e. non-humans. Instead of human economic relations (Gibson-Graham), we can look at the diversity of ecological relations. Here we see how a politics of subjectivity can be used to deepen our understanding of human’s role in the world and human-nature relationships, i.e. the interconnectedness of humans and nature. This is in line with Reid and Taylor’s body-place-commons notion in which subjectivity is “intersubjectivity arising in embodied practices in concrete places with heterogeneous temporalities of the ecological commons” (5). A politics of subjectivity is an effort to re-imagine ourselves in relation to each other and to the world we inhabit in order to create sustainable communities and ways of being in the world.

Our understanding for the self matters. When we look at the dominant way for understanding subjectivity we see the Cartesian self: the autonomous thinking self that is brought into being by thought; the Platonic self that is able to transcend the physical and find truth in the metaphysical; the prevailing Western self that is separate from other selves and from the physical world (Loy, 2012). The implications of our prevailing sense of self are considerable. A major implication is the fundamental disconnection between “us” as human beings and the physical world we perceive around us. Many philosophers suggest that this disconnection is at the heart of the ecological consequences we face today (Naess, 1986; Marshall, 2015).

A counterhegemonic project engages in the process of “resubjectivation,” or “the mobilization and transformation of desires, the cultivation of capacities, and the making of new identifications that may appear at first vague and unspecified, such as “community economy”” (Gibson-Graham:xxxvi). Promoting new kinds of subjects is a way for moving away from “capitalocentrism” and building community economies. Language can be used to cultivate subjectivity. Fundamental shifts in how we view ourselves can contribute to social change. For example, the change in how the role of women is understood in the U.S. has resulted in major social, economic, political, and cultural implications, i.e. women now serve in the military and as U.S. senators and congresspersons. In the case of a counterhegemonic project grounded in an ecological perspective for community, the subjectivity process entails transforming consciousness, nurturing capacities, and creating new associations with an emerging notion of an “Ecospheric Commons.” How does an individual identify with the new subject positions that become possible in an Ecospheric Commons?

A politics of collective action represents intentional, collective efforts aimed at building a new reality. In a politics of possibility, collective action is both intervention and experimentation,

meaning subjects participate as a way to resist the dominant order while testing out new ideas and practices. Collective action politics is about renouncing the dominant order while experimenting in a new order, allowing for transformations to take place. This form of subjectivity takes on an agency that allows for a ‘personal’ politics, strengthening the possibility for collective action.

Scholars of social movements have looked at the role of participation in social change. Collective action models suggest that participation outcomes are associated with a movement’s capacity to build a sense of community, create a shared identity, and transform consciousness among constituents (Gamson, 1992). In turn, these social-psychological factors lead to participation outcomes. If a SMO has been successful in addressing all three of these social-psychological factors, then participation outcomes are likely (Gamson). If not, then a lack of participation among members is likely to occur as in the case of Bell’s *Fighting King Coal* (2016).

Scholars studying social movements suggest that “micromobilization” settings are necessary for recruitment and participation (Bell, 2016; McAdam, 1988). In these analyses, a setting is an important feature for facilitating interaction and communication processes for collective action. These micromobilization settings serve as a catalyst for action by: cultivating social ties (Polletta, 1999); fueling emotional energy (Parker and Hackett, 2012); recruiting potential supporters (Frickel and Gross, 2005); organizing and mobilizing supporters (McAdam); serving as a bridge between the present and the future and between the individual and society (Gamson, 1992); creating self-empowerment (Haug, 2013); developing skills related to leadership, decision-making, cultural interactions, and storytelling (Haug).

A politics of collective action is a way to bring about social change. In the case of a counterhegemonic project grounded in an ecological perspective for community, Reid and Taylor state that collective action is a “tending of worlds-in common” in which humans and nonhumans, the social and the ecological, are “dwelling-in-common” sharing the same common world (9). Taken together, a politics of possibility is a counterhegemonic project, creating new language and cultivating new subjects to inspire collective action. How can this project be bounded? I next turn to a concept to provide a visual for a politics of possibility on the ground.

4.3 Liberated Ecosystem

Dunlap and Catton (1994) call for environmental variables to be included in social analyses of social-ecological issues. In the spirit of an ontological project, I use my scholarship as a way to open up a social-ecological imagination for understanding a counterhegemonic project on the ground. I present the term *liberated ecosystem*³² as a concept for analysis to refer to a SMO’s complex repertoire³³ of activists, policies, and institutional practices standing outside a dominant system and nurturing a politics of possibility for comprehensive social change. The term *liberated ecosystem* is a conception in which social patterns for interacting are compared to ecological dynamics, broadly speaking. In using the ecosystem concept, I am attempting to bridge the social and natural sciences so analyses can be more interdisciplinary. By finding common ground through language across disciplines, I aim to strengthen analyses of social-ecological issues. At the same time, the concept serves as an ontological tool to imagine a new

³² I present a new term as a way to practice a politics of possibility through scholarship. The term is an attempt to create a vision for interconnection between the social and natural dimensions, thereby opening up possibility for a new social order. In the industrial model of agriculture, the social and natural dimensions tend to be separated with humans dominating nature.

³³ I use repertoire to mean the human supply of knowledge, attitudes, aspirations, and skills used in activism.

social-ecological order qualitatively different from the mainstream way of thinking and doing. In this sense, a liberated ecosystem is about liberating our ways of thinking, which have been captured by false concepts of the dominant culture.

A SMO priming cultural transformation over the long haul is a representation of the process of pre-emergence. As a liberated ecosystem, the repertoire of activists and their environment engage in cultural work to nurture a politics of possibility in order to free subjects from the status quo way of valuing, thinking, practicing, and relating. Liberation sets subjects free from illusory, incomplete dogma set forth and maintained by the dominant in a field of power. An ecosystem³⁴ is contextual, relating to a particular time and place, representing the sum of interacting activists and their environment participating in the investment process of input and output. The productive cultural function of a liberated ecosystem, therefore, is to invest in a politics of possibility. In a liberated ecosystem, new discourse and new subjectivity for collective action flourish through relational processes of cultural work. A liberated ecosystem allows us to understand the conditions that account for inspiring a politics of possibility of the same group within different conditions over time.

I suggest that a SMO acting as a liberated ecosystem in the process of pre-emergence, cultivates new experiences that have yet to create a transformative mainstream culture. We can think of emergence as a process in which new values, meanings, practices, and relationships arise out of interactions of social ecosystems. If successful, these new experiences emerge to create a larger culture, exhibiting properties the smaller and simpler social ecosystems, such as a SMO, do not exhibit. A liberated ecosystem is a function of cultural work nurturing a politics of

³⁴ Like natural ecosystems, I assume that resources are essential to a liberated ecosystem's structure, function, and composition, therefore, I focus on the cultural activity using resources to invest in a politics of possibility.

possibility, or a counterhegemonic project. This means that a SMOs productive activity is creating new language and new subjects through collective action.

I apply a social-ecological imagination to previous literature on collective action as a way to present possibilities for new language, new subjects, and new collective action. I start with scholars who suggest that movement participation is central to transforming hegemonic meanings (see Morris, 1992; Snow, Rochford, Worden, and Benford, 1986). The social construction of meaning takes place among a group with collective interests in social settings. For these scholars, conflict or struggle is an important factor in constructing new cultural meanings and group loyalties. The routines for everyday interactions occur in everyday locations for actors to either support or resist the dominant culture. These settings are “where grievances, resources, and opportunities as well as ideologies and symbolic representations of collective identities can be constructed and transmitted” (Aldon, 13). Here, group interaction becomes a setting where hegemonic belief systems can be overturned.

Social interaction is an important way for people to socially construct new meanings and values, new practices, and new kinds of relationships. Furnari (2014) looks at the micro-interaction dynamics that account for the emergence of new innovative practices for social protest among activists. For Furnari, the setting, or the “interstitial spaces” where interaction takes place, is the answer to the beginnings of new practices and ideas. According to Furnari, these settings are small-scale in nature in which members from different fields interact on an informal, occasional basis. Furnari suggests that the setting in of itself allows activists to temporarily break free from their existing institutions, coming together to experiment with new activities and ideas.

From this work on group settings³⁵ where the social construction of meaning takes shape, we see that the environment of the location is “intimate”, one of “trust”, “emotionally charged” (Frickel & Gross, 2005) in which participants are able to engage in dialogue, critical discourse, and reflection on dominant ideologies and alternatives (Morris, 1992). The group setting allows participants to exchange ideas and practices. It is the actual setting that is important to the process of emergence for Furnari because the space is conducive to creating “interaction rituals” (a concept from Randall Collins, 2004) in which high levels of mutual attention and emotional energy take shape while at the same time staging catalysts, or the individuals who lead the way in constructing shared meanings.

For Gamson (1992), a SMO can mobilize action through “encounters,” in which another person or group of people comes into contact, inspiring an individual to commit to a cause and to participate in collective action. In Gamson’s collective action model (1992), the social locations, where potential participants of a movement come together, are central to mobilization processes because the interactions help build solidarity among members, connect members to a collective identity, and transform individual consciousness to mobilize collective action. Bell (2016) offers insight on participation by looking at non-participation in *Fighting King Coal* in Central Appalachia. Bell (2016) suggests that potential activists can be dissuaded from group settings aimed at micromobilization, preventing participation in a social movement. A lack of these social settings limits the occurrence of solidarity building, identity correspondence, and cognitive liberation processes, all factors in Gamson’s (1992) micro-level model for collective action.

³⁵ Also referred to as “micromobilization contexts” in the social movements literature.

I add to this previous scholarship by using a social-ecological imagination to visualize a liberated ecosystem and by focusing on the significance of a SMO's cultural work for nurturing a politics of possibility as central to the process of pre-emergence.

Despite the excellent sociological work on the political economy of agriculture (outlined in the previous chapter) and the strategic repertoire of social movements (as outlined in this chapter), the specifically cultural analysis of social movements remains relatively undeveloped. I view cultural work as a strategy in of itself used to generate structural transformation. Cultural work is the production of cultural forms, such as language, texts, material objects, art, and music. An SMO, like TLI, has its own unique culture that can be investigated. The cultural study of social movements includes two main elements of culture: 1) both the product and the production of the product, i.e. aesthetic and cultural forms of movements and 2) movements as unique subcultures within the larger society. Cultural analyses tend to depict expressive forms of culture, such as protests songs in the Civil Rights or community murals in the Chicano movement (Johnston and Klandermas, 2013). My investigation of a SMO's cultural work focuses on the strategies used to advance a progressive agenda while getting at the pre-emerging character of transformation.

A liberated ecosystem and its cultural work in a politics of possibility play a central role in how a SMO emerges in a field of power, creating new values and meanings, practices, and relationships not legible to the dominant. In turn, a liberated ecosystem and its cultural work contribute to its success as an emergent model and agenda for progressive change. Therefore, creating a liberated ecosystem that invests in cultural work for a politics of possibility is a form of strategy in and of itself. Yet, scholars have overlooked the details of this relational context.

Understanding the cultural work of a complex repertoire of activists, or liberated ecosystem, that constitutes the vitality of a SMO helps us to understand how oppositional initiatives contribute new meanings, values, practices, and relationships within a dominant system. The agro-capitalist research complex is the dominating position operating in a field of power, also referred to here as the dominant agricultural research system³⁶. Building on both relational models, the overarching question for this research asks: how do social movement organizations *advance a progressive agenda* for transformation *without being coopted* by the dominant position? I accept the thesis that pre-emergence is in process, so I engage in questions such as: What accounts for the process of pre-emergence, i.e. imparting new values, meanings, practices, and relationships that are not legible to the dominant culture? What does a counterhegemonic project look like on the ground?

³⁶ I use system, network, and field interchangeably although the literature has made distinctions among these terms. However, I am not making those distinctions here.

**PART TWO: CULTURAL STRATEGIES FOR PRE-EMERGING
SOCIAL CHANGE**

5 THE CASE: THE LAND INSTITUTE

I am looking at the case of a SMO that has been successfully advancing its model for a sustainable society without being coopted and incorporated into the dominant order. The case is worth investigating because the SMO represents a counterhegemonic project that has not been coopted into the dominant culture. Before I present the findings that answer the question at hand (in the following chapters), I describe the context of the SMO under investigation. I then give details pertinent to the specific case by describing the protagonist of the narrative, the posture taken by the organization, the place out on the prairie where the organization is headquartered, and the organization's key annual public event as an embodiment of the cultural work that takes place out on the prairie.

In the broad context, exacerbating climate change and agricultural land and water degradation is one challenge taken on by the agricultural sciences, focusing on how to 'feed the world' with an increasing population. A second challenge is how to mitigate climate change to avoid ecological collapse. Solutions to the dual problem of food insecurity and climate change abound in agriculture, from genetically engineered crops on one side of the philosophical-scientific spectrum to organic production on the other. While 'feed the world' has been an ongoing conversation in many forms throughout human civilization, climate change is a more recent issue also receiving increasing attention. Some policymakers and organizations have taken a keen interest in addressing these concerns by coupling food security and climate change issues and allocating research dollars to scientists to model future scenarios.

As Kloppenburg (1984) found in his examination of the historical development of hybrid corn in the United States, there were other viable options for breeding and improving corn, but these alternatives were bypassed by the dominant field of actors making decisions about the

future trajectory of agricultural research. Excluding some options in favor of others has serious implications on social relations and the future of agriculture. Knowing about alternatives to a prevailing system that has been showing signs of increasingly negative social, economic, and ecological outcomes is imperative for land managers and policymakers so that they may make sound decisions about the future of agriculture.

The purpose for selecting TLI as a case is to bring attention to a model for addressing both food security and climate change issues based on a progressive approach but has not received much attention from the field of agricultural research systems. In what follows, I present the case study as a tale of two prairies theme that draws in a protagonist and a posture. The protagonist is Wes Jackson who postures a solution, also referred to here as a systemic alternative, to the problem of agriculture, which serves as the basis of culture writ large. In the next chapter, I will go into detail on the logic informing TLI's problem-solution perspective.

Amidst the growing environmental concerns of the 1970s, oppositional scientists and activists, struggling to articulate an ecological perspective for restructuring modern society, developed a philosophy of deep ecology. These oppositionalists espoused an ethos of respect for the intrinsic values of richness and diversity along with complex, dynamic, interdependent relationships, distinguishing themselves from mainstream scientists and mainstream environmentalists (see Naess, 1973). A central assumption of deep ecology is that all living things, human and non-human alike, have inherent value. Scientists and activists taking on a deep ecology philosophy have ushered in a radically different perspective from the prevailing anthropocentric view for environmentalism that subscribes to environmental conservation for human purposes.

Enter The Land Institute (TLI) in 1976, a non-profit organization that both leads and

follows in the deep ecology scene. TLI is a story with deep roots, one of pre-emerging social change. What has been growing is TLI's vision for a resilient community of self-reliance, regeneration, and sustainability. TLI has been planting the seed for an ecological worldview for the past 40 years where systemic alternatives based on the principles of sustainability along with cultural-based strategies are part of everyday life.

TLI is located in north-central Kansas, Salina, where never-plowed upland native prairie ecosystems still exist, scattered among the predominately plowed bottomland prairie land that has been turned into one of the world's largest wheat-producing areas. It was here 40 years ago that Wes Jackson, the protagonist of this story, along with Dana Jackson³⁷ started a school for sustainable alternatives writ large. Originally, he began the school to find alternatives in all aspects of society, including waste, shelter, energy, agriculture, and health. Today, the organization is focusing on systemic alternatives in agriculture.

Early on, students from all across the nation came to participate in TLI's intern program, an alternative curriculum based on experiential learning. What started as a school evolved into something much more. The embryonic goal was to provide a school, a space, where interns could challenge the industrial model for development and find systemic alternatives. The findings show that TLI's liberated ecosystem has grown into a place out on the prairie for envisioning systemic alternatives, providing values-based education, conducting place-based work, and gathering together. TLI has become a visionary hub, a school, a research center, a gathering place, all-in-one.

The theory of change behind TLI's model of a homecoming major starts with a vision for

³⁷ Wes Jackson and Dana Jackson were the co-founders of TLI. My research focuses on Wes Jackson who became the sole director of the organization in 1993. Dana Jackson's influence is included as one of the perspectives making up the organization in the early years.

sustainable communities. We will see in the findings that TLI's cultural activity entails producing this vision through values-based education first and foremost, values-based work as part of the everyday, and gathering together to engage in critical thinking. What we see throughout TLI's cultural activity is its underlying principle for human-nature relationships: in order for a community to be sustainable, society must live, work, and play through an ecological perspective.

TLI is a story of the cultural work behind the relationships that they have built. The value of TLI's model is placed in relationships – human-nature relationships based on mutuality and interdependence that translate to human-human relationships. A community of “consecrated constituents” and “Friends of The Land” has emerged from the vision, education, research, and gatherings that have taken place at TLI over the years. The cultural activists at TLI are continuing to shape and carry out their vision for sustainable communities. SMOs like these are important to opening up imagination and possibility for a new, progressive social order based on an ecological perspective.

Throughout its history, TLI has been securing the necessary resources to be a thriving organization. Jackson provides a “Summary of 5 Phases of Work in Preparation for Meeting Oct 1-2, 1998:”

To What Extent is The Land Institute Poised for this Transition?

- A. We have more than adequate acreage to get started...
- B. Financial solvency demonstrates sound fiscal management over the past 22 years. The Land Institute has no debt.
- C. Publications in respected refereed scientific journals made it easy to assemble 65 members of our Advisory Team including members of the National Academy of Sciences and the Royal Society.
- D. A highly successful symposium featuring papers relevant to our work at 1997 annual meeting of Ecological Society of America made possible, in part, by our papers in scientific journals and a feature in the Research News section of *Science*. A writer from *Nature* attended our ESA

- symposium and was responsible for the placement of an article in *Nature*.
- E. Awareness of our efforts has increased in the culture due to exposure over the years in more popular media...
 - F. Scores of lectures, keynote talks at various conferences in small and large colleges and universities in England, Scotland, Denmark, Australia, New Zealand and throughout the U.S.
 - G. Honors and attention directed to The Land Institute's work...
 - H. We have had an effect on establishment science. This was in spite of current dogma which holds that increased seed yields in perennials would come at a trade-off cost...
 - I. We have \$35,000 from the Gund Foundation to plan a center.
 - J. We have a solid relationship with the foundation world through various program officers who have had a history of long and broad thinking, of dealing with big ideas, the big picture... (KHS, 1998 (3110-3117)).

In the fall of 2016, nearly 1,000 people gathered in a barn out on Jackson's 30 acres of pasture³⁸ in Salina, Kansas where it all started to hear Wes Jackson deliver his final Prairie Festival speech as President of The Land Institute. As co-founder of TLI in 1976, Jackson was handing over his 40-year project to retire. In his speech, Jackson recounted "The State of The Land," providing an account of TLI's history within the context of industrial agriculture. Jackson drew the audience's attention to the "double meaning" of his title in order to situate the stark difference between the global condition for progress and TLI's position. Using facts from the consensus of the global scientific community to back him up, Jackson pointed to the ecological issues the world is facing: land use is the number two contributor to green house gases, major biodiversity loss is due to agriculture, land and water pollution are at lethal levels – ecological degradation is our current crisis. He then contrasted this dire state of the land by highlighting TLI's record of achievements: the organization has been operating in the black 40 years in a row, the organization has added more staff and expanded its facilities over the years, and the organization benefits from the commitment of people, of its "consecrated constituency." This

³⁸ Jackson owns 30 acres of property where TLI headquarters, including the barn, administrative offices, and research building, and his residence is situated.

rhetorical technique by Jackson represents a “reading for difference” that challenges the hegemony of industrial capitalism by making the invisibility of dominance visible while uncovering what is possible but hidden from view (Gibson-Graham). So, who is this Wes Jackson?

5.1 The Protagonist: Wes Jackson

Context, experiences, relationships, and ideas go into making a vision for systemic alternatives. While the organization was established during a period of emerging environmental activism, TLI’s orientation also originates from the experiences, relationships, and ideas constituting the co-founders.

Born in 1936, Wes Jackson grew up on his family farm near Topeka, Kansas. Jackson gained a “practical” philosophy, experiencing first-hand the hardships of farm life during the Great Depression, yet, he viewed his upbringing as one of “bounty.” He has written on how he was the youngest of six kids and was raised by Jeffersonian agrarian parents with a Methodist, Congregationalist upbringing.

I grew up on a farm in the Kansas River Valley, near Topeka. We grew most of our own food, some twenty-seven crops in all in the 1930s. We butchered our own animals—cows, hogs, chickens, turkeys. We cleaned up our plates. Nearly all farmers know that soil erosion represents the destruction of much of the foundation of food production. But then comes the highly dense carbon era. Labor was replaced by capital combined with highly dense carbon. In industrial societies, that era of shared values and common work is mostly gone. The lack of a sufficiently large constituency of people who feel the connection to the creatures and soil that sustain us makes change hard. The industrial mind has its way, which makes it hard to head off the confinement of animals in warehouses. (Mother Earth News Editors, 1987):

Like many kids in rural America, Jackson left his home for education. Yet, going the atypical route, Jackson went on to pursue possibility outside the status quo. Trained as a geneticist, Jackson has the educational credentials to back up his assertions for a new agriculture:

a B.A. in Biology from Kansas Wesleyan, M.S. in Botany from University of Kansas, and Ph.D. in Genetics from North Carolina State University. He was a professor of biology at Kansas Wesleyan and later became a tenured full professor at California State University, Sacramento where he established the Environmental Studies department.

Resigning his tenure position in 1976, Jackson returned to Kansas to found The Land Institute (TLI) with an original mission to search for alternatives in agriculture, energy, shelter, and waste disposal as a way to bring about change for living more sustainably. Jackson's establishment of TLI was a deliberate separation from the land grant university because in his view the university was in cahoots with industry perpetuating the negative consequences of agriculture. Since then, he has committed his lifetime work to solving the problem of agriculture.

The purpose of Jackson's life work is:

to save soils, to get off the fossil fuel nipple, to quit introducing those chemicals into the environment that our tissues have not evolved within effect, to run agriculture on sunlight (Mother Earth News Editors).

Jackson's work represents his influence as an intellectual: he is an author of numerous books and has published in numerous peer-reviewed scientific journals, writing on topics related to the problem of agriculture, sustainable agriculture, perennial grains, and philosophical epistemology. He has received many prestigious awards and recognitions, including a MacArthur Fellowship, the University of Kansas Distinguished Fellow Award, and National Geographic's Person to Watch.

Jackson has been inspired by certain influencers and ideas that called for alternatives to the current social order. Along his educational journey, Jackson was influenced by Aldo Leopold; his professor, Ben W. Smith, at NCSU; personal friend, Wendell Berry; mentor, Arnold Schultz; and mentor, J. Stan Rowe (Jackson, 2010). Jackson credits the thinking of these

individuals along with the history of the Civil Rights movement, the Vietnam War, Rachel Carson's *Silent Spring*, his two early colleagues Angus Wright and Charles Washburn, "[Martin Luther] King and later the Black Panthers and Stokely Carmichael and H. Rap Brown and Gloria Steinem would change my world and become part of the intellectual architecture of The Land Institute" (62). For Jackson, mention of history is important "in part because over the years I have detected an absence of sense of history in environmentalism. I worry that without this, our thinking will not be bold enough" (63).

Early on, Jackson was against the rules of the game dominating mainstream culture at large. During Jackson's intellectual training he recalls that "We were activists of sorts when need arose," concerned with and supporting the big social movements of his time, including: Vietnam War; Civil Rights; Antinuclear Movement and Friends of the Earth; and Appropriate Technology. Jackson points out that he was "busy getting his education," but he was all for the pro-civil rights movement. He had the opportunity to watch Martin Luther King, Jr. and attend a Ku Klux Klan rally in Raleigh, North Carolina, contributing to his activist spirit. At the local level,, TLI led efforts against the Wolf Creek Nuclear Power Plant in Kansas and organized a march and teach-in at the Holcomb Coal-Fired Power Plant on the Kansas-Colorado line.

The rules of the game in the field of agricultural science did not suit Jackson either. While he gave it a go for 10 years as a professor in a university setting, he ended up resigning from his traditional tenured academic post in order to homestead with his family. He remarked on how the decision to "return or resign" was a pivotal moment in his career. Jackson was on sabbatical with his family, practicing homesteading, when he made the decision to take a risk and not return to his academic post.

TLI's vision is an accumulation of Jackson's knowledge and experiences: Jackson's family background growing up on a farm in Kansas, his training in genetics, the inspirational influencers informing Jackson's ideas, his academic experience teaching, writing an anthology³⁹, establishing a new Environmental Studies program at a university, and his family's homesteading sabbatical. Jackson encounters people and place along the way, contributing to the vision for systemic alternatives. In the early days, Jackson and co-founder Dana Jackson⁴⁰ led the vision, acting as a team, bringing a different set of personalities to the organizational table. Jackson was the creative, big ideas leader while Dana was the "caregiver" and "nurturer" of the interns and organic garden.

An organizational consultant conducted an audit of TLI in 1989, including an assessment of the leadership at TLI:

Wes and Dana Jackson have each made an indispensable contribution to The Land Institute. It is impossible to imagine The Land Institute without Wes' vision, ideas, and philosophy. It is impossible to imagine those ideas being translated into reality without Dana's organizational sense and down-to-earth practicality...their different styles and outlook have complemented one another. (KHS, 1989).

When Dana Jackson left TLI in 1993, Jackson became the primary leader for setting the direction. While Jackson is the leader setting the vision, the board serves as a sounding mechanism and creative outlet for Jackson. The continuity in board members has supported Jackson's creative visioning process. Scientists and staff disseminate the vision through their work. Jackson has been a very hands-on leader, getting involved in all aspects of the

³⁹ When Jackson was at Kansas Wesleyan, he wrote *Man and the Environment* in 1971. When he went to California State University, Sacramento, he used the book as part of his curriculum. When he references this book, he likes to point out "there's only two things wrong with the title," referring to "man," which should be "human," and "environment," which should be "ecosphere." Jackson believes the term "environment" is problematic when referring to ecosystems and ecology because it conjures up a container, falling into the trap of looking down through a reductionist perspective.

⁴⁰ Wes Jackson and Dana Jackson married in 1957. They had three children. They divorced in 1993.

organization. While a micromanagement approach has its down falls in organizational management, Jackson's doggedness has been a benefit to TLI, keeping the organizational doors open for 40 years. Early on, TLI brought in an organizational consultant who recommended that the organization should move away from its heavy reliance on its founders in order to be sustainable as an organizational entity.

TLI documents its purpose and reason for bringing in an organizational consultant in "Planning Meeting Minutes" in 1988:

Purpose: to make The Land less dependent on Wes & Dana; to ensure The Land's survival by cultivating a place within the organization for strong, creative, bright people who can assume major responsibilities and contribute vision & leadership.

Triggers for discussion:

1. Shift in foundation targets - move from social change foundations to large ones focused on "solid research program with published findings" and "clear long-range plan" (ex. Hewlett Packard)
2. Call from Board along with others to focus on long-range planning, vision and leadership
3. Wes may or may not have cancer (KHS, 1988 (3662-3668)).

After the audit in 1989, the consultant offers TLI some recommendations in "Organizational Consultant's Report" to TLI:

the board of directors will have to assume a stronger role in setting the overall direction, priorities, and policies of The Land Institute...the staff will not only need to be given greater authority, but they will need to play a stronger and more visible role both in the internal and external affairs of The Land Institute (KHS, 1989).

Staff comment on how Jackson to this day still plays as the primary decision maker in all aspects of the organization. While this approach has presented challenges along the way, Jackson's hands-on leadership has been mainly successful for a small, non-profit organization led by its founder.

Jackson credits the former Director of Development and the former Managing Director as two key players who contributed to the surge of the organization leading up to 2000. For Jackson, their involvement and engagement in the organization “has been a godsend.” With Jackson’s recent retirement in the fall of 2016, the management style will be a transition for the entire organization.

TLI has faced several organizational challenges throughout its history, including the organizational audit of leadership (as mentioned above), Dana Jackson’s departure, fundraising (as a given for any non-profit organization), and succession of the organization’s founding leader. I maintain that TLI is able to face its organizational challenges because it has been functioning as a liberated ecosystem outside a field of power, intentionally investing in cultural work, creating new values and meanings, practices, and relationships not compatible to the mainstream order. When an organization is vulnerable, it can resist threats of cooptation by staying rooted in its deliberate cultural work in a politics of possibility as demonstrated by TLI throughout the findings chapters (7-11).

5.2 The Posture: Solution To Problem

Industrial agriculture has increasingly dominated our food system over the past seven decades. In agriculture, research and development activities by scientific experts have led to a set of technologies (high-yield seeds, chemical pesticides, irrigation, on-farm machinery) that gave way to the rise and expansion of industrial agriculture in the U.S. after World War II. Adoption of these technologies has become a widespread phenomenon that we now talk about a global, industrial agricultural system.

Not until 2010⁴¹, the National Research Council (NRC) called for a transformative approach to agriculture research and development in which multi-interdisciplinary collaborations work on “identifying and researching the potential of new forms of production systems that represent a dramatic departure (rather than incremental improvement of) the dominant system of present-day American agriculture” (2010:6). Today, agricultural systems across the globe produce staple grain crops, such as corn, rice, wheat, and sorghum, on almost 70% of global cropland providing about 70% of human food calories. These major grain crops are annuals surviving just one growing season. The NRC identified perennial grain systems as an example of a production system model that is different from the dominant model (9). Since 1976, Jackson and scientists at TLI have argued that transforming agriculture’s major annual grain crops into perennials, and growing the grains in diverse assemblies, would mimic natural ecosystems, thereby, both food and ecosystem security would increase.

Jackson and his colleagues argue that an industrial, agronomic approach to agriculture that is reliant on inputs derived from fossil fuels has caused serious ecological degradation, economic instability, and social problems across the globe because the industrial process is based on mechanical and chemical inputs and agronomic principles based on production and efficiency goals (increase yield).

Jackson and scientists at TLI are researching and developing an alternative form of staple grain crops (wheat, sorghum, rice) by breeding for the trait perennialism in these annual plants⁴².

The plant-breeding program at TLI relies on selection, wide-hybridization, and domestication

⁴¹ In chapter 2, we saw that the U.S. government started to consider “alternative” agriculture and “sustainable” agriculture in the late 1980’s and 1990’s, respectively.

⁴² Perennial crops, such as nuts and fruit trees, grow for multiple years and make up a small portion of current agriculture, and some are grown as annuals, such as asparagus, in that the crop is harvested each year. Alfalfa is a perennial legume that is produced for forage and has sparked controversy since breeding has used genetic modification techniques and has developed a seed variety that is resistant to herbicide.

methods to perennialize staple grain crops that will produce adequate yield in an intercropping, or polycultures, system. Examples of domestication include a perennial relative of sunflower, *Silphium integrifolium*, and Kernza™ (*Thinopyrum intermedium*), which is a perennial relative of wheat.

As a SMO, TLI represents oppositional energies struggling to transform the system. Starting an education based non-profit organization separate from the land-grant institution was an intentional move by Jackson to establish an alternative to the prevailing way of thinking and doing. In its first newsletter, the organization shared its mission with readers:

The Land Institute is devoted to a search for alternatives, alternatives in agriculture, energy, shelter and waste disposal...We are also devoted to a search for alternative world views, alternative thinking. Both have to come together, the alternative technology and the thinking; for if we change the technology and still seek our identity by feeding our insatiable consumer-oriented appetites, we are still into mine depletion and sink impaction (*Land Report*⁴³, 1976:1).

From this statement, we see that ideas matter – culture and material conditions are interrelated. Jackson’s proclamation for “alternatives” is in line with sentiments of other critical voices shaping the growing concern among the public at the time.

5.3 The Place: Konza Prairie

Konza Prairie is located within Flint Hills, a 50,000 km² region that includes eastern parts of Kansas and northeastern parts of Oklahoma and contains the largest remaining area of unplowed tall grass prairie in North America. Konza itself is a Long Term Ecological Research (LTER) site funded by the National Science Foundation and managed by faculty mainly located at Kansas State University. The Konza Prairie is one of the most productive grasslands in North

⁴³ The Land Report references for TLI’s newsletter are abbreviated as LR followed by the issue number in parentheses throughout the rest of the dissertation. For example, LR(01), 1976 is for The Land Report, issue number 1, year 1976.

America and has received attention from scientists studying ecological patterns and processes in grasslands across the globe. Native prairie ecosystems, such as Konza Prairie, feature mostly perennial plants, species diversity, and herds of grazing bison. The root systems of native prairie grasses are deep allowing the plants to hold soil in place preventing soil erosion. Fundamental features of an agricultural system based on natural processes include perenniality of plants, diversity of species, and animal integration. Konza is dominated by native tall grass prairie, containing perennial warm-season grasses. True to its name, the tall grass canopy can reach close to three meters in height in the most productive years. Drought, fire, and grazing are methods to maintain the prairie system. Advocates of Natural Systems Agriculture believe that looking to nature as the standard for practicing agriculture is the best way to achieve sustainability.

The Flint Hills is where Jackson had his epiphany that “soil erosion is a persistent, millennia-old problem.” Jackson cites two experiences that led him on his journey to better understand more completely the history of Earth abuse through agriculture. One, he read the U.S. General Accounting Office report on effective use of federal funds for soil and water conservation in 1977. According to Jackson, he noticed that soil erosion was as bad then as it was when the Soil Conservation Service (SCS) was formed in the 1930s. He questioned this finding because the SCS was a nationwide effort dedicated to soil and water conservation, having built thousands of miles of terraces and grass waterways, so something more was going on with the soil. Two, Jackson took some of TLI’s early students out to the Konza Prairie on a field trip to see nature in action where there was “no apparent soil erosion beyond natural replacement levels, no fossil fuel dependency or chemical contamination, no dependency on commercial fertilizer.” Thus, the Konza Prairie plays a significant role in Jackson’s vision.

TLI’s ecological environment includes land holdings totaling 936 acres as of fiscal year

ended June 30, 2016. The ecological environment extends to the experimental plots and facilities of collaborating institutions.

5.4 The Event: The Prairie Festival

You can find Jackson out on the second prairie of this tale in Salina, Kansas where he lives and works and hosts along with his colleagues the Prairie Festival. The Land Institute has hosted an annual Prairie Festival since 1979 with hundreds of speakers over the years. As President, Jackson has spoken at all the annual festivals. Attendance has been upward to 2,000 in recent years.

In 2014, Jackson kicked off the annual event by imploring "we are in need of a great moment." He challenged the audience to ask questions that have never been asked. Beseeking that we (local-global society) are in need for a great moment, Jackson took a radical turn and proclaimed that we are in a predicament in which we need to end economic growth and meet human needs at the same time. Jackson ended his opener promising the audience that "the intellectual hootenanny is about to begin," cueing laughter and applause.

Jackson's radical hint to a future without economic growth left room for the main speaker to evoke formidable thoughts. Lisi Krall is a professor of economics at the State University of New York Cortland, receiving her PhD in economics from the University of Utah. She serves on the executive board for the Center for the Advancement of the Steady State Economy, a research organization dedicated to mobilizing an economic model based on limits as opposed to perpetual growth. Her research focuses on labor economics, the political economy of women, environmental and resource economics, and ecological economics.

Krall admitted that Jackson invited her to speak at the Festival because she is not part of the mainstream, status quo economists and is considered an economic heretic by many. Similar

to Jackson, she challenged the audience to engage in a future that honors human dignity and ecology by asking what is imprudent and impossible. Drawing on some Marxian concepts of the wage labor system, Krall asserts that we (capitalist society) are living in a failed growth economy. Krall sees meaningless work, low wages, and unemployment in a growth economy a problem to human dignity. She declared that we should disengage from the market and offered possible solutions based on redistribution, planning and rationing, and decentralized, publicly owned approaches. She ended "we humans were perchance given the gift of earth, a chiseled body and soul out of its wisdom," jolting the audience to their feet in an animated applause.

The economic imagination stepped aside to usher in the ecological imagination. Next up, TLI's Research Director introduced the scientists at TLI to provide an update on research and development of perennial grains. Some of the scientists had recently attended an international conference in Rome sponsored by the Federal Agriculture Organization (FAO). The conference was a milestone because it was specified for perennial grains research and gathered many different scientists from a range of organizations around the world researching perennial grains. One of the TLI veteran scientists also announced that TLI received part of a collaborative grant awarded by the USAID to do research on perennial sorghum. Each scientist provided an account on the research efforts offering insight into the patience and tedious detail required in breeding for new traits in plants. Another TLI scientist spoke to the use of perennials beyond food sparking an interest among organizations, such as Organic Valley Cooperative and Patagonia, looking to the future for the next best sustainable product.

In between presentations, attendees wandered the grounds or checked out the art exhibit, which was held in a small, red, metal-silo like structure next to the barn where presentations took place. The exhibit was open throughout the day so that attendees could visit at their leisure. The

“Art Gallery in the Red Barn”, as indicated on the program, featured a display of environmental photography by artist Philip Heying who lives two hours down the road in Lawrence, Kansas. Jackson is deliberate in who he invites to present at the Festival. The art exhibit captured the science, beauty, and life of nature. Woods or fields displayed in vivid colors or black and white shots provoked both wonder and serenity. The scenes in the photos captured temporality in seasons, the wooliness of the wild, and a calmness of the natural. Intricate brambles depicted a robustness while shadows and light created a mood of wonder. These pieces were a stilled representation of the dynamic natural systems processes that Jackson and his colleagues refer to as the measure for ecological integrity in agriculture. The Art Gallery is evidence of how Jackson views the interconnection of science-art-beauty-life-nature.

Further evidence for the interconnection of science-art-beauty-life-nature unfolded at the Festival in Sandra Lubrasky’s presentation titled “The Importance of Beauty.” Sandra Lubarsky is the Department Chair for the Sustainable Development program at Appalachian State University in North Carolina. She is interested in the importance of beauty as a public value and has written on the link between beauty and education and beauty and sustainability. At the 2013 Festival, she opened her speech by paraphrasing Jackson stating that babies are beautiful not in moral worth or utility. She then posed the question “what is beauty?” Her speech on beauty came after the technical science topic of plant breeding presented by the TLI scientists. What a curious mix. For Lubarsky, beauty should not be taken lightly; beauty is a serious matter for our culture and we should not privilege pleasure. She claims “the loss of beauty and the loss of ecological integrity are intertwined.” In our contemporary world, according to Lubarsky, we are lost and confused because we substitute our interests for beauty. Lubarsky untangles the interdependence

between sustainability and beauty by positing how can we live in a way to promote beauty, if the idea of sustainability is to endure.

Mark Bittman was the second to last speaker of the event. A well-known food writer for the New York Times, Bittman infused a pop-culture component into an event filled with academic-heavy talks. By this point, the themes spoken at the event were enough to bring on despair in the work at hand to make the impossible happen. Bittman asked the audience to participate in a task. With index cards being passed around, each person was to write one sentence of a positive interaction with food and/or agriculture. He collected the index cards and started reading from the large stack generated by the audience. As he read, he filled the room with hope and referenced the stack of cards as evidence for not wallowing in despair. He sees the all the good work that needs to be done as an indication that we are on 'the verge of a Renaissance.' Bittman's performance was light-hearted and easy going.

Typical of the Festival's flow of speakers and events, Jackson closed the show. Since the perennialization of grain crops on a global scale will most likely not be realized in Jackson's lifetime, then what motivates someone to take on this type of work? Jackson reminds his constituents: "if you are asking questions that can be achieved in your lifetime, then you are not asking big enough questions." For Jackson, agriculture based on nature's principles is about more than food security. He likes to quote his late friend, Charles Washburn, "if we do not get sustainability in agriculture first, it's not going to happen."

TLI's cultural work is a robust, deliberate project of envisioning an alternative life of wellbeing. This cultural work, I argue, is cultivating a politics of possibility in which new language, new subjects, and collective action transpire, all of which contributes to pre-emerging social change. As a liberated ecosystem, TLI is sustained by its productive activities. A politics

of possibility represents the potential for change by creating new language and cultivating new subjects inspiring collective action.

The cultural forms of TLI's work face the threats of either disappearing or being coopted by the power elite, or what I have referred to as the agro-capitalist research complex. To date, TLI's ideas and practices have not been incorporated into the dominant position, so a case study can help us better understand the conditions for pre-emerging social change. What contributes to the process of pre-emergence, defined as actors partially articulating new values, beliefs, practices, relationships not taken up by the dominant position? To get at pre-emergence, I enter the empirical world by asking: what does the productive cultural activity of TLI look like? What does a successful counterhegemonic project look like on the ground? This study will contribute to previous scholarship by analyzing the history of a SMO in the field of agricultural science in order to more fully understand the process of pre-emergence for systemic alternatives in agricultural systems in the U.S. Using a case study of a SMO, a mechanism putting forth possible solutions, I analyze cultural work as a way to understand pre-emerging processes in a field of power.

As a counterhegemonic project, TLI is challenging the traditional political and economic order while creating new realities to build a new system, offering a new vision with new institutions. TLI is using cultural-based strategies to build a new future, engaging in activities across places – in its workplace, in its local community, in civil society – locally, regionally, and internationally. In the next chapter, I present the methodology I used to investigate the case of TLI.

6 METHODOLOGY

In the previous chapters, we looked into the background context for the agro-capitalist research complex. This dominant power structure has been driving a reductionist, unsustainable agenda for agricultural research systems for the past 70 years. The question at hand is: *how can a SMO outside a field of power promote a progressive agenda without being coopted by the dominant system?* To answer this question, I used a case study of TLI to study processes and evolutions that are best described through in-depth investigation. The case of TLI in of itself presents a unique and important story to be told. A descriptive case study is used to document the intricacies of an experience (Stake, 1995). A detailed case study account presents answers to a series of questions based on theoretical constructs (Yin, 2013). The research questions get at “what happened” and “how did something happen.” The phenomenon being studied (pre-emergence) is subtle, so a case study can get at the in-depth details and context of a particular experience.

The primary purpose of this case study is to tell the story behind the success of an organization advancing a progressive agenda while not being coopted by the dominant culture to capture the on-the-ground processes over time. Specifically, my research examines the process of pre-emergence in which a SMO is in some measure *formulating* new meanings and values, practices, and kinds of relationships that are *not workable*, or not logical enough for the dominant position to coopt and incorporate into the field of agricultural research systems. A single case study allows for detailed investigation into a particular case from multiple perspectives (i.e. multiple data sources). Using multiple data sources is a strategy for enhancing the credibility of findings. By using multiple sources of evidence, data can be triangulated, establishing converging lines of evidence to ensure rigor of findings (Yin, 2004).

The descriptive case study was chosen for this research for two main reasons. First, the main purpose of this research is to develop an understanding of pre-emerging social change. Second, descriptive case studies answer questions based on theory. The descriptions through the findings of cultural work help define the theoretical constructs under which a SMO is a mechanism for pre-emerging social change.

The following subsections present the research design, data collection, and data analysis used for understanding the dynamics of pre-emergence as evidenced by the cultural activities of a SMO promoting a progressive agenda for transforming agricultural systems.

6.1 Research Design

How TLI has been able to promote its progressive agenda without being coopted by the dominant position is a reflection of the organizational and participant interactions for producing certain types of meanings and activities in the field of agricultural research systems dominated by the agro-capitalist research complex. The research design for this study is an interpretive (Denzin, 1997) case study of a SMO of scientists, staff, board members, and constituents. Qualitative research questions get at meaning, context, and processes of social phenomena (Maxwell, 2012). Using an exploratory qualitative approach, I collected, analyzed, and interpreted cultural phenomenon, including human interactions and material artifacts.

I used a multi-method qualitative ethnography to study the process of pre-emergence using the case of TLI to focus on the role of cultural work in a counterhegemonic project. Ethnography offers a high level of engagement and adequate dialog between the researcher and participants, which allowed me to access the people interacting and constructing meaning in their natural setting (Hammersley and Atkinson, 2007). An ethnographic case study allows for emersion into a particular culture. Ethnography is a means for investigating cultural

phenomenon, such as human interactions and cultural objects produced by humans, by focusing on word and observational data. Ethnography uses fieldwork, participant observation, in-depth interviews, and cultural objects to provide a descriptive study of human interactions in different cultures, such as an organization.

I closely explored several sources to provide an ethnographic account of the case. Data sources include interviews, site visits, observations, and key texts produced by participants. The design combines qualitative analysis, textual analysis, and historical analysis. Focusing in on ideas and practices, these methods collectively examined three conceptual areas: organizational history, cultural work, and principles of vision and division⁴⁴ in the field of agricultural research systems. I focused on the qualities representing organizational and participant interactions producing values, meanings, practices, and relationships over time. Specifically, I use the multiple data sources to assess the organizational and strategic dimensions contributing to a politics of possibility in which pre-emergence unfolds. The purpose for using different data sets was to triangulate the data, or crosscheck information and follow up on discrepancies to establish reliability and validity of the sources (Yin, 2013). Analysis focused on properties from the data to help build theory on pre-emergence via an oppositional organization. The results represent rich insights with in-depth details on social contexts, presenting an interpretative account of observed activities while identifying thematic patterns.

I prepared Institutional Review Board (IRB)⁴⁵ documents for approval of my research, including participant Consent Forms (See Appendix 1). Except for the founder of the organization, I have not included names in the write up because names do not add to the

⁴⁴ Principles of vision are the ideas and practices promoted by TLI whereas principles of division, or difference, or the ideas and practices disseminated by the agro-capitalist research complex.

⁴⁵ This group review serves an important role in the protection of the rights of human research subjects.

substance of the account. Instead, I reference the position at times to provide context for the participant's information processing. As a non-profit organization, TLI's work is considered public information, so the account based on the data collected does not put the organization or its participants at risk.

6.2 Data Collection

Data used for this study were collected between 2013 and 2016. Interviews, site visits, observations, and key texts were used to identify the ideas and practices participants associated with TLI's progressive agenda and to gain insight into counterhegemony in action. Each set of data weighs in on various elements of TLI's philosophy and model in order to analyze the cultural work for nurturing a politics of possibility. In the preliminary phase of research, I sought out people and events that would help me gain access to the field, building relationships and trust with potential participants. I worked with a key informant from TLI to help me gain access to participants and key texts, such as the organization's incorporating documents and newsletters. I used the preliminary research to adapt questions for follow up interviews to get at the organizational history, cultural work, and principles of vision and division according to participants.

From 2013 – 2016 I conducted participant observation, taking field notes, during several organizational events, including three weekend-long Prairie Festivals (the organization's annual event), three special-invite events hosted by TLI, and two international academic conferences for soil, crop, and agronomy scientists. I also stayed onsite at the TLI offices for a total of eight weeks.

Additionally, I interviewed a total of 23 key actors of TLI, including staff, scientists, board members, and fellows. Using both purposive selection and data saturation techniques

(Charmaz and Belgrave, 2002; Patton, 2005)⁴⁶, the sample included TLI’s president, scientists, staff, board members, and fellows. Interview questions such as “What does the ideal agricultural system look like to you? How does that compare to our current system?” and “In your opinion, what can be done to move towards a more sustainable/ideal agriculture?” were asked to elicit actors’ interpretations of TLI’s philosophy and model for creating new experiences (see Appendix 2). Interview questions and observations focused on how participants frame the problem and solution of agricultural systems and how they see themselves fitting in the field of agricultural research systems. Interviews were conducted mostly onsite, at conferences, or via Skype and lasted for 30 – 90 minutes each. They were recorded, transcribed, and coded following a grounded theory approach (Corbin and Strauss, 2008).

The sample of texts included the following sources: 400 citations, 20 curriculum vitae of former Fellows, 4 major texts by founder, 14 boxes of archival records on the organization, 40 *Land Reports* (the organization’s newsletter published and circulated three times per year), 10 annual reports, governing documents of the organization (IRS Form 1023 and IRS Form 990), 3 key publications by TLI scientists, and the organization’s website. Texts represent meaningful artifacts of a culture, illustrating another way participants produce meaning and contribute to discussions and debates on visions of the field (Fairclough, 2003). Texts were used to articulate a story of self-representations according to participants. I examined the social representations each set of text portrays, focusing analysis on elements of TLI’s philosophy and model to assess the strategies contributing to a politics of possibility. An organization’s newsletter is a public

⁴⁶ The number of interviews, site visits, and documents for analysis is based on data saturation, or conducting as many as necessary for the data to become saturated to the point that participants are not revealing anything new (Charmaz and Belgrave, 2002). I selected participants based on their role and position within the organization with the purpose of interviewing a range of participants to get multiple perspectives. I worked with a key informant who introduced me to participants.

relations, or impression management, tool that participants use to project a certain image to its audience. In this sense, the newsletter is a representation of organizational bias and does not represent what is happening behind the scenes. Using multiple data points, such as archival records, interviews, and participant observation, helped to delineate the various representations enacted by TLI.

Close attention was made to the years in which milestone events occurred according to participants, starting with the year the organization was established: 1976, 1977, 1986, 1989, 1996, 1997, 1998, 2001, 2003, 2008, 2009, 2010, 2011, 2012, 2013, 2014.

Table 6.1 Milestone Event Years Used in Historical Analysis of Archives and *Land Reports* Representing TLI’s Organizational Trajectory

Years	Event	Location
1976 – 1977	The Beginning	Salina, Kansas
1986	“Tenth Anniversary Celebration”	Salina, Kansas
1989	“The Marriage of Ecology and Agriculture”	Salina, Kansas
1996	“20 Years”	Salina, Kansas
1997	“Agriculture as a Mimic of Natural Ecosystems”	Williams Australia
1998	Start of Fellows Graduate Research Program	Salina, Kansas
2001	“25 th Anniversary”	Salina, Kansas
2003	Half Life of Fellows Program	Salina, Kansas
2008	End of Fellows Program	Salina, Kansas
2009	“First International Perennial Grains Workshop”	Kunming, China
2010	“2 nd International Conference on Developing Perennial Grain Crops”	Wagga Wagga, Australia
2010	Kellogg Biological Station	Hickory Corners, Michigan
2011	Kellogg Biological Station	Hickory Corners, Michigan
2012	The University of Manitoba	Manitoba, Canada
2013	Food and Agriculture Organization of the United Nations: “FAO Expert Workshop on Perennial Crops for Food Security”	Rome, Italy
2014	“New Roots for Ecological Intensification”	Estes Park, Colorado

These years also represent organizational progression over time: early years in establishing the organization; transitional years for implementing an educational-based strategy at TLI; and most recent years for thriving at TLI. Charting the organizational history illustrates how the philosophy and model along with the mission and message have changed over time. Who are the key stakeholders involved, and what do their ideas and practices look like and how have they changed over time? Through a detailed examination of key texts of an oppositional organization, the strategies nurturing a politics of possibility in a liberated ecosystem can be described.

6.3 Data Analysis

An SMO is composed of a multitude of actors, resources, and activities, interacting in complex, unpredictable ways. I use research to provide a descriptive analysis of the data, illustrating the nature of the relationships contributing to a counterhegemonic project. I analyzed factors contributing to a counterhegemonic project (how a SMO promotes a progressive agenda without being coopted). The strategy for analysis was to look at the conditions, interactions, tactics, and consequences (Straus, 1987) of a SMO functioning as a liberated ecosystem nurturing a politics of possibility. Analysis focused on the primary inputs, the productive activity, and the primary outputs of the liberated ecosystem, or a SMO and its activists, policies, and institutional practices.

I used a deductive and inductive approach to data collection, analysis, and interpretation. This means I analyzed data dialectically, or iteratively, to link theory, methodology, and epistemology. In this way, analysis is both theoretical and descriptive. Through a dialectical approach, I started with analysis from the very beginning with a literature review and continued analysis throughout the data collection and formal analytic procedures. I used the literature

review to make connections between my experiences and TLI's organizational dynamics for enacting its ideas and practices. Then, I used a grounded theory approach (Glaser and Strauss, 2009) to develop a conceptual theory, or model, to look at the data from a different perspective. I used this grounded theory approach to explore how an SMO outside a field of power promotes its progressive agenda without being coopted by the dominant position.

To start, I turned to theory to enter into the field for research, meaning, I used theoretical constructs from previous literature to inform analysis. Specifically, I analyzed the empirical world to find evidence that supports, or not, the theoretical mechanisms of interaction for pre-emergence. In my preliminary exploration of the data (texts, observations, and interviews), the concepts that emerged appeared to support the resource mobilization, framing, identity, and networks models put forth by social movements scholars. I generated categories under these deductive themes and then gathered examples of those themes from the texts (see Appendix 3). This helped me to identify the principles of vision and division using a coding framework based on recurrent themes in the sociology of agriculture and social movements literature, including: principles and practices of the agro-capitalist research complex, forms of alternative-opposition, features of a politics of possibility, and resources mobilization. This deductive coding framework helped me focus on the participant's view and experiences while identifying patterns as evidence of social processes (Corbin and Straus, 2008).

From here, I inductively analyzed the data for patterns to get at the broader dimensions that get at the nuanced meanings of processes (Esterberg, 2002; Maxwell, 20012). This dialectical approach is flexible enough to allow for the particular to emerge from the participants in the field. The exploratory aspect of a dialectical analysis also allows for theory building. This iterative process allows for analysis to be in conversation with both the empirical world and

theory. I classified thematic groups based on participants' responses to describe their ideas and practices for sustainable agriculture. Some of the emerging themes included: legitimacy, struggles, transitions, and philosophical model (see Appendix 3). I used these emergent themes to identify patterns and trends. I generated themes to support theoretical issues on pre-emergence, oppositional forms, and power dynamics.

Through this iterative mapping strategy, I synthesized different data sources, including historical archives, interviews with key actors, texts produced by these actors, media on these actors, and observations of activities. Analysis emphasized the historical development and cultural activities contributing to a SMO's counterhegemonic project. I mapped the complex figuration of TLI's liberated ecosystem and its productive activity to understand the nature of pre-emergence. I identified thematic patterns that link to each empirical dimension of a politics of possibility (new language, new subjectivity, and collective action). For the findings, I described the complex repertoire of activists, or liberated ecosystem, in terms of its conditions, interactions, tactics, and consequences.

The model emerged through cultural analysis, historical analysis, and textual analysis through phases of coding, going from initial codes to more theoretically oriented codes, or from more specific to more general. Through an interpretive, holistic approach, I identified important themes for describing the on-the-ground nature of a counterhegemonic project, focusing on a few key issues to understand the complexity of the case. I did not seek to make generalizations from this analysis. Instead, the themes were used to support theoretical issues on pre-emergence and power dynamics. Data analysis focused on the following three, context-specific areas: organizational history, cultural work, and principles of vision and division in the field. In each of these context-specific areas, emphasis is given to the conditions, interactions, tactics, and

consequences (Strauss, 1987). I validated the evolving theory by comparing it with the data and checking with participants. The liberated ecosystem model (see Chapter 4) is a useful conceptual for the process being studied – that of pre-emergence.

Cultural analysis of ideas and practices plays a central role in this study. In this work, I focused on the conditions, interactions, tactics, and consequences of a SMO's productive cultural activity nurturing a politics of possibility. The main subjects of the study are the scientists, staff, board members, and graduate fellows of TLI. These actors are the ones creating new experiences making it possible to analyze their productive activity. I coded text from field notes, documents, and interviews to find statements on TLI's ideas and practices for promoting sustainable agriculture. As a negative case (Mahoney and Goertz, 2004), I used my review of the sociology of agriculture literature on industrial agriculture for comparison of ideas and practices. In this way, drawing on the possibility principle (Mahoney and Goertz) for theoretical exploration means that I selected the literature review as a negative case in order for the outcome of interest (pre-emergence) to be possible.

Cultural analysis investigates the key assumptions, values, artifacts, and symbols of a group⁴⁷ (Hatch and Cunliffe, 2013; Johnston and Klandermans, 2013; Schein, 2010). Cultural analysis can be used to gain insights into the successes and failures of structures and organizations, such as a SMO, to understand changes in society. I used cultural analysis to interpret the ideas and practices of a SMO promoting a progressive agenda for transformation to gain understanding on how culture is used to help sustain the SMO while resisting cooptation by

⁴⁷ Assumptions center on worldviews, such as: the relationship between humans and nature, the nature of truth and reality, the nature of human relationships, and the nature of human nature. Values describe what ought or should be done based on the underlying assumptions. Artifacts are the visible social and physical environments of a culture. Artifacts are derived from assumptions and values. Examples of artifacts include: written and spoken language, behaviors of members, physical space, technological outputs, and productions. Symbols are the acts or things that carry significance and meaning.

the dominant system. Specifically, I looked at how TLI's productive cultural activity ensures its ongoing survival of its vision, organization, progressive agenda, and constituents while not being coopted by mainstream culture. This analysis is used to help understand and map the trends of a counterhegemonic project.

I used a cultural analysis approach to present cultural work as strategies for the basis of how TLI ensures its ongoing survival of its vision, organization, progressive agenda, and constituents. Cultural work can be broken down into three moments, including: production, representation, and reception (Hall, 2001; Johnson, 1986). In the moment of production, TLI used a set of techniques to actively make and deliver cultural work. In the moment of representation, culture as product is signified by certain narratives, images, discourses, and representations. In the moment of reception, participant's respond in some way to TLI's cultural work.

Analysis was based on the following questions getting at 1) the making of culture (production) 2) culture as product, and 3) the reception of culture.

1. Active Making of Culture: What are the contexts and constraints that have shaped TLI's active making of its culture? How is TLI's cultural form displayed, represented, or transmitted to an audience? What are the techniques [methods] that bring TLI's cultural form to life?
2. Culture as Product: What are the narratives, images, discourses, and representations found within TLI's cultural form? What are the principles that bring TLI's cultural form to life?

3. Reception of Culture: Who are the intended audiences? How has the object been received, read, interpreted, and used by the audiences? What has been its appeal and ‘resonance’ for its audiences, and why?

I used historical analysis to examine the context in which TLI emerged to situate the organizational development, cultural work, and principles of vision and division of the field. Analysis focused on what is at stake in the field of agricultural research systems and identified the principles of primacy and legitimacy. Previous scholarship has established the industrial agriculture model as the prevailing paradigm in agricultural research systems. I drew on historical analysis of an organization to position opposition in a field of power.

I used textual analysis to get at the meanings and practices for TLI’s philosophy and model, drawing out its strategic repertoire, or modes of resistance. The participants act as a defining mechanism for the model. The ideas and practices of participants produce everyday reality, implementing categories of thought and action. Ideas and practices help to understand the logic and level of investment in the program.

For data entry and coding, I used field notes, transcribed interview scripts, and qualitative software *AtlasTi*. I examined the data to better understand the role of a liberated ecosystem’s productive activity for nurturing a politics of possibility as a contributing factor in the process of pre-emergence over time. Coding for themes centered on the organizational history, how TLI has been promoting its progressive agenda without being coopted over the years, and principles of vision and division according to participants.

The main limitation is the central strength of this research: a qualitative case study. While the case is not able to make generalizations, the design offers intense, particular insights into the everyday relational dynamics of participants. I used multiple data sources, or triangulation, as a

way to enhance the credibility and confirmability of the results (Golafshani, 2013). I also checked my interpretations with participants to ensure that interpretations of participants and context were accurate and complete. To ensure that my personal biases were not a threat, I kept a journal with research memos to reflect on my evolving thoughts through the research process. Bringing together multiple methods, sources, and perspectives of information enriches the narrative by adding texture, depth, and multiple insights to the analysis.

This analysis represents the ideas and practices that contribute to a SMO's counterhegemonic project for advancing a progressive agenda for social change while not being coopted by the dominant position. I examined the data collectively as a liberated ecosystem pre-emerging through its productive cultural activity nurturing a politics of possibility. Drawing on an interpretive, holistic, cultural analysis approach, I investigated pre-emergence of new experiences as a relational process in which actors are constructing and reconstructing meanings and practices. Empirical observation is expressed in words and themes to portray relationships.

In sum, I examined the data for insights on strategies for promoting progressive agendas for transformation. From this analytic approach, I organized my findings chapters based on thematic patterns, including the cultural logic of TLI (Chapter 7) and TLI's four cultural activities – creating a shared vision (Chapter 8), delivering values-based education (Chapter 9), doing place-based work (Chapter 10), and gathering together (Chapter 11). Taken together, the data provide an illustration of a counterhegemonic project in action. In the following chapter, I present the first set of findings that gets at TLI's uniqueness factor by showing the assumptions and values that are qualitatively different from the traditional order.

7 CULTURAL LOGIC: ASSUMPTIONS + VALUES FOR IDEAS + PRACTICES

Interests are rooted in values, for what is important, right, and good. Values are rooted in assumptions about the world, for what is considered to be real or true. In this chapter, I first present TLI's assumptions, or logic, understood as a particular way of thinking about the world. These assumptions, in turn, inform TLI's values, beliefs, practices, and relationships. I then consider TLI's main values-based ideas and practices. As I stated in Chapter 4, a counterhegemonic project is understood as a politics of possibility whereby activists are creating new language and new subjects to inspire collective action in order to transform mainstream culture. I call for a social-ecological imagination to visualize a counterhegemonic project by presenting the term liberated ecosystem as a concept for analysis to refer to an SMO's complex repertoire⁴⁸ of activists, policies, and institutional practices standing outside a field of power and nurturing a politics of possibility for comprehensive social change. I argue that a liberated ecosystem's productive cultural activity is a key ingredient for nurturing a politics of possibility, thereby, presenting the potential for transformation. I maintain that this cultural work for a politics of possibility contributes to the process of pre-emergence whereby new ideas and practices not workable to the dominant culture take shape. Before looking at the cultural activity forming on the ground, we need to look at the logic informing the cultural work.

I use this chapter to answer: what makes TLI's model qualitatively different from the industrial model? In what follows, I present the essential elements of TLI's oppositional paradigm before considering TLI's key ideas and practices: Natural Systems Agriculture, perennials in polycultures, a marriage of ecology and agronomy, and Ecospheric Studies. I show that TLI's model is a systemic alternative to capitalist modernity with its limitless growth, profit

⁴⁸ Repertoire defined as the supply of knowledge, attitudes, aspirations, and skills used in activism.

over people and planet, commodification, and privatization logic. TLI's model is also a paradigm shift away from positivist, reductionist science used to maintain the capitalist logic.

As indigenous activist Pablo Solon states:

The alternatives to this [capitalist] system can only be constructed if we deepen our understanding of the process by which capitalism reconfigures itself. Capitalism has shown that it has great flexibility to adapt, capture, remodel and create ways out for itself. What begins as an idea or a progressive movement is coopted, transformed and incorporated in order to maintain and reproduce the system. The challenge is to build alternative societies capable of breaking with the logic of capital and of avoiding cooptation by capitalism. The alternatives do not arise in a vacuum, they emerge in the struggles, experiences, initiatives, victories, defeats and resurgence of social movements. The alternatives arise in an often contradictory process of analysis, practice and proposals that are validated in reality (Fidler, 2016).

Progress in the name of capital is a linear path of technological and scientific improvement, marketization, universalization, rationalization, and consumerization. My purpose then, is to understand TLI as a systemic alternative in the process of its development, or pre-emerging character, in order to identify its potential for addressing the "crisis of sustainability" as result of capitalist logic (Orr, 1992).

7.1 Oppositional Paradigm

An oppositional paradigm is a representation of pre-emerging processes in which new ideas and practices not sensible to the dominant paradigm begin to percolate. As an SMO, TLI's logic, or assumptions for how the world works, is counter to the dominant culture, i.e. the agro-industrial research complex. Logic is the set of assumptions informing values, beliefs and their associated meanings, relationships, and practices on how the world works. By understanding TLI's logic, we can understand the organization's cultural work because assumptions on how the world works guide its cultural activities. The assumptions and values motivating TLI's cultural work are steeped in its organizational documents and the staff, scientists, board members, and

fellows. The logic that is relevant to TLI's cultural work includes its political-economic context along with its assumptions for property, temporality, epistemology, place, ecology, and nature.

I first turn to the political-economic context that has helped TLI to advance its model without being coopted. Throughout its history, TLI has been able to emphasize its cultural perspective over a material object, i.e. a marketable product, suggesting that the production of ideas is relevant to social change processes. Because the technology of perennial grains is still in development, TLI has not had a product to sell on the market for most of its history⁴⁹. Not having a marketable product allows the organization to buy time for a new culture with new political-economic institutions to emerge before the full-scale implementation of its technology. TLI sees the lag of its product as a benefit, hoping that the culture at large will shift to a more ecological perspective by the time the organization is ready to usher in the material object of perennial grains. One of the scientists has consistently mentioned this hope in his explanations to constituents. In a *Land Report*, he writes:

Here at The Land Institute, we are going to develop crops that will hold the soil in place, thrive in a diverse agroecosystem, and provide a good quality of life to people who grow them as well as to those who eat them. But mere plants can't do everything. Something must be given up. For example, these plants will not increase the share prices of agrochemical companies or help farmers become more productive wage workers or support animal factories. So, when people ask, "How long will it take you to breed perennial grains? I tell them, "*It's the job of you, and me and all of us to demand and work for new priorities in agriculture and in society. By the time we have an economic system that benefits the land, the people and communities living on the land, and the people who eat what they*

⁴⁹ In 2016, TLI's first registered trademark crop, Kernza, went on the market. Patagonia Provisions has been giving money to farmers over the years to grow the perennial crop. After doing research and testing to get the U.S. Food and Administration stamp of approval as safe, Patagonia Provisions processed the grain crop into beer, selling over 650,000 cans of beer on the first day it went to market. The company has been seeking out food crops that are suited for regenerative agriculture, demonstrating potential for an alternative track. The Perennial Restaurant in San Francisco, "a restaurant and bar that champions progressive farming," also has been getting in on the Kernza product to market action. General Mills, an iconic food processing company making up the agro-capitalist complex, another suitor of Kernza, is exploring market potential, tipping the scale towards the industrial logic. The door to the market has just opened, so how the product goes to market will be an interesting case to follow.

grow—and lets agribusiness fend for itself—I assure you, *by that time, we'll have the polycultures of perennial crops ready to go*" (LR(71), 2001:20, emphasis added).

Another scientist expresses some doubt:

Although there is considerable doubt that society can or will “choose” a more ecological world view...but many of us think it will come as the result of a breakdown in the current system (you know, like waiting for Obamacare to implode).

One of the Fellows suggests that TLI has not received much attention from the government because its perennial grains are not a marketable product yet:

There have been policy pushes that say because it [organics] makes up this much of our market therefore we should put a percentage of our research funding into it. And perennial polyculture hasn't received that type of traction, from the consumer end of things because it's not a deliverable yet.

As for the technology of perennial grains, the trait does not fit the agro-capitalist research complex substitution-appropriationism (Goodman, Sorj, and Wilkinson, 1987) model in that perennial seed is not a yearly input purchase to draw profit. Both the political economy and the technology in this way shelter the organization from being incorporated into the dominant culture. By articulating new cultural ideas and practices, TLI hopes that not just technology but also a shift in culture will contribute to the rearrangement of social-ecological relations in the broader world.

TLI interacts with the political-economic context as a non-profit, non-governmental organization. This means that TLI's structural location in society is neither constituted by market nor state interactions. Instead, TLI's organizational structure is situated in civil society. Institutions of civil society (Swynedouw, 2005), such as TLI, can be more nimble and more open compared to market and state institutions, which are constrained by their limiting logic and interests. Where market logic acts to maximize profit, i.e. return on investment, state logic must

support economic growth via the market while providing national security and upholding political legitimacy (Jessop, 2002). In this interlocking way, market and state institutions do not waver from their logic or interests.

Yet, TLI operates outside a field of power while interacting with the dominant logic. In 2001, Enron, a for-profit business, wrote to TLI seeking a partnership in “natural systems agriculture, financial derivatives and risk management.” TLI sent a response, declining the solicitation and pointing out that the two organizations were not on the same path. In response to TLI’s regrets, the Enron executive conveys the capitalist logic:

Thanks for the response...I am disappointed that your efforts will have such a long time horizon. There will be a lot of damage done in the next 25 years. I can’t help but wonder if there is a place for a financially minded company like Enron to alter the agricultural space the same way we did in energy...

In the old days, inefficiency was rampant, assets stranded, and energy supply was a local monopoly. Now, thanks in part to Enron, power can be provisioned more efficiently on demand. Even sulfur emissions can be traded and managed via free market mechanisms...

I can’t help but wonder what the state of agriculture would be like if the power of the free market was unleashed to manage nitrogen pollution, phosphorous, pesticides, etc. In such a world, organic farming and perennial agriculture would generate immediate and significant earnings in the form of publicly tradable derivatives. Sustainable farming would be profitable right out of the gate, instead of 25 years from now. Imagine the income statement of a local organic farmer including CO₂ credits, nitrogen credits, soil erosion credits, etc., all monetized in real time making his farm wildly profitable...

Anyhow, if you see a shorter term opportunity, please keep the Enron Xcelerator in mind. Otherwise, I’ll see you in 25 years (LR(86), 2006:21).

Enron’s logic is “financially minded,” “provisioned more efficiently,” “via free market mechanisms,” that can “generate immediate and significant earnings,” in the “shorter term.” In contrast, TLI is in it for the long haul, “25 years from now.” Moreover, TLI’s financial assumptions look different from the industrial model.

For TLI, economic systems should be a full accounting of inputs and outputs, including ecological resources. An industrial-capitalist model does not account for “externalities⁵⁰.” TLI received funding for its 10 year Sunshine Farm Project and additional funding for its Matfield Green community-based project to carry out detailed, full-accounting programs. The Sunshine Farm Project explored farming without fossil fuels, fertilizers, or pesticides. The lead scientist calculated the ecological and energetic food costs, comparing TLI’s perennial grain crops to conventional annual crops also grown without chemicals. In 1992 TLI and several Friends of The Land purchased some property, including abandoned houses, in Matfield Green with the aim to restore a dying rural town, population 56. The ecological community accounting project at Matfield Green investigated and accounted for the ecological patterns of local life. Both programs were designed to demonstrate the efficacy of NSA.

At an organizational level, TLI takes on a “financial conservatism” logic in its approach to resources. As a result, the organization has operated “in the black” since its inception, which many staff call praise to during interviews. This means that TLI has been able to meet or exceed budget projections, balancing expenditures and funds received. We see this logic from the beginning of the organization’s history when Jackson writes about a “philosophy of materials” in the second *Land Report* in 1977:

Are we really seriously engaged in a search for alternatives when so many of our projects are left-overs from the fat of our present culture? I posed this question to E.F. Schumacher when he visited in March. He didn’t answer right away, but as we walked away from the patio doors he said, “Never mind. Materials want to be used and they will show you how.”...Such an approach at The Land forces us to use our imagination. It also requires time. Here, I think, is the crux of the consideration. As important as materials during the coming period of scarcity will be **the imagination to use what we have and the patience to not feel terrible**

⁵⁰ An externality is a consequence of an economic activity affecting unrelated people or ecosystems; it can be either positive or negative. Pollution emitted by a factory that spoils the surrounding ecosystems and affects the health of nearby residents is an example of a negative externality.

if it takes awhile to solve a problem... I think we can justify using the excesses of affluence as a way of preparing ourselves for a future of scarcity. Perhaps our imagination can grow even as scarcity grows. Perhaps if we develop patience, we can cope more gracefully with scarcity" (LR(02), 1977:11, emphasis added).

Within a financial conservatism logic, TLI values imagination and time. TLI accesses resources by reusing and making do with what is available. TLI's logic is informed by E.F. Schumacher who wrote a critique of modern economics in his *Small is Beautiful: A Study of Economics As If People Mattered* in 1973. Schumacher advocated for appropriate technologies instead of mass production in the wake of the energy crisis and the advent of globalization. Financial conservatism of resources is unfamiliar to the consumptive, expansionary, and wasteful logic of industrial capitalism. Financials pose a threat, or vulnerability, for many non-profit organizations that find themselves closing their doors or selling out their models when they are not able to raise the necessary funds to maintain its work. TLI's financial conservatism logic has helped the organization to manage its budget. Throughout its history, TLI has been able to garner the majority of its financial support from foundations, followed by individuals. Very little of the budget has come from private corporations or government (see Appendix 4).

TLI's financial conservative logic also instills the value for community:

Friends and acquaintances in Salina know about our junk pile at The Land...most of the time we appreciate the gifts and the tips on inexpensive materials available (LR(02), 1977:11).

Over the years, TLI has received financial support and resources not only through its development efforts but also through the donations of friends and the community. Much of the land TLI has acquired over the years has been from constituents who have made donations for the purchase of land or donated their land to TLI's aim for conservation as a consequence of agriculture. TLI makes announcements to readers in its newsletter when the organization has benefited from the community spirit for giving:

With the help of generous donors, we paid cash for 208 acres at auction. The land is about half terraced upland field that has been in wheat and which we plan to use for experiments on sloping ground. The balance is native prairie and woods on the bluff overlooking the Smoky Hill River and valley (LR(74), 2002:18).

In a capitalist market logic, private property is the logic for ownership. The state institutes private property through patent rights, as in the case of the Plant Protection Variety Act (see Morris, Edmeades, and Pehu, 2006). In contrast, TLI follows open-source principles as a source of innovation, valuing a shared commons. Open-source seed is about freely distributing germplasm to individuals and organizations. One of TLI's scientists explains the difference between patented and open-source varieties of seed:

These days, farmers buy commercial, hybrid seed of some self-pollinating crops, such as grain sorghum, that could probably be bred and grown just as productively as nonhybrid varieties that don't require yearly seed purchase. To be fair, saving farm-grown seed isn't trivial. A farmer must clean it to eliminate weed seed and store it carefully to maintain good seed vigor. It's easier to buy the latest variety already cleaned, bagged and guaranteed. On the other hand, nonhybrid, public varieties of other crops are routinely grown and bagged commercially. They are more expensive for farmers than homegrown seed but less expensive than patented or hybrid varieties.

University and government breeders are reluctant to be seen as competing with seed companies by releasing new varieties when private, hybrid varieties are available. An independent organization like The Land Institute has the freedom to develop open-pollinated or hybrid varieties depending on the biology of the crop and the breeding objective. Either way, *we are committed to public ownership of our varieties and the free exchange of plants and seeds between breeders. And buying perennial hybrid varieties wouldn't commit farmers to buying new seed every year.* Perennial sunflower hybrids will continue to produce grain and maintain their hybrid qualities for many years before replanting is necessary (LR(86), 2006:14, emphasis added).

Short-term gain fuels the capitalist market, whereas TLI's logic is temporal in that the organization looks at the past, present, and future in all that it does. This temporal-line of thinking is evidenced in TLI's outline of "Land Institute Programs" in the 2017 Board Book. Acknowledging the past, TLI references Natural Systems Agriculture (NSA) as the

organization's first program and original concept, offering a solution to the "10,000 year problem" of annual cropping systems. Turning to the present, TLI asserts that the "contemporary problem" of widespread use of pesticides and non-renewable resources is compounding the problem. The next two programs include TLI's research, "Perennial Grains Research" and "Ecological Research," which mentions the current research along with the "potential for many more perennial grains" into the future. From here, TLI highlights the importance of the present for "Multiplying Our Efforts" to spread its reach and develop widespread collaborations. The final program listed is "The Road Ahead," whereby the organization is focused on the future for: fostering research; developing and freely distributing germplasm; building a body of knowledge; providing a core team and drawing on cooperators for their expertise and facilities; communicating ideas to scientists and citizens. Throughout the description, we see that TLI takes on a temporally interconnected perspective to its work.

The interconnected temporal breadth of TLI's logic shows up again in its newsletter to constituents. In its 2003 Land Report, the authors write about TLI's work in articles titled: "Why We Do What We Do," "What We Do and How," "Where We are Going," and "What Will Come After Fossil Fuels?" Together, these articles provide temporal context for the problem of agriculture while offering a path for a more sustainable future (LR(76), 2003).

A long-term approach to its work is part of TLI's temporal logic. The long-term approach is seen in both its research and development efforts. This long-term logic is in contrast to the short-term logic of industrial agriculture as pointed out by one of the scientists in TLI's newsletter:

The 25 to 50 years expected for achieving [perennializing current annual crops and domesticating promising wild perennials] appears impractical in a world of three-year research projects. But the problems of soil erosion and degraded water from annual cropping have been with us for millennia. These will worsen

with the rising pressure to meet the planet's expanding food needs. If, in 50 growing seasons, there is in place an agriculture that both provides adequate yields and supports our ecological foundation, the time required for success will have seemed short (LR(76), 2003:8).

TLI's long-term logic in research translates into its development efforts. For example, in its "Investment Policies and Goals," TLI sets the conditions for its approach to funding:

TLI has endowment funds that need to be invested...The investment fund shall be invested in a manner that provides a reasonable long-term rate of return on the investment fund and in a manner that considers preservation of the investment fund for the long term and the long-term needs of TLI...The Committee may invest in assets that do not pay dividends or interest if the Committee believes the long-term capital appreciation or other future income from the assets is a reasonable basis for making the investment...In making any acquisition or disposition of assets of the investment fund, the Committee shall attempt to minimize the number of sales and purchases in order to reduce the fees and other transaction costs and shall attempt to make long-term investments because it is difficult to predict short-term market changes (ARCHIVE: Board Book, 2017).

Turning to TLI's epistemology, reality is steeped in evidence, ignorance, and context, or place. TLI emphasizes the "reality" of the problem based on *evidence* pointing to degrading soils, water pollution, decreasing biodiversity, and spreading of toxic chemicals associated with annual agricultural systems. TLI's science is inspired by a "harmony beyond hard facts" in which TLI deals with hard facts and assigns value to rigor but is also "tempered by common sense, intuition and practical wisdom derived from practice and experience in the context of particular places" (LR(70), 2001:21).

An evidence-based reality is tempered by *ignorance*, according to Jackson. Jackson follows an "ignorance-based world view" in which we embrace the unknown, the mystery, and recognize that we are more ignorant than knowledgeable and always will be. In this way of thinking, Jackson asserts, "[w]e would learn patience, and we would enjoy a kind of yeastiness for thought...this also would do the absolutely necessary job of driving knowledge out of its

categories...Acknowledging that we are fundamentally ignorant, we now can ask a question that goes beyond the available answers, and that's going to force knowledge out of its categories” (LR(81), 2005).

However, we have not been in tune with an ignorant-based knowledge, Jackson claims, because the problem of agriculture is a result of an uncritical faith in scientific knowledge. Jackson rejects the belief that science and technology are benign and at the service of society. Paradoxically, knowledge and insight accumulate fastest in the minds of those who hold an ignorance-based worldview, according to Jackson, because examination of the alternatives to a technology-based culture expands imaginations. We know what we know; we know there are things we do not know; we know we can continuously ask questions to better understand and reveal what we do not know; we know that mystery will always pervade our knowledge. From this logic, we can conclude that we should allow the known and the unknown to coexist. If we assume that we are limited in our knowledge on what we know about our world (i.e. we simply can't know everything about everything), then we need to work along side the unknown.

Context is important in TLI's set of assumptions. The *genius of the place* means that the local context matters. Here we see the assumption that knowledge and wisdom are contingent on the local place. TLI's genius of the place logic represents a place-based consciousness for communities living sustainably. Jackson calls to attention:

a broader goal of becoming native in the modern world, and that means becoming native to our places in a coherent community that is in turn embedded in the ecological realities of its surrounding landscape (1994:3).

The idea for genius of the place is translated into TLI's practice: the perennials in polycultures farming systems that TLI envisions can be planted anywhere. The assumptions for TLI's research are based on the “genius of the place” in which the context of local place

(including people) is taken into account.

An ecospheric worldview is based on ecological principles featuring holistic systems, interdependent interactions, emergent properties, and supraorganismic realities. The reasoning for supraorganismic realities counters the reductionistic logic of industrial agriculture. The definition for supraorganismic realities references the distinction between the industrial model and TLI's model:

the search for meaning at lower and lower levels of agriculture blunts the higher level search for more inclusive realities...[because] organisms do not stand on their own. They evolve and exist in the context of *unified ecological systems* that confer those properties called life (Jackson, 2010:58, 59).

This line of thinking sets the stage for emergent properties, defined in the natural sciences as: "When units of biological material are put together, the properties of the new material are not always additive, or equal to the sum of the properties of the components. Instead, at each level, new properties and rules emerge that cannot be predicted by observations and full knowledge of the lower levels. Such properties are called emergent properties (Novikoff, 1945)" (Lobo, 2008).

Jackson is known for saying:

The social is a derivative of an ecological worldview.

This means by adhering to a sustainable ecological order, social justice will follow. This perspective is in line with the ecological influential influencers that Jackson follows. In a *Land Report*, TLI quotes from Liberty Hyde Bailey's "The Holy Earth":

One does not act rightly toward one's fellows if one does not know how to act rightly toward the earth.

For TLI, social justice starts with making sense of diversity with the different forms of life on the planet, how the different forms of life experience the world, and how they should be treated.

Nature as Measure is a model for the common good/health of humanity. The core assumption of Nature as Measure is that nature is imaginative by necessity and is the archetype for survival. Humans can look to nature to see what works because microbes, plants, and animals have already solved many of the problems humans are facing. Ultimately, nature acts as instructor and judge of human behavior. This strategy for survival turns to nature for the answers to a sustainable future. The features of natural ecosystems promote sustainability, or permanence. (ARCHIVE)

Distinct from industrial agriculture's technological fundamentalism is TLI's logic that technology is in service to nature. This assumption acknowledges that technology has limits – technology can be used to enhance what is inherent to nature. Technological determinism sees solutions to the problem of ecological degradation through a tools and technology lens. Even mainstream environmentalists suggest: “we finally have the tools and technology to make a global shift from fossil fuels to clean energy, affordably and effectively” (EcoWatch, 2016).

All this to say, TLI offers a language that describes the intricate and robust ways human beings interact with the world. TLI's logic describes the complex ways that human beings are interrelated to and shaped by the nonhuman world in which we live (see Table 2 for summary of logic). Subjectivity is not about humans being separate, in control of, or superior to nature – humans are a part of interconnected ecosystems. This underlying logic informs TLI's main contributions to the field – its ideas and practices. Findings show that TLI has been judiciously articulating a vision informed by a set of values not workable enough for industrial agriculture to incorporate into mainstream culture. Specifically, TLI has been promoting an emergent type of thinking and doing, including: Natural Systems Agriculture (NSA), Perennials in Polycultures, Marriage of Ecology and Agronomy, and most recently Ecospheric Studies.

Table 7.1. Qualitative Differences between TLI’s Logic and Industrial-Capitalist Logic

TLI Logic	Industrial-Capitalist Logic
No product to sell	Marketable product
Systemically change culture	Maintain cultural hegemony
Full accounting	Externalities
Financial conservatism	Tradable financial derivatives
Open-source seed	Patented protected seed
Commons	Private property
Evidence, ignorance, context for knowledge	Science ultimate knowledge
Genius of the place	Universalism, standardization
Social is derivative of ecological integrity	Humans are superior to nature
Humans-nature interconnected	Humans separate from nature
Ecological principles	Agronomic principles
Technology is in service to nature	Technological fundamentalism

7.2 Natural Systems Agriculture

We have already seen how TLI’s logic includes an ecological worldview for both its work and culture at large. This logic shows up in its original concept “Natural Systems Agriculture” (NSA). Unlike the term “sustainable agriculture,” the concept of Natural Systems Agriculture has not been coopted by mainstream culture.

Jackson has been cited as one of the first people to use the term “sustainable agriculture” in a publication (Kirschenman, 2004). While his use and application of the term were not part of popular discourse at the time, contemporary use of the term has rationalized and standardized the original concept, incorporating it into mainstream culture. Sustainable agriculture is still part of TLI’s discourse despite the various interpretations that have evolved over the years. Sustainable agriculture allows the industrial logic to piecemeal the principles into its model, whereas Natural Systems Agriculture starts off with the idea that nature is the ultimate source of knowledge, creativity, and ingenuity. Humans, with their technology, are in service to nature.

Each of our programs is intended to increase the likelihood that our society will improve the ecological sustainability of our food supply. Natural Systems Agriculture is an original concept, one that requires perhaps 25 years and a large investment to develop. However, there seem to be no other programs to achieve such an integrated range of improvements. Our other programs and frequent presentations in public forums build a constituency and acceptance of new ideas for agriculture. Food should be a vital topic to everyone, since we all eat (LR(73). 2002:22).

In a grant proposal to a foundation, Jackson emphasizes the uniqueness of the Natural Systems Agriculture approach:

Our pioneering agricultural research results have the potential to change not only farming but the lives of rural communities, the majority of which operate at a disadvantage. Increasingly, expensive inputs and low prices have reduced self-reliance and loss of local control. Our brand of agriculture, called Natural Systems Agriculture (NSA) would require little reliance on outside inputs, be they from the seed houses, chemical companies, or farm machinery companies. Moveover, with NSA, conservation is a consequence of production” (KHS, 1998(3863-3865)).

Natural Systems Agriculture (NSA) is TLI’s main concept informing its research. The primary principle informing TLI’s research is “nature as measure” for an inherently sustainable biological system. This approach to agricultural systems looks to “nature as model” for agriculture. This means that natural ecosystems are the measure for developing and managing agricultural systems. The genius is in the place, as we previously saw, whereby agricultural systems should emphasize context, accounting for the conditions of place-based ecosystems, which includes humans as one part of many making up an interacting life-nonlife system.

NSA can be summarized by the following hypothesis: agricultural systems can be converted from net consumers of ecological capital to conservers, or even creators, of ecological capital by imitating the structure of local ecological capital-rich native ecosystems. Natural ecosystems are the result of millenia of evolutionary trial and error, building soil and sponsoring increased genetic diversity. Conventional agricultural systems are young in evolutionary terms, and already have consumed or degraded much of the original ecological capital (soil and genetic diversity) (KHS, 1998(3866-3869)).

TLI's ecological perspective views conservation as a consequence of agriculture, meaning agricultural practices conserve the soil and resources, allowing the necessary time for regeneration. The NSA conceptualization is predicated on an agriculture that mimics natural ecosystems. This concept informs TLI's research for developing diversified perennial grains agriculture. Jackson outlines activities of is NSA program in a proposal:

We seek 1) to mimic the major features of the prairie ecosystem and explore whether nature's virtues can be retained even as we push to equal the grain yield of annual crops; 2) to perennialize the major crops and to domesticate perennial grain candidates. The conceptual and practical milestones achieved for Natural Systems Agriculture have gained us credibility within the scientific establishment. We hope wealthy individuals and institutions will understand the necessity to fund research on Natural Systems Agriculture beyond our historical support from foundations.

Program goals: a) continue to elaborate on the proven assumptions of NSA and b) develop the crops and agricultural methods necessary to implement a farming system based on NSA (KHS, 1998 (3866-3869)).

Jackson is devoted to hiring scientists who assume ecosystem as model. The tallgrass prairie ecosystem in particular serves as the model for TLI's research on perennial grains in polyculture systems. Scientists at TLI use its backyard, the prairie, as a model for conceptualizing NSA because out on the prairie "nature as measure" takes place. Native prairie ecosystems, such as Konza Prairie, feature mostly perennial plants, species diversity, and herds of grazing bison. The root systems of native prairie grasses are deep allowing the plants to hold soil in place preventing soil erosion. According to TLI scientists, fundamental features for an agricultural system based on natural processes include perenniality of plants, diversity of species, and animal integration. Advocates of NSA believe that looking to nature as the standard for practicing agriculture is the best way to achieve sustainability.

NSA is qualitatively different from industrial agriculture (see Table 3 for summary). With "nature as measure," NSA is the antithesis of an industrial model of mechanistic thinking.

An industrial model views nature as something that can be controlled and manipulated. In NSA approach, “nature as measure” means that nature serves as the teacher, the model for humans. In an industrial model, efficiency, calculability, predictability, and control, or McDonaldization (Ritzer, 1998), rank supreme. Scientific management is based on rationalization and standardization in an industrial model. Ecological principles informing TLI’s research and NSA are alternative to the agronomic industrial dogma producing the bulk of our food today. TLI’s NSA concept is the basis for its research and development of perennials in polyculture systems. For TLI, agricultural systems can be re-ordered to be more sustainable in which conservation is a consequence of production.

Table 7.2 Qualitative Differences between Natural Systems Agriculture and Industrial Agriculture Models

Features of Natural Systems Agriculture	Features of Industrial Model
Mimicry: Management strategies used to mimic natural ecosystem structures and functions.	Mechanistic: Management strategies used to control and manipulate nature.
Internal Integrity: The intrinsic benefits of ecosystems, or nature, to self-regulate and to accumulate ‘ecological’ capital. Ecosystem health is characterized by stability, resilience, diversity/complexity, efficiency, and equitability.	Human Integrity: Humans the ultimate source of knowledge for mining nature’s benefits.
The Genius of the Place: Knowledge-Wisdom is contingent on the local context.	The Universality of Placeless-ness: Knowledge has universal properties in that it is uniform in nature and can be applied to any situation, in all places.
Supra-organismic Realities: Refers to “the search for meaning at lower and lower levels of agriculture blunts the higher level search for more inclusive realities” because “organisms do not stand on their own. They evolve and exist in the context of <i>unified ecological systems</i> that confer those properties called life” (Jackson, 58, 59).	Reductive Realities: Dominant perspective that assumes the material world (matter) is truly real; all processes and realities observed in the universe can be explained by reducing them down to their most basic scientific components, e.g., atoms, molecules, and everything else thought to make up what we know as "matter."
Perennial Polycultures: Cropping system that follows the practice of growing two or more crops together on the same tract of land in a crop season. The crops are alive year around and harvested multiple times before dying. Benefits: prevent soil erosion, energy conservation, tight nutrient cycling, water-use efficiency, biological nitrogen fixation, and pest management.	Annual Monoculture: Cropping system that follows the practice of growing one crop on a tract of land year after year. The crop is harvested and reseeded and replanted from year-to-year.

7.3 Perennials in Polycultures

The industrial food we eat today is largely based on annuals, or crops that grow for one season, in a monoculture system, or a practice that produces a single crop in a wide area for a number of consecutive years. Staple grain crops, such as wheat, corn, and rice, make up about

70% of the global cropland and provide about 70% of human food calories. The goals of an industrial-agronomic cropping system designed for global markets are productivity, efficiency, and organization. The goals for a cropping system inform research and plant breeding goals. Increased yield is the primary plant-breeding goal that supports agricultural productivity goals. As a result, these cropping systems are highly specialized and uniform, resulting in low diversity. Input-dependent cropping systems of the industrial-agronomic model have relied heavily on irrigation, tillage, and application of chemical fertilizers, herbicides, and pesticides.

Jackson and his colleagues argue that an industrial, agronomic approach to agriculture that is reliant on inputs derived from fossil fuels has caused serious ecological degradation, economic instability, and social problems across the world because the industrial process is based on mechanical and chemical inputs informed by agronomic principles for production and efficiency to increase yield. One of the late TLI scientists informs its newsletter readers the consequences of industrial dependence:

In the long run, soil and water are more important than oil. But because the American food system is increasingly dependent on fossil energy, we ignore the declining quality and quantity of our soil and water resources. During the last 200 years, at least a third of our cropland soil has been lost (LR(12), 1981:12).

Based on the NSA concept, Jackson and plant scientists at TLI are researching and developing an alternative form of staple grain crops (wheat, corn, rice) by breeding for the trait perennialism in these annual plants. At TLI, the goal of the research team is to develop diverse perennial⁵¹ grain production systems that are ecologically efficient and resilient like natural ecosystems. Specifically, plant breeding efforts are dedicated to perennializing the major grain

⁵¹ Perennial crops, such as nuts and fruit trees, grow for multiple years and make up a small portion of current agriculture, and some are grown as annuals, such as asparagus, in that the crop is harvested each year. Alfalfa is a perennial legume that is produced for forage and has sparked controversy since breeding has used genetic modification techniques to develop a seed variety that is resistant to herbicide.

crops and domesticating wild perennials for grain. For scientists at TLI, the primary output of a perennial-polyculture cropping system is conservation to maintain ecosystem health.

Specifically, this type of cropping system is being designed to provide food while protecting soils, water, and biodiversity. A perennial-polyculture type of design incorporates the characteristics of the native prairie. Rotational management and livestock can also be features of a perennial-polyculture cropping system.

The goal is to find and breed perennial grasses that can produce high yields each year, and be planted in polycultures that reduce insects, pathogens, and weeds, and renew soil fertility, especially nitrogen and carbon. Researchers have planted four thousand wild relatives of annual grains in order to isolate hardy high yielding varieties that can be developed through further cross breeding.

The criteria TLI scientists use to select for a perennial, mechanically harvested grain include: hardy persistence; stiff, erect culm; synchronous seedset; resistance to shattering; rapid dry-down at maturity; easy threshing; relatively large seed; and good seed flavor (Cox et al, 2006). There is debate in the field on what constitutes classical techniques versus modern plant breeding. Scientists at TLI consider the techniques they use as mostly traditional breeding augmented by some of the modern techniques, such as marker-assisted selection. According to one of the scientists at TLI:

Traits like perenniality that involve complex genetic control and interact with the environment are not susceptible to improvement through manipulation of individual genes. Therefore, there is little chance that transgenic technology can dramatically speed up the development of perennial grains from annual × perennial hybrid populations (Cox et al, 2006).

Assuming the NSA concept, the plant-breeding program at TLI relies on selection, wide-hybridization, and domestication methods to perennialize staple grain crops that will produce adequate yield in an intercropping, or polycultures, system.

TLI's plant breeding program has made significant progress over the years. While breeding is the top priority of the research team, TLI has recently made a push in its ecological

research, hiring a Director of Research and Ecologist in 2012, to understand and compare different crop management strategies for growing perennial grains. Ecological research has been going on all along at TLI, but it has taken a back seat in the last 20 years to plant breeding, not because it is less important, but because “we NEED the perennial hardware,” the Director of the Ecology Program emphasizes. He notes that natural systems ecology work is being done in the field, which is directly relevant to Natural Systems Agriculture.

The dominant can only see, or understand, alternatives that can fit within its logic. The case of organic agriculture is an example of an alternative that has been incorporated into the industrial, capitalist logic of agriculture. Compared to the Green Revolution technologies, industrial organics are grown in monocultures and follow input substitution practices. Industrial organics is a slower death of the living soil because the soil is disturbed each year harvesting annuals and lacks diversity in a monoculture system.

The industrial logic is eyeing perennials, but perennials in polycultures are not workable to the dominant position. One of Jackson’s sound bites suggests that TLI’s work is not functional to the industrial model:

If we stop at perennial monocultures, then we’ve missed half the point.
(Jackson).

This statement infers the failure of organics. What Jackson means is that perennials grown in monocultures, like industrial organics, do not adequately transform agricultural systems. Moreover, organic annuals still have to be sown each year, disturbing the soil. Perennials in polycultures go beyond organic annuals in monocultures and even organic annuals in polycultures. TLI is a supporter of organics and the ecological principles that inform the process, but in practice, organics has run into cooptation along the way. For comprehensive

transformation – to get it wholly right – perennials in polycultures are necessary to transform agricultural systems, according to TLI’s model.

7.4 A Marriage of Ecology and Agronomy

While “nature as measure” is the underlying assumption for TLI’s research, its philosophy includes an integration of ecology with agronomy. TLI’s approach to science reflects an interdisciplinary perspective as opposed to disciplinary silos specializing in separate research areas.

Jackson advocates for a “marriage between ecology and agronomy.” For Jackson, a new research agenda for agricultural systems is necessary. Carrying out a new agenda in agriculture requires a major shift in consciousness – from an economic development perspective that assumes infinite resources or infinite substitutability to an ecological accountant perspective. This new agenda is one based on a dialectical interaction with nature in which change is the rule (1994:112).

we of Western civilization have moved from the church, to the nation-state, to economics as the primary organizing structure for our lives...It is time to move more aggressively on to the fourth phase, already under way, ecology (1994:116).

Jackson openly critiques the Cartesian worldview for being reductionist and for stressing the parts of things over the whole ignoring “the profound reality of the whole affecting its parts even as those parts affect the whole” (1994:19). For Jackson, the Cartesian worldview “has created problems for humanity...[and] has contributed to our alienation from nature” (20). “Science is supposed to be value free but the reality is that our values are able to influence the genotype of our major crops and livestock” (21).

Jackson (1994) calls on scientists to “reject [reductionist] methodology, not altogether but *as the dominant way of discovering*” (111, original emphasis). He goes on to say “it takes

courage for agricultural researchers to risk looking downward from the ecosphere and seeing nature's ecosystems in the mosaic as primary objects of study" (111).

An alternative to the "knowledge-confident" Cartesian worldview, according to Jackson, is based on an assumption of ignorance in which we do not have complete or correctable knowledge. An ecological, evolutionary view informs scientific investigation in which "we must turn to nature to inform us, to serve as a reference, must turn our thoughts to building a science of ecology that reflects consultation of nature" (1994:25). Jackson draws on the epistemological and ecological logic that was outlined in the previous section to advocate for a marriage between ecology and agronomy.

7.5 Ecospheric Studies

Ecospheric Studies, put forth by Jackson, represents TLI's most recent enactment for its value of education. While the term "Ecospheric Studies" is a new addition to TLI's discourse, the idea has been part of TLI's philosophy all along. The program is an outgrowth of TLI's aim to instill a "homecoming major," a "place-based education" into the school system. In Jackson's early works, he refers to a "homecoming major" as one that educates people to go back and become native to place and teaches "ecological community accounting" (1994).

Later on, TLI collaborates with several Chase County schools to implement a Rural Studies Program at Matfield Green in the Kansas Flint Hills that is a "place-based education." Through a grant, TLI collaborated with Emporia State University and the Rural Challenge to set up a program directed at school districts to educate school children on sustainable communities. The goals of this PLACE (People, Land, and Community in Education) program were:

- 1) to help students acquire a deeper sense of self, a stronger appreciation of their home place, and a better understanding of their role in the community, and
- 2) to promote the enhancement of small, rural communities (LR(59), 1997:16).

TLI's homecoming major, place-based education, and ecospheric curriculum all represent a comprehensive education based on an ecological worldview in which place matters, people are part of place, and people and place are interconnected. This line of education emphasizes interdependent thinking and practicing. When we start thinking from this perspective, we can start going beyond the individualistic way of understanding our place on this planet and start imagining interdependence and sustainability. Opening up the imagination to interdependence opens us up to equitable, democratic forms of social-ecological order.

Ecospheric Studies is TLI's embryonic project for re-imagining and restructuring current educational curricula and pedagogical practices at the university level in ways that challenge the prevailing beliefs in progress, individualism, and rationality and foster new ways of understanding the relationship between humans and the natural world we inhabit. While the target is the university, TLI envisions an Ecospheric Studies grounded in an ecological worldview that reaches across educational levels and into all aspects of society.

In 2015, Jackson initiated his Ecospheric Studies project by inviting 30 individuals to take part in a gathering to discuss ideas for such a curriculum. A follow-up gathering took place in 2016. The opening remarks of the Ecospheric Studies gathering in 2015 demonstrate how TLI's ideas and practices are qualitatively different from the industrial model of agriculture:

Ecospheric Studies 2015: Welcome

Jackson: The purpose of the event is to bring together like-minded individuals who can help overturn the fundamental thinking of the dominant culture. This requires a rethinking of place. Humans have colonized the planet but have not really discovered it. We will need to be brave as possible to oppose the dominant worldview.

Participant: Earth has been a farm for 10,000 years; it has been a machine for the past 400 years; now we are asking Earth to be an Ecosphere. Our culture needs to reassess the primary operating assumptions of society. This is a disruptive task that alters current reality while constructing a new reality.

Reordering reality requires new ways of being, knowing, valuing. The alternative conceptual model that we envision is one in which nature is Alive! Nature is not a machine. We need to develop new cultural habits and rituals to affect change. We need an education that refreshes our imagination. The work before us is to institutionalize an emergent and Ecospheric worldview.

Participant: A rebellion is necessary to push boundaries to look at things differently. Nature is Alive! This is a different way of seeing nature. Nature is also dynamic, interconnected, whole, creative, evolutionary, self-aware, interactive.

TLI Scientist: We need to shift from a carbon intensive economy to one that accounts for Energy Return on Investment. We live in planetary boundaries that have limits, so we must abide by these limitations, creating and working within those limits.

Here we see qualitative differences between Discovery vs. Colonization; Alive vs. Machine; Energy Return vs. Carbon Intensive; and Limits vs. Limitless. We also see key features: “dynamic, interconnected, whole, creative, evolutionary, self-aware, interactive.” A politics of possibility is unfolding through TLI’s remarks whereby the speakers provide new language, offering new experiences for subjects to consider: limits are creative and freeing and open up possibilities by telling us what cannot be done while setting us free to discover all that can be done.

In sum, TLI calls for a fundamental transformation of production and consumption patterns and existing institutions to realize a “nature that is Alive!” representing a more sustainable, equitable, and democratic world. This philosophy is based on a “nature as measure” perspective which is a counter-narrative to the dominant industrial agricultural research systems discourses. Instead of agronomy as the dominating knowledge system, TLI aims to marry ecology and agronomy to draw on the complementarity of the disciplines. TLI’s purpose, then, is to transform agricultural systems in order to achieve sustainability in society. To do this, TLI claims that perennial grains in polycultures that mimic natural systems will produce sufficient food for communities across the world while eliminating the negative consequences of industrial

agriculture – “conservation will be a consequence of production.” Education, through Ecospheric Studies, is a necessary component for this paradigm shift for TLI. Taken together, TLI’s paradigm provides meaning and purpose by explaining human’s place in the world. TLI’s worldview for human-nature interactions offers context for ethical thinking.

In this chapter, I documented the logic along with the ideas and practices of TLI, an SMO promoting a progressive agenda for sustainable agricultural systems. I highlighted the features of TLI’s model that are qualitatively different from the industrial model. This logic along with the main ideas and practices inform TLI’s main cultural activities, outlined in Chapters 8 – 11. TLI, as an SMO, represents a cultural-based strategy for transformation. TLI is one example of how an SMO uses cultural work to create new experiences that are not fully functional to the dominant culture. I maintain that cultural work is a productive component of social change.

Before moving onto TLI’s four cultural activities, I want to set the scene with two vignettes. First, in TLI’s first newsletter to constituents, Jackson describes the all-in-one experience of TLI’s cultural activities – vision, education, work, and gathering – nurturing a politics of possibility:

[The work for erecting physical structures at TLI]...These are the tangible alternatives, the visible effort...But there is the intellectual and religious effort as well...As we go through the checklist of environmental problems...we find ourselves asking the oldest religious questions. Where did we come from? What kind of thing are we? What is to become of us?

In our search we have carefully studied [Robert Pirsig, Theodore Rozak, Aldo Leopold, E.F. Schumacher]...

When our heads begin to spin, we are secretly happy that the visitor to The Land cannot inspect these dizzying thoughts...Yet the scholarly and religious are as much a part of The Land effort as [the tangible projects]. Perhaps these ideas lie in the safety of the shadows cast by the technological alternatives, and like them they are waiting for their time to come. (LR(01), 1976).

Here we see that cultural work is a combination of physical, intellectual, and spiritual work. This effort takes place in the classroom and out on the prairie and includes the ideas from inspirational influencers and the interactions with visitors, or referred to as “Friends of The Land” by TLI. Jackson sets the stage for critical thinking – posing deep, worldview questions in the classroom.

Now, imagine:

You are a graduate student in the agricultural sciences, plant breeding, ecology, or perhaps crop sciences, and you are awarded a fellowship. You receive anywhere from \$3,000 to \$9,000 to cover some, but not all of the costs of your dissertation research. Now, as part of this fellowship you have to attend a week-long workshop in the summer hosted by the organization that awarded you the fellowship. This workshop is like an academic conference, with speakers and presentations, but it's not - it doesn't take place in a stuffy conference room of a hotel. Now imagine that you are at this workshop, out on the Flint Hills in the middle of Kansas. You are inspired by the intellectual rock stars who are guest speakers at this gathering; you are stimulated by the expansive conversations that spill over from the daylong workshop into the evening as you play frisbee and drink beer. These are your people; you are comfortable here. Now imagine you are about to give your presentation on your research. You are out on the prairie or in the make-shift research lab down in the basement of a house. It's a Kansas summer, so it's hot. You are wearing comfortable clothes – you don't change into anything formal for your presentation. As you present to your peers along with the intellectuals you emulate, you notice that you are thirsty - perhaps from the heat, perhaps from your nerves, most likely both - so you take a swig of beer. Then you finish your presentation.

The above scene is also representative of TLI's cultural work for a counterhegemonic project. In the next four chapters, I outline TLI's main cultural activities nurturing a politics of possibility. The findings presented in the following chapters indicate that TLI has been able to promote its progressive agenda without being incorporated into the dominant position through four productive activities: creating a shared vision for alternatives; delivering values-based education; doing values-based work; and gathering together.

8 SUSTAINING A SHARED VISION

In this chapter, I focus on the cultural activity *visioning* which is the dialectical process for actively making a vision and generating the vision as a product. Envisioning systemic alternatives is about desiring something new, thinking ethically. Throughout its history, TLI has been envisioning systemic alternatives, creating new language and cultivating new subjects to inspire collective action. TLI's vision is a complex of ideas opposing the dominant paradigm. Envisioning systemic alternatives is both a critique of the current political economy and a vision for a new social order. For TLI, their comprehensive vision presents a path for an “enduring community,” for living more sustainably as evidenced in its current mission statement.

The vision serves to set a broader agenda, inspire constituents, and signal action. TLI promotes its agenda for social transformation through alternative discourses, creating a shared language and opening up subject thinking for a politics of ecospheric possibility. An ecospheric imaginary envisions a sun economy of renewal replacing a fossil fuel economy of extraction and exploitation. The practice of Natural Systems Agriculture fosters alternative ways of being – instead of humans controlling and dominating nature, nature becomes teacher while humans are part of an interconnected nature constituted by humans and non-humans, biotic and abiotic.

8.1 Active Making of Vision

In this section, I provide the context that has shaped TLI's vision for systemic alternatives. I start with the external context and then dive into the internal milieu for TLI's envisioning cultural activity. My goal is to get at the active making of TLI's vision. I describe the main activities for bringing TLI's vision to life: spreading the gospel through Friends of The Land, using slow communication, using a historical imagination, and introducing influential intellectuals.

An SMO must be able to access resources to actively make a product. Since the social movements literature points to resources as a necessary component of the mobilizing and organizing process, I use this theoretical explanation as an assumption that TLI has had adequate access to resources to advance its agenda. The resource mobilization perspective says that SMOs succeed through the effective acquisition of material and non-material resources, mobilization of members, and development of political opportunities. I consider the resource mobilization perspective to be an input into a liberated ecosystem. Structurally, the vision is made possible through internal staff and resources along with external support via funding and donations. Instead, I focus on how TLI is actively making its vision as part of its cultural work with resources (financial, built, human, social, ecological) as a given.

TLI is one of the many organizations that originated out of the growing awareness and concerns of ecological degradation in the U.S. and across the world. Scholars writing on the environmental movement have depicted the 1970's as a period of legislative victories as evidenced by the passage of a variety of environmental laws and policies during this time (Faber, 2008). Although environmental consciousness among the public was on the rise, the idea of sustainable agriculture was still on the margins when TLI was establishing its school. It was not until 1990 when the USDA recognized sustainable agriculture in its policy. Both then and now, funding for sustainable agriculture makes up a fraction of the overall USDA budget. TLI's vision for systemic alternatives reflects opposition to the larger ideological and political-economic realities shaping agricultural research systems both then and now. TLI's decision to go out on its own, separate from the land-grant system, was an attempt to promote its philosophy for solving the problem of agriculture based on its an ecological perspective. To this day, TLI must secure

its own resources to survive in a landscape dominated by the agro-capitalist research complex. It also must find ways to gain legitimacy for its philosophy and model.

The organizational structure has helped TLI in its active making of vision because its non-profit status is an alternative to the agro-capitalist research complex. TLI operates as an education-based non-profit, non-governmental organization with a board of directors. The organization started with nine board of directors and has grown to 16. In its first newsletter, TLI introduced each board member and their affiliation and stated:

The **Board of Directors** for TLI consists of individuals who have expressed high **interest in the goals, philosophy and projects of The Land**, and who have agreed to **guide and support** the non-profit educational corporation (LR(01), 1976).

The original policy was broad in its requirements, whereas the board's current policy for recruiting board members is more specific, targeting individuals who can help with fundraising. The current policy also states that new Board members should be the type of individual who "shares a belief in NSA" and scientist board members should "not be committed to reductionist approach to science" (ARCHIVE: 2016 Board Book). Both the original and the current policy emphasize the importance of TLI's philosophy. Here we see where TLI's language interacts with subjectivity in that individual board members should be a believer of TLI's original concept, NSA, while providing guidance, support, and connections.

As an outgrowth of TLI's philosophy, organizational policy influences the type of subjects that TLI targets. The board has played a significant part in TLI's vision by providing support to Jackson over the years. As one of the staff members explains, Jackson goes to individuals on the board to work out his ideas. The board has been a source of "continuity" for the organization with several members serving for the organization throughout much of its history. John Simpson, founding member of the Board of Directors and initial financial

contributor, currently serves on the board, serving a total of 40 years, Don Worster, 27 years, Angus Wright, 19 years.

As another structural component, the various programs TLI has delivered over the years have been instrumental in the organization's vision making. From the intern program, tours, short courses, and fellows program, TLI puts on a show by sharing the vision, presenting new language and creating new experiences for its participants. As one of the Fellows states, one of the values of the Fellows Graduate Research Program was the ability to engage in TLI's vision up close and personal:

I learned more about how to communicate why TLI thought perennial grains could work because I definitely went back to my home institution and people saying "you really bought into that?" and I still get a little of that to this day. So there was a little just general education on sort of their understanding and the state of the science.

As an education-based organization, TLI has been effective in structurally organizing its policies and programs around its vision making. While the structure keeps TLI grounded, TLI's active making of its vision is a dynamic process. The vision has evolved over the years as evidenced by the change in its mission statement.

TLI's original mission statement:

The Land Institute is a non-profit educational research organization devoted to a search for alternatives in agriculture, energy, shelter, and waste.

Compare to TLI's current mission statement:

When people, land and community are as one, all three members prosper; when they relate not as members but as competing interests, all three are exploited. By consulting nature as the source and measure of that membership, The Land Institute seeks to develop an agriculture that will save soil from being lost or poisoned, while promoting a community life at once prosperous and enduring.

Looking at TLI's history, the organization's emphasis on alternatives in society has shifted from broad-based alternatives to a specific focus on agriculture. The original mission of

TLI was to seek alternatives in agriculture, energy, shelter, and waste management. The original scope of the organization's work included alternatives in all aspects of society. That mission has since changed to a more focused calling, emphasizing the agricultural domain for researching and developing perennial grains in polycultures over other societal domains. As part of its current mission, TLI sets out to "save soils, protect water, and promote an enduring community." Moreover, the statement connects the social to the ecological by including a vision for an "enduring community" that is linked to healthy soils and clean water. TLI's vision contributes to a reordering of social-ecological relations in the broader world.

Finding alternatives to the mainstay institutions is still very much part of TLI's vision for transformation – current practices need to be uprooted and replaced with a new way of thinking, doing, valuing, and relating. However, TLI's emphasis on agriculture represents Jackson's belief that "if you don't get sustainability right in agriculture first, then you won't get sustainability at all." Meaning, if society does not first figure out how to provide for its own subsistence, i.e. food, in a sustainable way, then society will miss the train, arriving too late to build sustainability in all other aspects of society. He also is referring to the fact that agriculture has ecology to stand on, and thus it is actually possible to imagine sustainability. The rest of the industrial economy is more difficult to imagine, with respect to sustainability. Strategically, TLI narrowed the scope of its vision to focus on alternatives in agriculture in order to direct its work and resources in hopes for shortening the timeframe for making transformation in agricultural systems.

In an agenda for an organizational meeting in 1988:

Purpose: To determine what The Land Institute should be doing. Dana and Wes stressed the importance of having goals and objectives relevant to the needs of society. Keep the focus on the mission and vision; institutional viability will follow. We can hire a management consultant to advise on organizational matters. Ivy said The Land's viability is a concern of hers. I suggested that realizing a cultural transformation in which nature becomes the standard is the primary mission of

The Land, and that perennial polyculture—our best idea to date—is but one embodiment of this larger transformation goal.

Overview: During this meeting, we used Conn’s model...to articulate goals for The Land’s primary work. We must still set priorities for the use of our limited money, staff, and time" (KHS_1988_3662-3668).

From the start, TLI has taken on the role as a vision maker. Although TLI opened its doors as a school, offering a semester program for six to eight college-age students, spreading the gospel is very much part of TLI’s cultural work. The organization has been promoting its vision, targeting multiple audiences over the years. In its first newsletter, TLI mentioned:

We would like to be in contact with people across the country who are experimenting with solar energy, wind energy, organic gardening and other appropriate technology. Along with books and papers, we would like to receive information about the network of spiritual allies which we know exists (LR(01), 1976).

From the start, TLI has been cultivating solid relationships with individuals and organizations that support its vision for alternatives, and in turn, these relationships have helped to spread TLI’s philosophy. TLI’s strategy to share its vision with a diverse audience shows up again in its Education and Public Policy:

We seek to reach our **constituents and citizens** from farmers to school children to policy makers (LR(57), 1997).

Spreading the gospel, or delivering the vision to a broad base of constituents, is a collaborative effort that relies on friendship ties. The school was established in part by the external support of friend and original board member, John Simpson, who donated \$5,000 to help start the school. Jackson has publicly acknowledged the significance of Simpson’s support on several occasions, including most recently at Jackson’s last Prairie Festival as acting President of the organization. He told TLI’s story of origin to the Festival audience by starting off with “I was roasting a weini” with friend, John Simpson discussing what he, Jackson, was going to do at

the end of his sabbatical. This was how the story was told by the editor of the Land Report in issue 70, celebrating TLI's 25th anniversary:

At a weenie roast during the summer of 1976, Wes Jackson mentioned to John, then a Kansas state senator, that he was thinking about starting a school. After discussion, John said, "If you want to start a school, Wes, I'll help you." John did the legal work to obtain the institute's nonprofit status, then paid half of the tuition for each of the first students and became a member of the board of directors. With Wes, John is the only founding member still on the board (LR(70), 2001:9).

This original friendship between Jackson and John Simpson served as a platform for TLI's organizational structure. Again, the social movements literature refers to this friendship tie as a social resource.

The Prairie Writers Circle, an editorial syndicate, is an example of external reach through friendship ties. In 2002, TLI worked on an editorial project with two Friends of The Land who had media connections, one was a contributor to the *New York Times*' op-ed pages and former editor and columnist of the *Salina Journal*, the other was the former publisher of the Journal and had become member of the head company. Through this friendship ties, TLI was able to extend its reach to deliver its vision for systemic alternatives. As a weekly syndicate of essays, The Prairie Circle was sent out to editors across the nation. The syndicate was a way to reach a broader audience while connecting contributors with similar ideas to TLI. TLI introduced The Prairie Circle to its readers in its newsletter:

This year we more broadly spread our word and those of the like-minded. To reach The Land Institute's aim for ecological farming and culture healthily connected to it, there must be greater public awareness and help. So we have begun bringing together writers and distributing their essays for newspaper op-ed pages...The Circle's Kansas contributors are leaders of environmental organizations and interested others. National members take similar ecological views but on a broader scale. A thread running through much of the commentary is the need for sustainability in agriculture and community. Topic examples include industrial agriculture and the problems it poses, water quality, soil erosion, energy efficiency, land use, habitat preservation, biotechnology, environmental politics and the relationship between the environment and human

health.” [released essays are posted on TLI’s website] (LR(73), 2002:20)

TLI has been deliberate in cultivating supporting-role relationships to promote its vision. As another example, TLI established an Advisory Team. The idea for an Advisory Team was a recommendation from organizational consultants who worked with TLI on a funding plan in 1981. The consultants suggested that TLI establish a project Advisory Board of “local and national leaders who will lend credibility and funding contacts” (KHS_1981_3659-3661). By 1998, TLI established a NSA Advisory Team in conjunction with the Fellows Research Program. In its newsletter, TLI introduced some of the advisory members to readers:

Board comprises over 65 scientists and practitioners in ecology, agriculture, and policy who are willing to endorse the potential of our work, to discuss its need and benefits to national policy, to assist in articulating its feasibility to funders, to critique the research program, and to offer suggestions as the work unfolds (LR(62), 1998:28)

Our NSA Advisory Team, now 111 members, provides advice and critique and endorses our work. Staff-advisor interaction has increased. NSA Advisors referred half of our new Graduate Fellows, and NSA Advisors supervise half of all Fellows in their graduate programs. Throughout the year, Advisors provided useful information and assistance via countless phone and e-mail conversations (LR(66), 2000:22).

While TLI operates outside of the agro-capitalist research complex, it has reached into these very same institutions to cultivate relationships with individuals who “are objective the right way,” meaning constituents who understand and support TLI’s philosophy. Both the USDA and the LGU have institutionalized opportunities for sustainable agriculture through programs, such as Sustainable Agriculture Research Education (SARE). While these institutionalized programs of sustainability are marginalized, it does open the door for alternative-oppositional organizations like TLI to make its case. TLI has developed solid connections, and in turn, these relationships have helped to promote TLI’s vision. When professors have students come through

their program expressing interest in sustainable agriculture, they often refer students to TLI's work. This has turned into students reading Jackson's books, making the trek to Salina for a Prairie Festival or tour, or applying to the intern program or the Graduate Fellows Research Program. These students then become part of TLI's network.

All this to say, TLI has been deliberate in cultivating relational subjects, designing an organizational structure that draws on these relationships to promote its vision for systemic alternatives. TLI has intentionally and structurally cultivated a cadre of individuals to help carry out its work. TLI has used internal mechanisms, such as its policy and its newsletter, *The Land Report*, to deliver its vision to an audience, and it has extended its reach externally by cultivating its connections through Friends of The Land.

The turtle can win the race. Cultural change requires time and commitment that goes beyond an individual's lifetime. TLI's vision comes alive through what some of the development staff refer to as "slow communication." Jackson is known for saying: "If you're asking a question that can be answered in your lifetime, then you are not asking the right question." This statement represents the underlying assumption informing TLI's cultural activity slow communication. Telling a complex story requires time to articulate, cultivating new language and creating new experiences for subjects. Slow communication is a meaningful way to relate new language to constituents. Communicating the same ideas over and over through conviction allows new discourse to emerge. TLI likes to sit down with people and tell the story. Jackson relates new language to constituents through continuity and slow communication. While the scope of TLI's work has changed over the years, its philosophy for NSA has been steadfast.

TLI's newsletter is a slow communication tool for delivering its vision to constituents. TLI's communications are the antithesis of mainstream social media for short and instantaneous

messaging. While TLI has taken on social media to convey its message, TLI intentionally takes time to tell its story of complexity and difference. Taking time to tell the story is a demonstration of care for the people along with the ideas.

Published three times a year, *The Land Report* is TLI's organizational newsletter. The newsletter has been in circulation since TLI's inception in 1976. The original publication was approximately 12 pages of text, photos, and images and has expanded to an average of 40 pages of text, photos, and images. *The Land Report* represents TLI's slow communication method for delivering its vision for systemic alternatives. The newsletter is a combination of visionary statements, philosophical reflections, musings on daily organizational activities, political-economic-social perspectives on alternatives, and dense scientific information. TLI's representation of the human-nature relationship comes to life on the pages of its newsletter to constituents.

[T]he purpose of this publication is to inform readers about the work of The Land Institute, the people who do the work, and the ideas and values that guide us. The articles reflect our interest in a broad spectrum of issues that relate to the sustainability of agriculture, including natural resources conservation, environmental quality, human health, and the viability of rural communities. Staff, interns, members of the board of directors, and Friends of The Land contribute articles (LR(35), 1989: 2).

The format of TLI's newsletter has changed over the years as new editors take on the work. One of the sections that has been fairly consistent in more recent years is "At The Land." This section is used to give updates on the various projects going on at TLI. Also, the editor announces incoming and outgoing staff members or board members, upcoming events where TLI will be presenting, past presentations made by TLI, and publications that have showcased TLI's work. TLI has used its newsletter to highlight the student projects and the fellows' research over the years. Both students and fellows have reported on their work in TLI's

newsletter to constituents. These reports provide evidence for projects and research on alternatives.

Slow communication allows time for a historical imagination⁵² to take shape. A historical imagination, an important part of TLI's making vision, is about making connections, specifically, relating things that seem unrelated to demonstrate patterns. For Jackson, stories are used to connect the abstracts to the particulars. This means that abstract ideas are grounded in particular realities. Stephen Jay Gould (2002) suggests that making connections between the seemingly unconnected is the secret of genius. This linking up of ideas is part of an open imagination, which plays an important role in creating new meanings and new subjects. Using a historical imagination to tell a story is an element of surprise, causing the audience to stop and think. Connecting the dots requires reaching across diverse disciplines to illustrate patterns. Making connections through a historical imagination reflects the breadth of creativity that goes into vision making, i.e. Jackson's art for storytelling.

Jackson defines a historical imagination as: "the ability to see small and think big, has never been more necessary. And I am not talking about thinking globally and acting locally" (LR(104), 2012). For Jackson, this means that a historical imagination must be both small and big because just thinking big leads to melodrama and fantasy while just thinking small leads to overlooking history. Seeing small and thinking big looks at not only what happened during the Industrial Revolution but also what has happened for the past 10,000 years, what Jackson refers to as the "The Great Non-Renewable Carbon Interlude" (26).

Jackson draws on Wendell Berry to further define a historical imagination. Here he emphasizes place, affection, and sympathy.

⁵² Jackson attributes Adam Gopnik's (see Gopnik 2012) ideas on the historical imagination and adapts the phraseology for telling stories.

Evidence of TLI's historical imagination can be found in TLI's newsletter in many of Jackson's contributions. In "A Letter from the President," Jackson connects an article in the local newspaper to the status of workers in Russia:

The collapse of the Soviet Empire represents the first major failure of the industrial mind. We should more or less ignore the difference between capitalism and the Soviet brand of communism here, for both systems have sought to concentrate power and in so doing greatly reduce the number of people on the land and in small communities... Two important messages come through to me, at least, messages of what we need to do here at home to prevent the eventual likelihood of widespread upheaval. First off, we need to aggressively consider ways to keep people on the land and in the small towns who are already there and secondly to imagine and implement ways to get some people back onto the land and into more traditional relationships with sun, soil and rural community (LR(59), 1997:3)

Jackson is known for using a historical imagination to make connections to tell a complex story of difference to envision systemic alternatives.

Jackson also brings in guest speakers from diverse backgrounds to help tell the story. This conglomeration of experts draws on diverse language as represented by their locational knowledge, yet, the language connects, converging into a pattern. The pattern for including guest speakers in its programs represents the philosophy that TLI espouses.

TLI is very aware of the historical context and the people who have influenced its ideas. At the Prairie Festival in 1998, TLI celebrated the legacy of Aldo Leopold, author of *A Sand Almanac*, 50 years after his death. TLI invited Leopold's children who read passages from their father's writings to Festival participants gathered out on a hill overlooking the Wauhob Prairie.

Leopold's influence is evident in Jackson's work. Jackson offered a course titled "Toward an Ecological Ethic" at CSU-Sacramento where he established one of the nation's first environmental studies programs. Many of Jackson's writings reference Leopold's thought,

including Leopold's "The Land Ethic" statement. For Jackson, Leopold's way of thinking and living were both comprehensive. As Jackson states:

Leopold's insights were "robust" because he kept himself abreast of both the old and the emerging developments in ecology. He was also a student of history, society, and cultures...he led an integrated life, one in which scholarship provided genuine insights (LR(61), 1998:3).

Leopold has influenced both the education and research programs at TLI. The intern curriculum represents Jackson's aim to develop a new ethic, including "The Land Ethic" espoused by Leopold. This new ethic is "robust" and based on ecological thinking. To this day, Jackson draws on Leopold's ideas to inform his philosophy, showing up in Jackson's most recent project for developing an Ecospheric Studies program.

Jackson cites inspirational influencers with a deep respect, suggesting them to be seedlings of an imminent revolution:

Leopold's ecological savvy turned him into a first-rate practical philosopher...his ecological insights de facto caused him to challenge some assumptions of modern science itself. More than any notable ecologist since Darwin, Leopold's mind ran against the tide of Baconian-Cartesian thinking (3).

What is evident throughout the active vision making process is that the most prevalent resource is social capital, or network ties. When looking at the significance of social capital in TLI's vision making, what we see is the organization's value for community. While the literature suggests the structural significance of social capital for social movements, we can look at the cultural meaning according to participants. For TLI, social capital represents their value for community.

8.2 Vision as Product

In this section, I focus on the narratives, images, discourse, and representations that inhabit TLI's vision. Envisioning systemic alternatives is a language and subject shaping

process. The style and content of the vision creates new language and cultivates new subjects via everyday life, contributing to the process of social change. TLI, as a liberated ecosystem allows participants to critically engage in discussions on the big issues of our time.

In situating TLI's vision within context, we can see that TLI's vision for sustainability is one of many alternatives. Specifically, TLI's vision is part of the deep ecology movement's rejection of atomistic individualism. The vision is also part of agroecology's integrated science, practice, and social movement perspective resisting industrial agriculture.

In digging into TLI's vision, we can see that TLI's cultural work entails a narrative pattern of discourse, including: a utopian ideal; a call for a paradigm shift; a complex story of difference; and a problem-solution..

TLI's vision for systemic alternatives can be categorized as a utopian ideal with a comprehensive agenda based on a set of ecological principles. TLI's vision represents an agenda, an ideal to work towards, a solution to a problem, to promote an enduring community. A comprehensive agenda uses a vision of transformation, a mission for carrying out the vision, and a model for transformation. For TLI, the vision is a solar economy of self-sufficiency and renewal; the mission for achieving this vision is to find alternatives in agriculture as the basis for all aspects of society; the cultural form of the model is the education producing alternative knowledge for NSA, while the material form of the model is the research and development producing perennial grains in polyculture systems. TLI's approach to sustainability is an envisioning strategy for systemic alternatives, nurturing a politics of possibility.

A utopian, ideal vision is not necessarily an end state. Instead, a utopian, ideal vision is a conscious narrative for the possibility of a sustainable society. A utopian, ideal narrative helps to

bring into being the world envisioned. By cultivating a utopian, ideal representation, TLI inspires and mobilizes ethical, ecological subjects.

TLI's vision is a utopian society with an ideal agricultural system. The last chapter of Jackson's book, *New Roots for Agriculture*, is devoted to a utopian vision of a farm outside a solar village in central Kansas in the year 2030 and is a description of a sustainable agriculture and culture. The utopian style has showed up in many of Jackson's writings and speeches. This utopian vision is a lived experience that shows up in how participants view TLI's philosophy and work. Participants view TLI's implementation of perennial grains in polyculture systems as a radical perspective that takes change, or sustainability (i.e. alternatives) to a comprehensive level.

The features of an ideal agricultural system, according to participants:

From an ecology perspective, I think TLI sorta has it right in that the ideal system would be different in different places, it would be regionally or site specific, and to the extent possible would be based on the natural ecosystems that succeed in those places that do well and that are productive...That's such a hard question from a social perspective. What would the labor look like? Or what would be the institutions that could support that type of thing? I almost think it's easier from an ecology perspective to come up with that vision.

Another Fellow:

The simplest way to put it [the sustainability divide within their own institution], the most crass way, "tweaks versus transformations." The subset of people who think, we need a completely different [system], we should be pushing more for a revolution and a completely different social and economic context for agriculture, sort of like TLI's position in some ways [this is transformation]...Not everyone at TLI lines up from a social perspective but they certainly, when they're talking about an agroecosystem it's a very transformative system that they're talking about. I have many colleagues here who would just advocate for minor tweaks within our ag systems to get us closer to sustainability because that's the pragmatic or feasible way to go and that we're never going to realize my utopian vision of whatever it is of a perennial grain future.

For this fellow, their heart is more on the transformation side because it is what is necessary and most effective to address the sustainability crisis.

Participants view TLI's model as a radical departure from the current ecology of the biophysical systems. Perennial grains in polyculture systems reorders human-nature relationships, starting with the emphasis on perennials as a plant that a farmer does not need to be sowed each year, supported by polycultures with multiple crops growing together on the same tract of land each year.

TLI is one of many organizations promoting an ecological model that replaces the industrial model of agricultural systems. TLI's solution is not just about a technical fix – TLI tells a story as a way to signal a shift in culture. TLI's vision is a call for a paradigm shift in worldview. A cultural shift goes hand in hand with material transformation because agricultural production systems following an ecospheric worldview will change accordingly. TLI's research work is dedicated to ushering in a material transformation, but TLI's vision for sustainability with accompanying ecological assumptions is its way of advancing the necessary cultural and material reordering of society.

Jackson believes TLI's work is more important than the Copernican revolution because modern society is facing a global crisis as evidenced by global warming. The Copernican revolution did not change how people treated the earth, according to Jackson. The human-nature relationship is key in moving towards sustainability.

Jackson makes his case in “Conceptual Revolutions: Who Needs Them? Why?:”

In the midst of all of our efforts we don't want to forget that the conceptual revolution of which I speak would require us to not constrain our view of Earth as containing the living and the nonliving, but to think of the entire planet as alive...evidence supports the hypothesis that the nonliving world gave rise to life...the only truly creative force at work in the world today is between what we call the living and what we call the nonliving” (6)...“Is it [the destruction of our

home] inevitable? Finally, a hopeful No! But a conceptual revolution is necessary, and this time a moral one, because it's perceived by us as necessary. And essentially all moral imperatives in civilized life require codification beyond the mental abstraction. We will need the morality and the code to help stop our dumbness, arrest our arrogance, shelve our greed and set ourselves on a journey measured by how independent we become of the extractive economy (LR(83), 2005:7).

A Friend of The Land writes about TLI's call for a paradigm shift in the organizational newsletter:

Jackson wants people to think hard about the boundary of consequences that we have accepted with industrial agriculture. His institute has taken on the daunting task of expanding boundaries of consideration in agriculture beyond mere efficiency and short-term profit, to include and respect ecological and evolutionary principles...Unfortunately, our economics-based culture finds it exceedingly difficult to set boundaries that accommodate such principles. Taking a long sweep of history, Jackson sums it up this way: “[W]e of Western civilization have moved from the church, to the nation-state, to economics as the primary organizing structure for our lives. We have been through the hypocrisy of the church, the atrocity of the nation-state that peaked with Hitler, and now we are devotees of economics, the encoded language of human behavior that directs toward ecological bankruptcy. It is time to move more aggressively on to the fourth phase, already under way, ecology.” (LR(84), 2006:6-7)

In a TLR article entitled “Where We Are Going”, Jackson invites the reader to imagine a future vision – a future in which perennial grains in polycultures become a reality. He postulates that historians would write about this material and cultural shift in time. Jackson outlines the factors that contributed to the material-cultural turning point, or paradigm shift:

Historians have explored this shift that began about 2000

1. Culture at large became conscious...
2. These questions [searching for a new paradigm of nature] led students to systematically examine landscapes between the extremes of ecological and historical determinism...
3. A major cultural barrier began to fall...
4. Funding in university departments, particularly in agronomy and crop science, had withered as biotechnology expanded. Offices, laboratories, growth chambers, greenhouses and acreage were all in place, but with little funding to support the research of plant breeders, plant pathologists and soil scientists. Leverage of these public assets was slow at first. The idea had to

be sold that it was possible to develop an agriculture in which progress could be measured by its independence from the extractive economy” (LR(76), 2003:18).

Jackson draws attention to a shift in consciousness. In this thought experiment, we see that a paradigm shift is necessary for our survival. A paradigm shift involves changing our deepest assumptions about the world and our role in it – from assuming separateness to assuming connectedness and wholeness. A paradigm shift calls on subjects to see the big picture and to act out of awareness of their role in it.

Storytelling is a long-standing tradition of culture and can be used in cultivating a politics of possibility and fostering change. Telling a story both produces culture and is a product of culture. Storytelling can be used in effecting positive change in worldview and attitudes, such as sustainable agriculture (Grace, 2011).

The content of TLI’s story is complex. Telling the story of the “10,000-year-old problem of agriculture” is TLI’s main strategy for presenting new language to visitors, school groups, new staff, visiting scholars, and prospective donors. The story tends to start with the “genesis of civilization” which is linked to the “genesis of agriculture.” This story is complex and takes time – after all, the story starts 10,000 years ago, at the beginning of human civilization when agriculture became the basis for food production leading to human settlement and city centers. The story is a detailed, historical, and philosophical account of agriculture, drawing on ideas, settlement patterns, and land use. The story is critical, pointing out “where civilization went wrong,” “took the wrong turn,” how contemporary society is going about agriculture wrong. From here, the story presents TLI’s robust solution, emphasizing its approach to research – a NSA perspective which uses nature as measure to think about agriculture.

An intern shares with *Land Report* readers in “Telling the Story”:

Solving the 10,000-year-old problem of agriculture will not be easy. One of the initial challenges is also the most time consuming—understanding and explaining the cause of the problem. We tell this story to anyone who shows interest in our work—visitors, school groups, new staff, visiting scholars—because it helps them understand our mission and why the solution of the 10,000-year-old problem requires no less than a paradigm shift...Like any story, the one we tell has a setting and characters, a history of ideas and achievements, and sets an agenda for future action. We begin using nature as our standard” (LR(62), 1998:6)

TLI has enlisted the expertise of others to help narrate and frame its story. In 2005, TLI invited a professor of rhetoric to give feedback to the Fellows on narrating science to the public (LR(82), 2005:24). According to the guest scholar, the five classic canons of rhetoric for telling a story include: invention, arrangement, style, memory, and delivery. Indeed, TLI uses different rhetorical devices to narrate its story, making a case against industrial agriculture while making an argument for NSA and perennials in polyculture systems. TLI creates a complex story of origin; the arrangement is made through connections of people and place; the style is bold and prophetic; the story is repeated through continuity to nurture a collective memory; the delivery of the story is through slow communication.

The challenge in telling a complex story is how to tell it so people get it. The scientists are aware of this and discuss what is the most effective way to tell the TLI story – focus on the philosophy and principles or the technical science? Scientists at TLI use a “hardware-software” analogy to help a general audience understand complex, scientific concepts. The recurring image that TLI uses is a computer analogy: the hardware in agriculture consists of the components of an agricultural system, and the software is the entire set of rules and procedures associated with the agricultural system. According to this analogy, the diagnostic hardware is the monocrop annual informed by an agronomy software, while the prognostic hardware is the polyculture perennial informed by an ecology software.

The style of TLI’s complex story is one of difference. The story is both descriptive and

prescriptive, highlighting the difference between “brands” of agriculture. TLI positions itself as an alternative paradigm to the current model of industrial agriculture. As the story told by Jackson suggests:

The extractive economy will end, but the “creatureliness” of these perennial grain species will keep them viable and available for change through future breeding...The industrial sector will have a more difficult time. It lacks “creatureliness.” (LR(104), 2012:25).

Creatureliness, represented by nature’s ecosystems, is the antithesis of industry’s mechanical process. Creatureliness, such as biological nitrogen fixation, features high information and low temperatures to function whereas industry’s mechanical process, e.g. Haber-Bosch process, represents low information and high temperatures in the form of standardization, universalism, and nonrenewable fossil fuel consumption. TLI is breeding for a creatureliness that depends only on air, water, and soil in which perennial grain species grown in mixtures are information intensive and operate at low temperatures⁵³. According to Jackson, the industrial sector lacks “creatureliness.” Jackson’s perspective also suggests that TLI’s approach cannot be coopted by the industrial model, opening up possibility for comprehensive transformation.

⁵³ Jackson states: In nature’s ecosystems atmospheric nitrogen is harvested by the symbiotic relationship between legumes and bacteria using 21 enzymes at 4/5 of one atmosphere at soil temperature.

Table 8.1 TLI’s Story of Difference

Industrial Agriculture	TLI’s ‘Brand’ of Agriculture
Short-term (5 years farm bill)	Long-term (50 years farm bill)
Extractive Economy	Renewable Economy
First about economics for production and quick profit	First about ecology for sustained production through conservation
Disciplinary divide	Interdisciplinary team of scientists
Patent protection	Free germplasm
Subsidies	Incentives
Annuals	Perennials
Monocultures	Polycultures
Grain-fed livestock	Pasture-fed livestock
Degradation as consequence of production	Conservation as consequence of production
Control over ecosystems	Mimic ecosystems
Standardization, universalism principles	Place-based principles
Technological determinism	Technology in service to nature

In telling a story of difference, TLI situates the divergence between the industrial model and TLI’s model of agriculture as a problem-solution phenomenon. In the social movements literature, this problem-solution strategy is one of framing. An envisioning strategy explains clearly the cause of the problem, presents scenarios of the future, and prescribes exactly how to get from here to there.

TLI is openly critical of the current social, political, and economic structure. For TLI, the current capitalist structure “is destroying the long-term ability of the land to support a variety of life and culture” (LR(23), 1985:5). Jackson continues his critique, simultaneously pointing out the solution:

We seek alternatives based on the wisdom of nature rather than the cleverness of humans. We believe humans must accept limits by controlling their numbers, their consumption of the earth’s resources, and their pride and greed which has led to the potentially disastrous nuclear arms race (LR(23), 1985:5).

One of the former scientists also explains in “Prairie Patterns and their Relevance to Sustainable Agriculture:”

By now, the environmental and social problems associated with large-scale industrialized monocultures should be familiar to most readers of The Land Report. These problems include high levels of soil loss, pesticide and fertilizer contamination of soil and groundwater, utter dependence upon finite fossil fuel resources, loss of cultural knowledge, and the depopulation of rural communities. Reliance upon extensive monoculture grain farms arose this century in large part from the availability of inexpensive fossil fuels that favored mechanization of labor and efficiency. Within agricultural universities, research to maximize production (yield/area) through specialization and massive inputs too precedence over guaranteeing sustainability of harvest into the indefinite future” (LR(33), 1988:23).

In a Land Report, one of the board members provides a book review of Jackson’s newly released book *Altars of Unhewn Stone*:

In this new book [Jackson] issues an **urgent call** for a **new view** of contemporary agricultural **problems**, arguing that **agribusiness interests have appropriated scientific contributions** piecemeal, overlooking the larger picture and destroying much of what our traditional farming had respectfully preserved. The essays vary from **sustained and careful analyses** of agricultural and scientific concerns to **brief and often amusing discourses**, sometimes **eulogizing** the beauty and wisdom of the salsala, the prairie tumbleweed, at other times **attacking** “pre-Copernican minds of the space age.” Jackson calls on us to recognize the **underlying causes of current problems** before it is too late. The **solution**, he argues, lies in an agriculture that does not break up human or biological communities, that minimizes soil erosion and reliance on chemicals and fossil fuels, that preserves the information contained in the genetic codes of plant and animal species now threatened with extinction. Jackson advocates an agriculture that is **whole and healthy, sustainable and sustaining** (LR(29), 1987:26, emphases added).

We see that the problem is urgent, requiring immediate attention. The problem stems from capitalist interests intertwined in the state-market-science logic. The solution is to reorder human-nature relationships. In the problem-solution orientation, Jackson is known for ‘eulogizing’ systemic alternatives while ‘attacking’ mainstream culture.

A politics of possibility requires a strong vision qualitatively different from the status quo to open up imagination and to see possibilities. TLI has been telling a complex story of difference, specifying the problem while presenting a solution.

8.3 Reception of Vision

We have seen that TLI's audience is a broad-range of constituents, from farmers to schoolchildren to policymakers. In order for cultural transformation to occur, then the consciousness at large needs to be educated on the vision.

Participants have positively received TLI's vision. Many interpret the vision as a "radical departure" from current approaches to agriculture, including sustainable add-on solutions.

For many of the Fellows working in the LGU, the vision speaks their language – they are very passionate about TLI's work. However, everyday reality of institutional constraints does not necessarily mean they can live out the visionary work in their day-to-day research. Even in some of the sustainable agriculture programs in the LGU system do not fully take on TLI's vision. This means that many of the Fellows take on side projects, working with TLI scientists to conduct research supporting perennial grains in polyculture systems.

Participants view TLI's vision as "comprehensive" and "radical" while appreciating Jackson as a visionary and charismatic leader. As a visionary intellectual:

[Jackson is] a visionary, he has, not just with founding TLI and kinda setting the Natural Systems Agriculture research agenda, but several times over his career with other matters has really managed to see what the next logical step is in his discipline or even in someone else's discipline or not just the next step but maybe three steps ahead.

A charismatic leader who has bold, new ideas is important to a politics of possibility in creating new discourse and new experiences for subjects. As one of the Fellows remarks:

[Jackson speaks] boldly and loudly and prophetically to such an extent that people actually hear and some people understand and agree...He is not afraid to make people mad...And not afraid to be a broken record in some respects, to repeating until it sticks, it takes years and years of repetition in a lot of ways

Participants reference Jackson as a successful founder of an organization:

I would say...he's mercurial and impulsive which actually is a profile of a successful founder of an organization like TLI. He'll get a notion and without necessarily a lot of assurance that it's a meaningful notion, he'll take off and pursue it on full after burner, sometimes for years. That means there's sometimes some wasted motion involved ultimately. On the other hand, I think it would be hard to find somebody who could have advanced the ideas that he ultimately did with TLI who did not have that personality trait, impulsive like that.

Many of the participants feel TLI's philosophy provides a deeper and firmer foundation for change compared to other sustainable agriculture models. Participants latch onto TLI's style for engaging the historical imagination by connecting agricultural history to the current agricultural system, using ecology and systems biology research in a rigorous way while tapping into philosophical and intellectual discussions.

As we have seen, building community is part of the organization's mission statement. In the very first newsletter, one of the original interns described student life at TLI:

A **community spirit** has developed at The Land. **Sharing** is an important part of our life. In our discussions of the readings, we **exchange ideas** and interpretations, and each person's contribution is important...Through our **daily activities** at The Land, and what we share in our personal lives, we have come to **care** about each other. The **educational experience** at The Land is more than the development of an **environmental philosophy** and **experiments with appropriate technology**. There is a sense of **unity** in the group that **enriches all of us** (emphases added).

Long-term viability is an "underlying test and goal" when applying a solution to the problem. One Fellow had this to say regarding TLI's solution to the problem of agriculture:

Probably more importantly, it helped me put and keep my focus on long-term sustainability, that even to the extent that I have worked on short-term sustainability...I am always running mental checks on whether a particular project or a particular decision on a project is going to coherently contribute to the viability of this community in 100 years or even 200 years or the sustainability of the natural capital of this region in 100 years or 1,000 years, it put that kind of task behind all of my decisions, and that has influenced me in [my work]...even from a lot of the influences from market and technology [emphasizing products to commodify first].

The positive reception of TLI's vision is an indicator for the organization's success in making people feel like they are part of the collective. The key to an SMO infiltrating a field of power is its ability to build community through cultural work.

In sum, TLI functions outside a field of power investing in cultural work for sustaining a shared vision for systemic alternatives. TLI is actively making and delivering its shared vision by: spreading the word through Friends of The Land; using a historical imagination to make connections; and introducing influential people who support the vision. As a result, we see the vision as a utopian ideal; a call for a paradigm shift in worldview; and a complex story of difference. Through this cultural work, TLI is cultivating a new social order, creating new language and new subjects for collective action. TLI's cultural work for sustaining a vision is in conjunction with its activities for delivering values-based education, another key strategy I describe in the next chapter.

9 DELIVERING VALUES-BASED EDUCATION

“[T]he purpose of education is the transmission of values” (Jackson, 1980:xi)

In this chapter, I set out to describe another key strategy constituting TLI’s cultural work for investing in a counterhegemonic project – values-based education. Education plays an integral role in the diffusion of culture and social change. As a cultural practice, education is a means for transmitting cultural values and traditions to new groups and the next generation. A values-based approach to education is a primary mechanism for bringing forth a new social order, creating new language, cultivating new subjects, and inspiring collective action.

For David Orr, Paul Sears Distinguished Professor of Environmental Studies and Politics and a former board member of TLI, "questions of environmental education cannot be separated from the broad issues of education" (144). Thus, he argues, "education can no longer afford to ignore two challenges arising from the environmental perspective":

The first is the challenge of **interrelatedness**. We have structured education and the entire knowledge enterprise along Cartesian lines stressing reductionism, discrete entities, literality, and simple causation, and must now shift to perceive patterns, context, systems, and complex networks of causation that span the sciences, social sciences, and humanities. Further, we must learn to overcome the parochialism inherent in nationality, geography, generation, sex, species, race, and class. If it can be done at all, this revolution in thought, perception, and behavior will go far beyond the Copernican or Darwinian revolutions, whose effects were scarcely felt at the level of daily, life, politics, or international affairs.

The second challenge posed by environmentalism concerns the essential misconception of **our role in the natural world**. For the past five hundred years our sciences, social sciences, and humanities alike have been committed to extending and celebrating the human domination of nature. The idea that we can dominate nature, however, is proving to be both a dangerous and paradoxical illusion. The ecological implications of the philosophy of domination now loom ahead like the icebergs before the *Titanic*. . . . Any change in this course will require that we rapidly transform values, institutions, and the way we define and transmit knowledge (145).

The following sections represent cultural work as a dialectical process in which TLI is both making and delivering education and education becomes a product. The last section depicts the reception among participants.

9.1 Active Making of Education

Taking the resources mobilization assumption into account, TLI's values-based education is made possible through internal staff and resources along with external support via funding and donations. So, what does the active making of values-based education look like for TLI? First, I provide the various contexts and constraints that have shaped TLI's values-based education. Then, I describe the key cultural activities for bringing TLI's education to life: managing and organizing a school, partnering with others, and showcasing guest scholars.

TLI was one of the few and original intern programs in sustainable agriculture when it first opened its doors in 1976. As an experiential-based program, TLI offered an alternative format from the traditional university setting. The intern program's emphasis on alternatives targeted students who were questioning the current political-economic structure, curious about other ways for living, or looking for a different experience from the traditional university. Sustainable agriculture was not part of the university setting at that time like it is today. While sustainable agriculture, along with agroecology, have been popping up in universities and colleges across the nation, the ecological disciplinary approaches are still a minor component of overall agricultural training – emphasis is still on agronomy and increasingly molecular biology.

The first 20 years of TLI's existence was dedicated to the intern program, the Prairie Festival, public events, classes, and workshops, along with speaking engagements. The proceeding 20 years, TLI has been focusing on ramping up its research while its education program has taken on a more supporting role.

Structurally, TLI is incorporated as a non-profit educational research organization, meaning, TLI is required to report education as one of its primary organizational activities to comply with its tax code. As TLI has worked to refine its purpose and identity over the years, education has always been a structural component of the organization. The programming has evolved over the years, but education has always been part of the organization's activities because TLI believes that education is necessary for cultural change.

In line with its original mission, the school was established,

devoted to the study of sustainable alternatives in agriculture, energy, waste-management, and shelter (Jackson, 1980:x).

For Jackson, the primary focus of the school was on:

the problem of soil loss and the development of a sustainable agriculture (Jackson, 1980:xi).

Students were tasked with identifying environmental problems, searching for new or alternative solutions, and adopting an ecological ethic. Students participated in a curriculum designed around works such as David Orr's *Ecological Literacy*, Herman Daly & John Cobb's *For the Common Good* (KHS, 1998(3123-3125)), Donald Worster's *Nature's Economy* (KHS, 1998(3123-3125)), and Stephanie Mills' *In Service to the Wild* (KHS, 1998 (3123-3125)).

As part of its organizational structure, TLI's educational policy guides its actions:

The Education and Public Policy program is **dedicated** to the promotion of **critical thinking** about the **issues of sustainability** and inclusion of "**nature as measure**" as we **search** for increased sustainability. We seek to reach our **constituents and citizens** from farmers to school children to policy makers. We employ *The Land Report*, visitor tours at TLI, many presentations by staff every year in diverse settings, *special events* at TLI, participation by interns and staff in community affairs, and a stream of writings which we publish in scientific journals, books, chapters in books, and magazines, as well as invited radio and journalism interviews (LR(57), 1997, emphases added).

From this statement, we gather the following:

1. The organization is committed, “dedicated”,
2. To an alternative approach, “critical thinking”, “issues of sustainability”, and “nature as measure”,
3. Targeted at multiple and diverse audiences, or “constituents and citizens”,
4. Using multiple interactions and communications, including face-to-face, written, and media

TLI orchestrates its strategy for values-based education, targeting multiple constituents and offering diverse formats, creating new experiences for subjects to participate in building community. TLI has identified different constituencies that should be educated about NSA, including “elites” (or people in policymaking positions), the public, neighbors, and interns (KHS, 1988(3662-3668)). The various formats of education include: the intern program, tours, public events, classes, and workshops, the Fellows Program, and speaking engagements.

TLI’s educational programs have evolved as the organization’s purpose has shifted over the years. TLI started out with the fall semester intern program, with seven students enrolling, in 1976. Student enrollment of the intern program remained low over the years, reflecting TLI’s value for interactive discussions and mentoring time between teacher and students. TLI’s earlier period in education represented homesteading principles and projects creating new subject positions for home-gardeners, small-scale niche producers, and alternative technology users. In the earlier period, TLI was a pioneer in sustainability programming because similar programs were not widely available.

TLI continues to build ecological awareness through education – the emphasis and approach have shifted. Moreover, sustainable education has started to show up as part of curriculum and programs in universities and colleges across the nation. The next phase of

education for TLI emphasized its original concept for NSA principles. The NSA concept has not quite shown up in curriculums nationwide. TLI's goal is to influence the academic culture, to demonstrate an ecological literacy, broadly, and to be adept in NSA principles, specifically.

In order to influence the academic culture, TLI established its Graduate Fellows Research Program in 1998 as a way to link to professors at universities who could in turn incorporate TLI's vision into their curriculum and research.

From the fall of 1976 through December 1998 we featured an intern program with students engaged in a broad range of learning. In its last year we launched a graduate fellows program dedicated to expanding within universities our research agenda. (LR(70), 2001:19).

In its most recent phase of education through its Ecospheric Studies initiative, TLI is continuing to find ways to influence the academic culture as a way to link to all domains of society.

Through its development work, proposal writing for TLI is not only about building relationships but also about educating. TLI refers to its development tactics as "fund-raising" for financial capital and "friend-raising" for social capital and human capital. In both cases, the tactics are designed to raise constituent awareness of TLI's philosophy and goals. The development officer does background research before reaching out to someone in the organization to build a personal relationship before submitting any type of proposal. The process is slow, going back after several months, checking in multiple times, being available to submit when the time is right, i.e. when "the organization's thinking opened up" to be in line with TLI's work. On top of building personal relationships, the development officer views the process as educational. Organizations will ask for Jackson to come out to speak to the board and/or staff after hearing and reading about TLI's vision and work. This requires people skills along with creativity.

You know, he considered it his job to educate people in the foundations too and that was partly what we were doing. They were in fact asking us, sometimes [Jackson] would go provide information to their board or to their staff and so on because we were a place obviously that fostered intellectually sound thinking based on a lot of what was already known but taking it to another level.

In 1996, two years before the Fellows Program, Jackson wrote an internal memo to the board outlining the barriers for placing interns into graduate programs to carry on the mission of TLI. TLI had been educating lots of students over the years, but Jackson's comments reflect his frustration that TLI's work was not being carried on into their careers. Jackson shares the challenges with readers in "Carrying Our Work into the Next Realm:"

We have three challenges to consider. We need: 1. More general acceptance of the potential for melding ecology and agronomy. 2. Broader public support for and understanding of the need to make the distinction between solving the 10,000-year-old problem OF agriculture compared to solving problems IN agriculture. 3. To convincingly demonstrate that, when fully developed, Natural Systems Agriculture can out-compete current industrial agriculture. There are countless still-unexplored and explored but undeveloped efficiencies inherent in the integrities of natural systems. They should be allowed to contribute to crop production rather than to be swamped by chemical and mechanical manipulation...The proposed approach for solving the above three problems is to greatly upscale the research and education effort. The first problem to be solved, therefore, is to find the necessary funding (LR(62), 1998:4).

He viewed a lack of awareness of TLI's work by professors in agricultural science as a barrier. From his view, professors have their own research agenda, meaning they were not able to see how to shape their research to TLI's ends. Jackson also recognized that the organization's original mission guiding the first half of its history was too broad for these same professors to comprehend. His last point referred to the students. Since TLI's breeding research had been on a long timeline track, students were unable to see a career entry point. Advances in molecular biology, computers, and ecological understanding have since helped to shorten TLI's timeframe for perennializing grain crops. Jackson wanted the interns to go on and work with professors who understood the paradigm to get an advanced degree to carry on the mission of TLI (KHS,

1996(3479-3484)).

One of the former Education Directors brings to light one of the challenges TLI faces in “Education in Transition”:

As we move closer to the industrially minded academic culture, how will we safeguard our mission to unite people, land, and community?...Even as we focus on NSA for strategic reasons, we recognize that it is only part of our larger world view. Ultimately, its success depends on a culture of people who seek to live ecologically on the land (LR(62), 1998:22,23).

Ten years later, TLI will have trained close to 80 Fellows through its Graduate Fellows Research Program. It will be another seven years before TLI transitions into its next phase of education, the Ecospheric Studies program. This line of reflective questioning is what helps keep TLI going and innovating.

The planning and organizing work that goes into making values-based education requires time, commitment, and various resources, including human and material resources. The organization has been steadfast in choreographing the logistics for running the various educational programs. For example, Jackson played an integral role in the beginning in the delivery of the intern program, running classroom discussions and mentoring students on projects. TLI wanted Jackson to focus more on the speaking engagements, writing, and fundraising, so the organization eventually hired an Education Director to coordinate the intern program, who was tasked with attracting and recruiting applicants and selecting students, setting the curriculum, and facilitating classroom learning and field projects while staff provide administrative support.

TLI actively makes education in a range of formats, including: intern program, fellows program, tours, and more recently Ecospheric Studies. Managing and organizing the multi-dimensional educational strategy is key to bringing TLI’s education to life.

TLI has transmitted its values-based educational program to just over 200 students through its intern program. With the first cohort of seven students starting in 1976, TLI was one of the original intern programs in sustainable agriculture. TLI shares its perspective on education with its constituents. In its newsletter, the organization explains “Why We Do What We Do” and listed the five objectives of its intern program (LR(40), 1991):

1. Help interns to become well-acquainted with The Land Institute’s history, unique philosophy and mission.
2. Explore the concept of sustainability and consider its application in many aspects of society: agriculture, energy, technology, economics, social structures and ethical systems.
3. Provide a background for The Land’s emphasis on “Nature as Standard” and discuss its significance in agricultural research, especially our own work on perennial polycultures.
4. Provide an experience in agricultural research through one growing season guided by The Land’s vision and contrast it with conventional approaches.
5. Instill a sense of the prairie as an ecosystem and a place with a cultural history.

Here we see that TLI uses education to promote its comprehensive vision. The emphasis by 1991 is on sustainable agriculture, dropping alternatives in all other aspects of society from its curriculum.

The NSA Graduate Research Fellowship Program (or Fellows Program for short) is a representation of TLI’s value for evidenced-based knowledge. During the process of establishing the program, TLI made the decision to put its intern program on hold. The program aimed at attracting graduate students in agronomy, botany, genetics, ecology, and related fields to NSA. The program was made possible by financial support from the Geraldine R. Dodge Foundation. When the philanthropic organization became familiar with TLI’s ideas, it believed that TLI’s efforts directly addressed the Foundation’s concern for a sustainable society. One of the scientists explains in its newsletter to constituents:

[The NSA Graduate Research Fellowship] will work with students from top

universities and colleges in order to assemble, educate and encourage a cadre—and ultimately an extensive web—of young people dedicated to building upon and instituting the fundamental tenets and research of The Land Institute...We hope that these students, after stepping back and re-examining the dominant Cartesian culture and paradigm in which they've been immersed, will re-enter their fields with a new perspective and enthusiasm for scientific research that is informed by considerations of public interest and ecological sustainability (LR(60), 1998:8).

The structure of the Fellows Program required dedicated time from both staff and scientists along with collaborating guest scholars. Each summer, TLI put on a week-long workshop at their Matfield Green location. TLI designed an agenda to indoctrinate Fellows into its worldview:

First, we teach new fellows about Natural Systems Agriculture. The students are interested in this new paradigm but often do not have much background in it. Second, we provide an experience unique to many graduate students: a chance to combine agricultural and ecological themes. The students come from traditional programs in agriculture or ecology, and most have found little cross-pollination in their home institutions. Finally, we demonstrate the breadth of fields involved in NSA through The Land Institute...Workshop sessions included the history of agriculture, alternative approaches to science, the U.S. Department of Agriculture's relationship to farmers and the role of genetic engineering (LR(68), 2000:20).

TLI also delivers values-based education to visitors through tours of its headquarters in Salina, Kansas. Illustrating TLI's tour ritual, a typical Fall Visitors Day includes touring the prairie and the Texas Longhorn pasture, Sunshine Farm, and NSA experimental plots while serving cider and muffins with TLI's very own eastern gamagrass flour (LR(59), 1997). When visitors go out to TLI for a tour, someone on staff takes time out of their daily routine to tell TLI's story and show where the story takes place. When TLI hosts public events, workshops, and classes onsite, staff coordinate the necessary resources to deliver and perform education as a way to increase awareness on the many facets of TLI's vision and work – from broad societal

transformation to specific on the ground action for transformation. Both scientists and staff give tours of the facilities and experimental plots of TLI, as one staff member explains:

I want to get them excited about what we're doing, and I don't give the big heavy science part of it, but I can talk about how our work addresses so many different environmental problems. And whatever they're concerned about, whether it's climate change or atmospheric carbon or the hypoxic zones or soil loss, whatever concerns them the most, I can talk about it a little bit thanks to the scientists...I start down here [in the office] because I got visual aids on the wall [pointing to poster of roots of plants and soil]. And I walk them through each plant that we're developing, each crop that we're developing, and what's special about it, and how we create it, and then I talk about the polycultures and the benefit of mixing all those together; and then I take them through the greenhouse and then we go see the science building, and then I take them out to the prairie plot where you can overlook that Wahoub Prairie and down into our plots and show them the actual stuff...I don't think they know what they're seeing until it's broken down first [in the office with visuals] and then we go and see it [out on the prairie].

After each tour, staff will send out a personal thank you letter, a hand written note, from the person who gave the tour if they have time:

Afterwards, we all make notes about the people that we toured, anything they said that might help us, if they mentioned a name, "oh, did you know so and so is working on this in Utah", we'll come back and put that in our database and follow through on that. And then we write them a thank you note for coming to visit...Everything [that is sent out] has at least a handwritten envelope and a personal message on it. Even the printed thank you notes, we'll have a personal note and signature and hand address.

This indicates the nurturing that goes into creating and maintaining social ties. One of the primary mechanisms the social movements literature cites as an important part of organizing and mobilizing work is social ties. Even the Executive Director sends out personal communications to visitors, showing that care for constituents is part of its organizational culture:

There's hundreds [of solicitation letters] that go out of here a month sometimes. And he [Wes Jackson] will look at every single one, and if he knows that person, he's going to put a note on it. And he remembers things about everybody. Every year we'll have somewhere between 1,800 and 2,000 donors. That's a lot of people; he remembers most of them.

The Prairie Festival is the organization's annual event that TLI has been putting on since

1979. Each Festival features speakers who address the event's titled theme. The first Prairie Festival, "Prairie Roots, Human Roots: the Ground of our Culture and Agriculture," set the stage for TLI's continuous engagement with its dialectical material and cultural philosophy. The Festival is a way to educate participants on the ideas that inform TLI's work. The yearly event is an example of the commitment and resources TLI puts into what it refers to as "friend-raising." Friend-raising is all about creating new experiences for subjectivity.

The purpose of the Prairie Festival is not to raise funds but to educate and update constituents on TLI's work. Planning and executing this event, that started with approximately 200 participants and has grown to as many as 1,000+ participants, requires eight to nine months of staff time and a modest budget to cover costs, such as the guest speakers, chair rental, along with the simple, freshly made lunch and dinner prepared by the local food cooperative and volunteers served out on the prairie. Staff collect data from constituents at the different events, whether its contact information to add to the database for future communications or survey feedback on the experience of the event.

Jackson is known for his purposeful experimentation for innovating that has taken place over the years, playing out in the organization's managing and organizing. The addition of the Ecospheric Studies Conference to TLI's educational line up in the summer of 2015 is an example of one of Jackson's innovations. Through Jackson's initiation, this program is an exploratory project to institutionalize an ecological worldview in universities and colleges across the nation. Jackson has successfully secured funding from The Malone Land Preservation Foundation to support the two conferences (in 2015 and 2016) that have taken place.

Each of the program formats requires a great deal of managing and organizing. Because education is a structural component of the organization, cultural work is dedicated to running the

various programs. As the organization has ramped up its research emphasis, organizational resources have shifted from running fully staffed educational programs to more fluid and flexible programs. For example, instead of running a 43-week intern program, TLI now takes interns on a rolling, project-based basis throughout the year, staggering the work to fit in with its research.

Part of TLI's success for promoting its educational program can be attributed to the partnerships that it has formed over the years. From the start, TLI initiated collaborations with universities and colleges as a way to attract students and to work with faculty interested in TLI's philosophy and agenda.

In 1978, TLI reached out to one of the local universities with a proposal to establish cooperation between Kansas Wesleyan and TLI. Through collaborative efforts, TLI and Kansas Wesleyan implemented an Environmental Studies interdisciplinary major at the university. TLI offered students "The Land Semester" program to fill the semester of field experience requirement for the new major. While Wesleyan delivered the coursework, TLI provided the hands-on experiential component of the program:

The Land Semester would be devoted to a search for alternatives in agriculture, energy, shelter, and waste. Emphasis will be on the development of an holistic philosophy through extensive investigation of environmental problems from social, political, economic, biological, and religious points of view. The goal of such integration would be to give the student an appropriate wisdom for relating to the earth. About half of the time will be spent in the library and in study and discussion; the other half will be utilized in the shop and in the field. The student will be involved in a major project during the semester (KHS, 1978(3032-3033)).

To this day, TLI continues to partner with Kansas Wesleyan on its Environmental Studies major, and most recently, TLI and representatives from Kansas Wesleyan have been exploring updating the program to TLI's new line of thinking for an Ecospheric Studies curriculum. The President of the university came out to Jackson's last Prairie Festival as President of the organization to show support. Strong mutual relationships like these have been part of TLI's

strategic repertoire from the beginning. TLI has established similar collaborations with universities and colleges across the nation over the years.

TLI established a consortium of rural schools to promote place-based education for the region. The Rural Community Studies Program was one of TLI's values-based education projects to reach out to schoolchildren. The project was made possible through partnering, as TLI announces in its newsletter:

TLI, in collaboration with Emporia State University, and the Annenberg Rural Challenge is working to enable school districts to come to a better understanding of the interdependence between our schools and communities.

The work that has begun at Matfield Green can indeed change the way we educate our children and can help them to understand the value of and develop the methods for creating a sustainable community. (LR(59), 1997).

While it may seem contradictory for TLI to work with the very "institutions" that are "part of the problem," Jackson makes clear that TLI works with individuals at the LGU, or even the USDA, and not the actual institution itself. This clarifying statement is used to make a distinction between TLI and the agro-capitalist research complex. Partnering is a demonstration of values-based education in the making in which TLI works with individuals who are "objective the right way" as Jackson says often about TLI's friends, constituents, and partners.

In 2015, Jackson invites 30 "colleagues" from colleges and universities, and non-profit organizations to be part of its first Ecospheric Studies Conference aimed at exploring:

some possibilities as we rethink education to replace the industrial mind (Jackson letter 5/20/2015 Ecospheric Conference Invitation).

The participants were invited because they had already:

implemented educational programs directed at one or more pieces of the evolving vision, enough so to get us started as we search for overlap and cooperation potential.

Jackson goes on to signify the importance of collaborating with participants to carry out its education:

what is required of educational institutions and of students if we are to authentically and accountably engage in transformation? We at The Land Institute think the first requirement is to collaborate and that is what we want to talk about in June.

TLI delivers some of its educational content through guest scholars, an important part of the active making process. When TLI facilitates programs and tours, it assembles experts from what may appear to be unrelated disciplines – from physics, to history, to art, to philosophy, to economics, to medicine – as a way to consider multiple approaches to complex systems. TLI regularly uses its newsletter to introduce readers to the intellectual superstars, such as in “Distinguished Men are Guests:”

Often guests will spend several hours in class discussions with our 8-10 students, and attend informal or receptions with students and members of the board of directors of The Land Institute (LR(09), 1980:4).

From the first newsletter, TLI introduces the significance of guest speakers and inspirational influences:

A diverse group of individuals around the **Salina area** have **shared their life experiences and knowledge** with The Land Institute this fall semester. [including retired professor from KS Wesleyan and former mayor of Salina; local resident; reverend; retired professor of psychology; pathologist; wildlife biologist and president of KS Audubon Council; linguist; artist and math teacher; art teacher at Marymount College and published poet; postal union official and novice farmers]...

The contributions from this **variety of interesting people** are useful in the development of a **holistic view of the earth**.

Guest speakers are inspirational influencers who play an active role in making and delivering TLI’s values-based education. These guests bring their ideas and credentials along with their support for TLI’s mission to the mix.

All this to say, new language and new subjects come to life through TLI's values-based educational strategy. For Jackson, changing the curriculum in the LGU system to an ecological, holistic perspective is a necessary component of its model for systemic change. Revising the curriculum contributes to shifting the dominant worldview. From the intern program, to onsite tours of the Wauhob Prairie and experimental plots, to speaking engagements, to the Prairie Festival, to the Fellows Program, TLI has been educating thousands of constituents. Education is a way of life for TLI. Case in point, TLI gave a tour out at Matfield Green to the first cohort of Fellows along with guest scholars and posed to the group the following:

How do we encourage a cultural shift towards nature as model and increase ecological consciousness of the history of our land and resources? (LR(62), 1998:7).

The response:

Education.

9.2 Education as Product

In this section, I present the cultural forms of TLI's values-based education. TLI's form of education is a constitution of new language, the narratives, images, discourses, and representations that go into symbolizing its principles. TLI's education as a cultural product signifies: alternative education, values-based worldview, and "PLACE" (people, land, and community in education).

In the organization's first newsletter, one of the interns shares with the newsletter readers the educational experience at TLI in "Leaving The Land to Learn:"

Learning at TLI falls into about four categories. We study books and papers and discuss them. We pound and saw. We invite guests to The Land to share ideas with us. We also leave The Land to learn. [Field Trips to local homesteaders, organic farmers, and local Indian museum] (LR(01), 1976).

This approach to learning did not fit the traditional model of education according to the local newspaper that ran a story on TLI, using the headline “School offers alternatives in learning:”

There are no grades, tests or classroom lectures at this school, yet students say they learn things they couldn't be taught elsewhere (KHS, 1978(3034-3036)).

As more programs started to pop up across the nation, TLI wrote in its newsletter nine years later distinguishing its program from other intern programs. According to TLI, the three factors that made its educational program unique included:

1) value-orientation towards critical thinking and alternative models for living, 2) student-orientation for a sense of community, 3) both classroom-learning and hands-on orientation for learning (LR(23), 1985:5).

The intern program follows a set of principles, including critical thinking, experiential learning, social change, and interdisciplinary education. For TLI, education is a dialogue in which students and teacher gather together, exchanging ideas and questions, in which

The Land Semester would be devoted to a search for alternatives in agriculture, energy, shelter, and waste. Emphasis will be on the development of an holistic philosophy through extensive investigation of environmental problems from social, political, economic, biological, and religious points of view. The goal of such integration would be to give the student an appropriate wisdom for relating to the earth. About half of the time will be spent in the library and in study and discussion; the other half will be utilized in the shop and in the field. The student will be involved in a major project during the semester (KHS, 1978(3032-3033)).

In an internal memo, TLI describes its educational program in a draft job announcement for the Director of Education:

The purpose of the intern education program is to provide a context for The Land Institute's research and to send interns on as strong critical thinkers about sustainable agriculture, with some idea of how to go about making change – either at the research, policy, community or farm level (KHS, 1996(3472-3474)).

TLI's style of education is also part of the experiential learning perspective that emerged in the 1970s. This form of education is learning through reflection and through hands-on learning. Education is about using "head and hands" to get at the heart of the vision in which: students are encouraged to question and discuss the values underlying the policies and actions at all levels of society (LR(23), 1985:5).

TLI's curriculum is interdisciplinary – a combination of liberal arts and natural sciences. The liberal arts component emphasizes TLI's call for a cultural transformation while the natural sciences content provides the knowledge base for sustainable agricultural systems. TLI views its curriculum as the type of knowledge base applicable to "all walks of life." Jackson shares this sentiment with newsletter readers:

In our educational efforts of the young it is an argument for teaching the basics about our source. By that I don't mean micro-economics but rather important processes like photosynthesis and the energetics of material recycling (LR(59), 1997:4).

A former Education Director talks about program's shift in emphasis to research on Natural Systems Agriculture, but we see that cultural transformation is still a primary component:

Although the curriculum generally is designed to complement the physical work performed by interns, it is primarily intended to lay a strong foundation for them to contribute to Natural Systems Agriculture (NSA) both now and in the future. With this focus we are examining the history and ideas which have led to the current work of The Land Institute, concepts essential for performing research, and the projected role of perennial polycultures in the future. We also want to identify the cultural implications and challenges of establishing a new agricultural paradigm (LR(60), 1998:9).

TLI's education has always included a values-based worldview. For Jackson, education is a form of resistance whereby new subject positions can be nurtured. Instead of focusing on

“upward mobility” Jackson proposes that universities offer a “homecoming” major (Jackson, 1994 [1996]):

To a large extent, this book is a challenge to the universities to stop and think what they are doing with the young men and women they are supposed to be preparing for the future (Jackson, 1994 [1996]:3).

In an interview with Jackson, a local newspaper honed in on TLI’s values-based approach to education, stating: [Jackson] decided that what he wanted to teach couldn’t be taught in a big lecture class.

The article goes on, quoting Jackson:

“I see the purpose of education as the transmission of values...I don’t believe that knowledge is value free. This is one of the big myths of the day...Your education and credentials are not for the purpose of giving you a passport to privilege, but a passport to responsibility...When students leave the institute they carry with them an ideology and a set of values...Those students in the right places will make differences in this society (KHS, 1978(3034-3036)).

Values-based education is a vehicle for social change. For TLI, education is a strategy to carry out TLI’s mission to develop sustainable agriculture and good stewardship. In 1988, TLI initiated a long-term planning committee:

to state a clear vision of The Land for the coming years, and to decide how we’ll get there (KHS, 1988(3759.3769-3772)).

The committee identified the program goals of its education strategy:

Education

- A. **General:** Communicate the vision, philosophy, goals, and work of The Land. Inform the public about environmental issues as they impact on agriculture and the quality of rural life.
- B. **Interns:** Change coursework to 2/3 sustainable society, 1/3 agriculture. Supplement field and garden work with seasonal interns and technology.
- C. **“Neighbors”:** Affirm environmental and land ethic – provide people opportunities to come together, discover new ideas, make friends. Promote the value of good food. Encourage people’s participation in sustainable agriculture – grow a garden; buy healthy food. Foster environmental literacy and promote land stewardship.
- D. **Public Policy: Decision Makers & Potential Funders:** Serve as active educators; target information. (Not “lobbyists”). Change the course of land

grant university research and education toward sustainable agriculture. Selectively use speaking and writing opportunities to spur state, national, and international action on sustainable agriculture. Educate wealthy people about the need for sustainable agriculture and the value of participating in the work of The Land. Give greater emphasis to media coverage and contacts with decision makers (KHS, 1988(3759.3769-3772)).

TLI reaches out to a wide audience to deliver its education based on a set of values. One of the former Education Directors states:

Education at TLI is partly rooted in the distinction between agrarian and industrial values (LR(62), 1998:21).

Jackson has more recently been using the term “ecospheric worldview” to describe its values-based assumptions constituting both its vision and education. This is a shift from the more common term “ecological” that is used by other alternative groups practicing ecology or agroecology.

TLI’s experimental research and educational project out at Matfield Green provides the narrative for education as PLACE (People, Land, and Community in Education). What started off as renovation and research of community expanded into a formal educational program. TLI announces the program in its newsletter:

TLI, in collaboration with Emporia State University, and the Annenberg Rural Challenge is working to enable school districts to come to a better understanding of the interdependence between our schools and communities.

The goals of PLACE: People, Land, and Community in Education project are 1) to help students acquire a deeper sense of self, a stronger appreciation of their home place, and a better understanding of their role in the community, and 2) to promote the enhancement of small, rural communities.

In the beginning phase of this project four districts from the Flint Hills region joined together in June at the Matfield Green schoolhouse to study, learn and share ideas and resources.

Each of the groups has gone back to their communities and talked with fellow educators, community members and organizations to develop strong teams of interested supporters.

The work that has begun at Matfield Green can indeed change the way we educate our children and can help them to understand the value of and develop the methods for creating a sustainable community. (LR(59), 1997:16)

People, land, and community – as a symbolic part of TLI’s education narrative – show up earlier in its history, before the PLACE program was initiated. In 1988, TLI identified its assets for its long-range planning work aimed:

To help develop sustainable agriculture and good stewardship through research and education.

Assets:

- **The Place** as a physical expression of our values.
- **The Community** of intelligent, idealistic people and their families which form the core of The Land Institute.
- **The Vision** of a sunshine future that inspires the participation and good work of others.
- Physical Assets: ample land and buildings. (KHS, 1988(3759.3769-3772)).

The PLACE acronym nicely articulates the various symbols of education produced by TLI. The people are TLI’s constituents who come from all walks of life. For TLI, people are the ones who live out their day to day, on the land, in community. A place-based education espousing an ecological worldview allows subjects to engage in a deep sense of self who interrelates to the land and the community in a sustainable way.

9.3 Reception of Education

Through the interns and the Fellows, we see that TLI’s values-based education is a transformative experience. A transformed consciousness is an awareness of the conditions ordering society. Interns have written about the classroom experience in TLI’s newsletter, sharing the significance of TLI’s education:

the interns have been exploring the roots of the agricultural and environmental

crisis which the work of TLI means, at least partially, to address. The lens through which we are examining this topic is that ever-relevant issue in the American West, water resources. Upon reflection, however, it became clear to me that we returned again and again to some aspect or other of an even more fundamental question regarding human nature itself. Classroom arguments have raged over why humans as a species do the destructive or creative things we do. Are humans fundamentally good or bad, giving or selfish? Here discussion stalled, with unbudging defenders of both extremes and plenty gradations in-between. And finally, given this impasse, is there hope for the human race?

...is there an obstacle to changing the practice of agriculture as we know it that runs deeper than the economic and political forces at work in today's world?

...There are many possible ways for humans to live on the planet.

...we could organize ourselves to produce food in radically new ways, once such ways are found. We are still left with questions, however. What level of peace, health, human happiness, and ecological sustainability is attainable within the range of human possibilities? What would such a culture look like? And how does such change come about? (LR(59), 1997).

We see that this intern has embodied TLI's cultural work – its vision “we could organize ourselves to produce food in radically new ways;” education through “classroom arguments;” research by “examining this topic...water resources;” and gathering together in which “here discussion stalled.” One of the themes running throughout the interviews with Fellows was the “sense of community,” and “camaraderie” they felt during the weeklong workshop learning more about TLI's philosophy and historical interpretation of the problem of agriculture. The “intense conversations” regarding TLI's concepts sparked intellectual imagination and possibility. For these Fellows, TLI represented open-minded thinking. Although Fellows came from diverse training backgrounds, they believed they were speaking the same ideas, albeit using different disciplinary language. Exposure to like-minded people and intellectual rock stars along with TLI's way of thinking topped the list for the value of the program for Fellows. The experience was not like what they got at their home institution where many felt marginalized from their peers who were more in line with mainstream thinking of agriculture. In this sense, TLI's

learning environment provided affirmation of self. Being around like-minded people encouraged Fellows to engage in big ideas, to recognize that thinking outside of the mainstream way in the institutions is ok, they were not alone.

For many of the Fellows TLI was a “learning environment” where “socializing and entertainment” took place. Many of the Fellows reminisced about their time playing Frisbee, drinking beer, talking around the bonfire at night – all activities that took place outside the classroom. The informal time together solidified the deep thinking that took place in the classroom during the day. Fostering a transformed consciousness and building a sense of community are primary factors included in collective action models in the social movements literature. Through cultural analysis, we can see the active making of a particular form, such as education, that contributes to this dimension for collective action.

Throughout this chapter, I described the significance of delivering values-based education as a cultural activity for a counterhegemonic project contributing to pre-emerging social change. In the active making of values-based education, TLI uses a set of techniques, including: managing and organizing multiple program formats; partnering with “objective the right way” individuals; and showcasing guest scholars. TLI’s cultural product for education is represented the following symbols: alternative education; values-based worldview; and people, land, and community in education (PLACE). In the next chapter, I examine the place-based work that TLI uses as another cultural strategy for transforming the social-ecological order of agricultural research systems.

10 CONDUCTING PLACE-BASED WORK

Work in of itself is a practice of culture – actively making culture while generating a form of culture. Conducting work for TLI is a dual practice consisting of research by the scientists and development by the administrative staff. Actively conducting research and development is a cultural activity for nurturing a politics of possibility by presenting new language, creating new subjects, and inspiring collective action.

10.1 Active Making of Work

From a resources mobilization perspective, the active making of work includes the research conducted by scientists, interns, and fellows and the development by administrative staff along with the financial and material resources that go into the research and development for making a product. Social ties also are important for mobilizing and organizing research and development work. In what follows, I describe the various contexts and constraints that have shaped TLI's place-based work. Then I describe TLI's key methods for bringing TLI's work to life, including: establishing infrastructure and coalitions, leveraging infrastructure and collaborations, gaining legitimacy, and keeping aware of self and others.

The Soviets were the first to start a perennial wheat breeding program back in the 1930s. The decades-long effort in the Soviet Union was abandoned in the 1960s for political reasons along with persistent problems in sterility, inconsistent perenniality, and undesirable agronomic characteristics (Cox et al., 2006). Little or no germplasm survives from the Soviet program today. Scientists in California picked up on the Soviet's efforts in the 1960s only to stop research because of plant sterility and undesirable agronomic characteristics (Wagoner, 1990).

TLI arrived on the peer-reviewed journal circuit in 1986, ten years after the organization was established, with its first publication reporting on its research on perennial grains. From the

beginning, TLI posed four main research questions, which drive TLI's agenda to this day. These questions assume perennality development in polycultures and focus on testing: high yield; polycultures versus monocultures; self-regulation through nutrient fertility; and disease, pest, and weed management.

In the beginning, TLI's research goal was exploratory, investigating:

the *feasibility* of an agriculture that features herbaceous perennials grown in mixtures for seed production as substitutes for annual monocultures grown on ground that can erode. These mixtures would be domestic prairies, cropping systems analogous to the vegetative structure of the prairie" (Jackson, 1999:3, emphasis added).

In the formation years, TLI scientists had to build an inventory and conduct preparatory work to make research legitimate. As Jackson states:

The results of many of these experiments are not what we would call publishable. They are more in the category of necessary homework to buttress other experiments (1980:144).

The research methods in the early years were dedicated to literature reviews, survey and inventory, classification, herbarium observations, and field experiments. These methods were designed to select different species to be used for breeding. TLI scientists collected and inventoried 4,100 accessions of 200 species and 4 hybrids from over 60 countries (Jackson, 2010). The herbarium consisted of 300 species of herbaceous, winter-hardy perennials for scientists to observe under cultivated conditions.

The progression of research reflects the time-consuming approach required for this type of breeding program based on ecological principles. Selecting, breeding, observing, and comparing are part of a systematic procedure not only to make improvements on a species but also to evaluate the factors that address the larger research questions. In order for the scientists to gather evidence to support TLI's research questions, successful selection and breed survival

beyond year three need to come first. Breeds that fail provide information for the scientists to use in the selection process, but this type of result is limited in answering the research questions regarding high yield, polycultures versus monocultures, fertility and self-regulation, and resistance.

One of the staff members refers to the early years as “lonely” in that the organization did not receive much attention compared to today in which TLI has been receiving attention from the international community. In the beginning, the organization relied on a charismatic leader to gain support, whereas today, the science itself demonstrates sufficient evidence to gain support from prospective funders. The most recent funding that TLI has secured is “a big deal” for the organization, as Jackson suggests in an interview with Allen White writing for Rural America:

Our work is getting attention, enough so that I think at times it now has a life of its own. Financial support has now made possible an annual budget of about \$5.4 million. Through an additional funding source (The Malone Family Land Preservation Foundation), we support fourteen graduate students and postdoctoral fellows at colleges and universities around the country. Some are domesticating wild perennials, some are crossing wild perennials with annual grains, some are doing ecological studies including soil biology, and still others are involved in a global inventory of promising wild candidates to domesticate and produce grain (White, 2016).

TLI’s research program has evolved over the years like its education program. The shift in research aligns with the organization’s shift in education in 1998-1999. The early period of research focused broadly on alternatives – shelter, energy, transportation, appropriate technology, and personal consumption. Like its education program, TLI’s research program changed from broad research focusing on a range of alternatives to a specific emphasis on developing NSA.

Now, the focus for TLI is to scale up the research on developing perennial grains because Jackson claims that the scientists have been able to show that their model is possible. Evidence is

based on TLI's success in developing its registered trademarked perennial grain, Kernza®. The Kernza® grain is TLI's first perennial grain crop to be introduced into the agriculture and food markets as a result of TLI's breeding program for intermediate wheatgrass that began in 2003. Further evidence is not only publishing, but also receiving acknowledgement for its work in popular magazines and prestigious journals. Jackson refers to *The Atlantic* cover story in 1988 as an instrumental publication that helped to "launch everything."

As part of TLI's transitional time in research, one of the former agroecologists co-authored "Future Farming: A Return to Roots" published in 2007 in *Scientific American*. In the issue, the editors wrote:

"The challenge is monumental, but if plant scientists succeed, the achievement would rival humanity's original domestication of food crops over the past 10 millennia— and be just as revolutionary" (LR(88), 2007).

In this scaling up phase for research, TLI has been focused on getting research onto the national agricultural research agenda (LR(62), 1999). TLI has attempted on several occasions to get its research on the national agenda be engaging in policy. Jackson brings attention to the significance of TLI's policy work in a proposal to a prospective funder:

As a result of our efforts in Washington, the Senate Agriculture Committee working on the Agricultural Appropriations bill wrote [in 1995]:

"This Committee recognizes that there have been exciting and promising advances made in Natural Systems Agriculture. This includes perennial grain polyculture ecosystems."

Jackson goes on to emphasize the significance:

More important, Natural Systems Agriculture language was incorporated in the 1995 Agricultural Appropriations Bill signed into law by President Clinton. The law includes this directive to the Secretary of Agriculture:

"The Committee is aware of breakthroughs in long-term natural systems agriculture research and wishes to have these research breakthroughs further examined. Therefore, the Committee expects the Secretary to

make an analysis of the feasibility, productive potential, and economic and environmental benefits of long-term natural systems agriculture and to identify associated near-term research needs” (KHS, 1996(3814-3820)).

In 2009, Jackson submitted a co-authored “50-Year Farm Bill” proposal to the USDA, advocating for “gradual systemic change in agriculture” (ARCHIVE: 50-Year Farm Bill, 2009). Jackson traveled to Washington, DC with co-authors Wendell Berry and Fred Kirschenmann of the Leopold Center for Sustainable Agriculture to propose the 50-year Farm Bill in front of members of the USDA and Congress. In the proposal, the 50-Year Farm Bill program treats each of the regular five-year farm bills as benchmarks. While the proposal did not receive support, the efforts have infiltrated the USDA’s line of thinking by presenting new ideas. The “sustainable” working arm of the USDA has been shifting towards more agroecological ideas in its funding mechanisms for sustainable, or alternative, agriculture (Sumberg, Thompson, Giller, and Andersson, 2016). While TLI’s efforts appear promising, the outcomes have been frustrating for TLI, falling short of the necessary shift in research and funding priorities at a national level.

Development work by the administrative staff is also an opportunity for TLI to deliver its vision for systemic change. In the newsletter, TLI sets aside sections for “Donor Acknowledgements” and “Ways of Giving to TLI” to draw attention to the organization’s development efforts.

Early on, TLI received a significant amount of funding from two small, private foundations dedicated to social change. TLI’s comprehensive vision for cultural transformation through education impressed both organizations. More importantly, the organizations were willing to provide long-term support, at least 15 years, which is uncommon in a field where three to five years is considered long-term research. The foundations invested in long-term funding for education to change the environmental consciousness. As one of the former development staff

explains, the foundations were investing in subjectivity (the interns) as a way to bring about social change in society:

[The two Foundations (The Joyce and Noys Foundations)] felt that the education of interns was invaluable to developing the environmental consciousness that wasn't very prevalent at that time...in those years the word environment and certainly the word ecology were just not being used. In fact it was very difficult to make our case, we were talking about a change in agriculture, but we were also of course talking at the same time and equally talking about a change in society to deal with the environmental issues that were beginning to be really well known. And so to convince them, if they thought that we were just doing agriculture they wouldn't have funded us because they didn't have that word in their list of issues that they funded. So they were definitely giving us funding for the interns and the social change that that might represent (interview).

As a small, non-profit organization, Jackson has played an integral part in the development work. While the organization has a development staff to solicit funding, Jackson has had a hand in writing the proposals. Jackson has contributed consistency, continuity, creativity, and contextualization to the proposals, as one of the former development staff explains:

Once Wes got the idea for a perennial polyculture he had written considerably in detail what that might be like in that second book, and when you look at that now even, all you have to do is add a chapter to bring it up to this point because, when he wrote that of course we weren't this far along in the science at all, but he knew where he was going from the very beginning and so the kind of language that is in that book is probably what we were using almost entirely. However, Wes is very creative, and each year when I started the round of proposals we would write a proposal that we meant for that year and I remember pretty clearly, that the first, the major part, the introduction that was meant to tell the foundation here's what we're thinking, here's what this is about, it was well written, it was something new every year, a different focus, taking into account where the country was, where our thinking was, but it was always extremely important (interview)

Part of TLI's success in conducting its work is the alignment between its research efforts and its development efforts. Early on, the Board implemented a policy for targeting long-term funding.

Board of Directors began to explore the possibility of longer-term financial stability at The Land Institute. Currently, the co-directors, Wes and Dana Jackson, raise money for each year's budget by seeking foundation grants and individual contributions. Although such support has been achieved successfully for nine years, the year-by-year budgets do not allow for long-term planning or program development. Research to develop perennial polyculture cropping systems modeled after the prairie must be done over at least a decade before significant results can be achieved. The Board agreed The Land Institute needed some security in the yearly income to insure the continuation of the research program...The Board approved a resolution to create an endowment fund, allowing contributions to be designated as endowment principal to be held, managed, or invested by the organization. (LR(24), 1985:6).

With Jackson stepping down as President in the fall of 2016, the development team has been working to put together tools for the scientists to deliver the organization's vision and message through speaking engagements. Scientists are reading *Don't Be Such a Scientist* by Randy Olson to learn about effective communication techniques. As Jackson has been preparing for his retirement, the scientists have been called upon to engage in more speaking engagements.

All this to say, the organizational structure has shaped TLI's place-based work on the development side. As President of a small non-profit organization, Jackson plays a large part in raising funds, building relationships, and writing creative introductions for proposals to grab attention from prospective donors. The next phase of organizational development is in transition.

TLI needs infrastructure in order to carry out its work. The active making of work entails establishing an infrastructure that aligns around TLI's vision. TLI's basic infrastructure includes: land for experimental plots, herbarium and greenhouse, science and laboratory building for research and testing, facilities for processing, and administrative offices for staff. The social infrastructure includes: board, scientists, staff, advisory team, and research clusters.

TLI has expanded its infrastructure over the years, accumulating land and building facilities. Development efforts have helped to secure various parts of TLI's infrastructure, including land:

A grant from the foundation for Deep Ecology facilitated the recent purchase of 90 acres of bottomland on both sides of Water Well Road and the Smoky Hill River adjacent to The Land Institute. This expansion will increase area for experimental crops and a site for the future Natural Systems Agriculture Center (LR(59), 1997:6).

Long-term agroecological plots:

Institute scientists Chris Picone and David Van Tassel are designing long-term agro-ecological plots, consulting with a committee of university researchers. The plots will eventually cover more than 100 acres of Land Institute land. The objectives:

- 1) Document the slow process of soil restoration that we predict will result when cropland is converted to perennial polyculture.
- 2) Contrast this with the effects on soil of more conventional agriculture.
- 3) Try variations in perennial polyculture design, searching for the most successful in the long term.
- 4) Set up convenient plots for additional researchers to use in future experiments (LR(67), 2000:25).

First major expansion:

Our long-term plan is to construct a Center for Natural Systems Agriculture at The Land Institute. The facility will include a visitor center and research space that encourages interdisciplinary attitudes and practices. Its architecture will exemplify explicit and subtle assumptions for the new Natural Systems paradigm and serve as a prototype for a twenty-first century research facility...Our goal is to carry out a 25-year research agenda to bring Natural Systems Agriculture to farm fields sooner rather than later. Meetings are being held with various foundations and individuals toward an eventual development of a consortium of funders to back this major line of new agricultural research (LR(66), 2000:22).

As part of its physical and built infrastructure, TLI has been establishing a social infrastructure comprised of different types of coalitions as a way to carry out its work. The various types of coalitions TLI has established to actively make its work include: advisory team, research clusters, and policy coalition.

In 1998, TLI established a coalition of experts to act as its NSA Advisory Team.

Our NSA Advisory Team, now 111 members, provides advice and critique and endorses our work. Staff-advisor interaction has increased. NSA Advisors referred half of our new Graduate Fellows, and NSA Advisors supervise half of all

Fellows in their graduate programs. Throughout the year, Advisors provided useful information and assistance via countless phone and e-mail conversations. Our thanks go to each one. Our priorities have been to convene Advisors interested in developing perennial grains and to meet with soil scientists interested in sampling agricultural lands, native prairie soils, and conservation reserve land (LR(66), 2000:22).

We have had working meetings with many of our NSA Advisors. Options and opportunities for pushing the research onto a larger stage were explored when three Advisors participated in a membership of ten that included funders and a media representative. We met with six Advisors at the University of Georgia to discuss the future of NSA and explore the connections between their work and ours. We visited Stephen Jones, breeder of perennial wheat at Washington State University-Pullman and will soon acquire seed from him for our own experiments. Steve is interested in collaborating with us and claims a spark for his original interest in perennial breeding was his exposure to Land Institute ideas as early as 1980. Six advisors led discussions on various science topics and spent a day to two last summer in our workshop with Graduate Research Fellows. Kendall Lackey, agronomist at USDA-ARS, traveled with us to visit Green Revolution research in Mexico (CIMMYT) (LR(64), 1999:28).

TLI has also been establishing an infrastructure of “research clusters” as a way to collaborate with other scientists. TLI sees research clusters as a way to carry out place-based work that can account for the local context. As one of the scientists reports in the *Land Report*:

As part of The Land Institute’s efforts to develop Natural Systems Agriculture, we are developing ties with other researchers who breed perennial crops (LR(58), 1997).

Coalition building is a way for TLI to engage in the knowledge production process. As Jackson suggests in “A Review of the 1983 Research Program:”

We expect to work more closely with researchers at Kansas State University, the University of Kansas, and Emporia State University next year. Several of them will give seminars here. Their critique of our work on December 1, 1983 at KSU was most useful, and their suggestions for next year’s research very helpful. I hope that some of our agricultural interns can go directly into graduate work with these professors and that they can build on some of the research started here (LR(20), 1984:9-10)

In 2009, TLI created a coalition of 17 different organizations that would help build a broader constituency base of support to influence policy. TLI sponsored and facilitated 10

meetings with farmers and representatives of sustainable agriculture organizations across the nation to gain support for its 50-Year Farm Bill to present to the USDA. According to TLI, this constituency base:

provide[s] vision, education and models of greater sustainability. With those constituencies, we share common principles and the goals of returning the world's grain-producing landscapes to perennial plants in the rotation for grain production (ARCHIVE: 50YFB, 2009:1).

Here we see that TLI is establishing a coalition to help legitimate its work at the institutional, policy level. With the backing of its coalition, TLI called on the USDA to lead the charge for systemic change in agriculture through policy. According to the proposal, systemic change requires a shift in priorities. As the leading organization initiating the 50-Year Farm Bill, the proposal included the language of TLI's natural systems agriculture perspective:

Our project would employ the ecosystem as the standard. Once that standard is adopted an array of technologies can become useful tools. Technology would follow, rather than lead the vision (ARCHIVE: 50YFB, 2009:2).

Establishing infrastructure and coalitions is integral to TLI's cultural activity for conducting place-based work. Both infrastructure and coalitions are designed to carry out TLI's mission to develop sustainable agriculture and good stewardship, broadly speaking. More specifically, infrastructure and coalitions support TLI's everyday activities for conducting research and administering constituent and funding development. Here we see the cultural activity supporting the resource mobilization perspective in the social movements literature.

Leveraging is also a deliberate practice TLI uses in its place-based work cultural activity. TLI intentionally seeks out ties with institutional scientists whose work supports TLI's agenda and the principles of NSA. Collaborating with institutional scientists functions as a leveraging strategy. While TLI has been operating as a non-profit organization separate from the agro-capitalist research complex since its inception, TLI has been intentional in leveraging facilities

and assets supported by public money by working together, collaborating with scientists from the LGU and the USDA while at the same time soliciting funds from foundations and private funds from corporations, such as Newman's Own and more recently Patagonia. The leveraging strategy is one in which TLI serves as the center for integrating the research among scientists from various institutions.

In a memo to the participants invited to the Natural Systems Agriculture meeting hosted by TLI in 1998, Jackson states the objective of the gathering to be held:

In order to leverage the facilities and assets supported by public money, The Land Institute sees two categories which need addressed at this meeting. First, the amount of funding necessary to do the job...Second, The Land Institute will need help to reach those able to assist. This help may include referrals and help in structuring the most effective ways to present ideas (KHS, 1998(3105-3109)).

He goes on to say:

Because work is (or could be) going on that applies to our mission, The Land Institute serves as the center for integration of any research which can be applied to our agenda, toward the achievement of the 25-year goal at the bottom of the "big chart" research agenda. That goal, of course, is farmer-ready prairie mimics producing good grain yields from perennials grown in mixtures (KHS, 1998(3105-3109)).

Leveraging is a bottom-up strategy, relying on collaborating scientists to push the agenda within their public institutions:

We have increased and will continue to increase collaboration with other ecological and agricultural researchers. We begin with our strength - begin where our connections are solid, from coast to coast, from Harvard to Stanford, and on to Australia and back to Europe, where there is respect for our work - to influence public policy from the sympathetic researcher upward into his and her respective institution rather than from the top down (KHS, 1998(3866-3869), original emphasis).

In a memo, Jackson summarizes the "five stages of TLI's history" for the participants of the NSA meeting hosted by TLI in 1998:

Following "Kitty Hawk," The Land Institute sought new avenues for expansion.

Efforts toward collaboration at Kansas State University and the U.S. Department of Agriculture ran into what were mostly monetary barriers. We concluded that if NSA were to make an impact on agricultural thought, we must find partners interested in and able to fund this work. The Land Institute is turning to the foundation world for funding to leverage public resources for expansion into the next round (KHS, 1998(3110-3117)).

The 10-year Graduate Research Fellows Program is a prime example of leveraging. The goal of the program was to attract graduate students who were conducting research in line with the principles of Natural Systems Agriculture, providing \$3,000 - \$9,000 per project. In working with the graduate student, TLI could connect to the student's advising faculty members at the LGU.

This year we will begin a university collaboration with our Natural Systems Agriculture (NSA) Graduate Research [Fellows] Program with these objectives: 1) to encourage outstanding young scientists to enter the field of NSA early in their research careers and give them direction in their choice of thesis or dissertation research on projects that will make vital contributions to achieve a truly sustainable agriculture; 2) to expose graduate students to our paradigm of using nature as the measure and model and allow them the freedom to pursue research that escapes the constraints of conventional agricultural research; 3) to bring together like-minded students and their advising professors as a step toward establishing a network of scientists who will help us develop and promote this new paradigm; 4) to leverage the human and material resources available at the major universities; 5) to continue the process of moving the ecological agriculture paradigm into the scientific mainstream by backing research which may make its way into respected scientific journals (KHS, 1998(3866-3869)).

This leveraging strategy creates a "symbiotic relationship with graduate students:" as TLI explains in its newsletter:

For help in reforming agriculture, The Land Institute reaches into the seminal ground of higher education...Our graduate fellowship program funds master's degree and doctoral students to do research advancing our development of agriculture patterned after natural ecosystems. This work might otherwise not happen, because it is perceived as too risky, too lengthy or unnecessary for today's agriculture. Students can take advantage of major universities' resources...The program plants the seeds of our ideas for school research and for when these bright young people move on to their life's work" (LR(82), 2005:18).

One of the Fellows, had this to say about applying to the program:

It was pretty clear...the outcome that TLI really seemed to be hoping for was drawing current university agronomy and ecology and plant breeding and genetics faculty into Land Institute related research, using, sort of passing out these small treats in the form of grad student grants to get faculty to get serious in collaborating with TLI (interview).

Some of the former Fellows continue to collaborate with TLI on projects. In doing so, TLI is able to attain funding and facilities that the Fellows receive to conduct their research as Principal Investigator. For example, TLI was able to acquire “\$1 Million for Perennial Wheat at Michigan State” because the Fellow continues to collaborate with TLI on research. TLI made an announcement of the collaboration in its newsletter:

Starting with Washington State University and Land Institute seed, Michigan State University will conduct a \$1 million, four-year project to help develop perennial wheat. The funding is from the US Department of Agriculture. The Land Institute’s work has been about breeding. Michigan State’s program will focus on how to farm perennial wheat well. That will include weed management, row spacing, fertilizer regimen, and best planting and harvesting times. “There’s a lot that we don’t know” said Steve Culman, a former Land Institute graduate fellow. He is managing the work at the W.K. Kellogg Biological Station in Kalamazoo County, about 115 miles west of Detroit...Culman said that problems from agriculture are worsening, and the more help with developing perennial grain crops, the better. He wants to see built a kind of critical mass for the work and for increasing awareness among researchers, farmers and the public. (LR(95), 2009:4)

Taken together, education and research are used to help new ideas gain legitimacy.

Making claims legitimate through authority and evidence, or legitimacy making, is a technique for disseminating ideas and practices in the field of science (Latour and Woolgar, 2013).

Scientists in the field of science, actively make research by gaining recognition and support from other scientists. One way scientists gain legitimacy for their work is through publications, such as books and especially peer-reviewed articles in top-ranked journals.

In the field of science, making claims legitimate takes place in peer-reviewed journals:

We have attracted national and international scientific attention, including the most prestigious scientific journals *Science* and *Nature*, because we have published our results in refereed journals." (KHS, 1998(3866-3869)).

Many of the peer-reviewed articles published by TLI scientists are concept papers in which the scientists promote the development of perennial grains in polyculture systems based on Natural Systems Agriculture principles. These papers outline the advantages of perennial grains over annual counterparts.

Some of TLI's published research investigates genetic improvement and variation. This type of research is the necessary pre-cursor to answering the four overarching questions driving the TLI agenda. Other papers evaluate the yield output of perennials, addressing TLI's research question focused on the capacity for perennials to produce high yield. Still other TLI publications investigate weed, pest, and/or disease resistance, answering TLI's fourth research question. Very few of the publications by TLI scientists address TLI's second research question, which asks whether or not perennial polycultures can outyield the same species of monocultures. Instead of comparing polycultures to monocultures, the articles tend to compare perennials to annuals. As noted by one of the scientists, "In part because this is an area of research in ecology that has received tremendous attention – Tilman's diversity plots at Cedar Creek, Dave Hooper's diversity plots at Stanford, and lots and lots of other papers." At the same time, this reflects the stage that TLI is at in their program – developing for the trait perennialism first. More recently, TLI has been ramping up its ecological research for polycultures.

One of TLI's top-cited articles is a concept paper that appeared in *Science* in 2010. This journal is well recognized in all science and has a high impact factor compared to the other journals included in the analysis. The network of authors that wrote this article includes 21 scientists from land-grant universities, USDA-ARS, international universities, and international

research units. In the article, the authors call attention to the obstacles, opportunities, and needs for breeding perennial grains. The argument of the article is promotional calling for the development of perennial grains and expansion of plant breeding programs around the world. Supporting this argument, the authors outline the ecological advantages of perennial crops over annual sources. The authors conclude that large investments are necessary to accelerate plant-breeding innovations in food-producing perennial grains. Key buzzwords, or terms that would be recognizable to a wide audience of both laypersons and policymakers, that frame the article include: food security, climate change, energy supply, and biofuels. The authors call for a research focus that supports three out of four of TLI's research questions: developing traits in perennial grain crops that produce high yield, self-regulate, and resist pests and diseases. The authors bring attention to physiological trade-offs between seed productivity and longevity in plants. This consideration is to demonstrate that perennial grains have unique characteristics that account for more than just high potential yield.

The second most cited article based on average citations per year by a group of TLI scientists, another concept paper, was published in *Bioscience* in 2006 (Cox, T. S., J. D. Glover, D. L. Van Tassel, C. M. Cox, and L. R. DeHaan. 2006. "Prospects for developing perennial-grain crops." *Bioscience* 56:649-659). The purpose of the paper is to bring awareness to breeding programs for perennial grains. Once again, the article is promotional in nature and emphasizes the benefits of perennial grain crops compared to annual equivalents. The authors focus on yield concerns, addressing TLI's first research question. The research is framed within a food security context, calling for more research and development of perennial grains in order to address the issues of a growing and malnourished population.

Conferences are another way scientific ideas gain legitimacy. In 1997, the annual Ecological Society of America (ESA) meeting hosted its first symposium devoted to Natural Systems Agriculture. TLI scientists and members from TLI's advisory team presented papers among other scientists in the field of ecology. The symposium challenged the industrial agriculture paradigm of annuals grown in monocultures by considering the scientific possibilities for developing perennial grain crops in polyculture systems.

The results from these scientific experiments are promising. Researchers asking questions which challenge conventional agriculture should be encouraged by this entire symposium devoted to Natural Systems Agriculture. The studies presented convincing evidence that the existing paradigm must be altered in some significant ways to ensure the sustainability of food production through agriculture" (LR(59), 1997:24-25).

TLI's work has engaged in theoretical debate in order to legitimate its work representing "Natural Systems Agriculture: Multiple Challenges to an Existing Paradigm:"

The possibility of developing and using perennial grain crops seems to run counter to the basic concepts of life history theory (LHT). LHT assumes that perennials, which must invest a great deal of energy into establishing and maintaining root mass, consequently would have a limited amount to put into seed production. As seed production increases, plant longevity would decrease. Laura Jackson of the University of Northern Iowa, finds fault with this assumption... Jackson concluded that selection for greater seed yield can occur without an immediate loss of perenniality, proving the LHT-based assumptions wrong... "Now that theory shows selection in perennial grains can be rewarding, the next step is to carry out this procedure (LR(59), 1997:24).

Beyond peer-reviewed journals and conferences, legitimacy making extends to the public through the media. TLI sets aside a section of its newsletter called "At The Land" to exhibit its legitimacy. In this section TLI calls attention to the recognition it receives from mainstream media outlets. For example, TLI announced: "The Land Institute was featured by two *New York Times* columnists, Thomas Friedman and Mark Bittman":

Friedman visited The Land Institute while making a television documentary about how climate and environmental stresses helped trigger the Arab awakening. He

interviewed Jackson and other institute scientists. The documentary will appear on Showtime next year...Food writer Bittman featured The Land Institute in a column published October 23 under the headline "Now this is natural food." The piece is less opinion than a profile of our work, and relies heavily on an interview with Jackson. The Times Web site includes a video of the exchange, and footage from the institute's fields and Prairie Festival, where Bittman was a speaker this year (LR(107), 2013: 9).

In another newsletter, TLI brings attention to the growing interest in perennial grains among scientists across the world:

The December issue of *Scientific American* magazine devoted a page to perennial grains in a collection called "10 World Changing Ideas." In the cover story of the October 20 science magazine *Nature*, use of perennial grains is among tactics offered to meet the world's growing food demand while avoiding further degradation of land by agriculture. (LR(102), 2012:26).

Legitimacy making also extends to external support. In 1997, TLI established a Natural Systems Agriculture Advisory Team of nearly 40 experts in the fields of agronomy, ecology, and other sciences in order to support its mission of advancing perennial polyculture systems in agriculture (LR(58), 1997). The purpose of the committee is to advise TLI on its overall scientific approach and research agenda and to help communicate TLI's mission and agenda to the public. The Advisory Team has expanded over the years, upwards of 111 members. Member credentials and bios have been profiled in the *Land Report*.

A key component of TLI's active making of work is keeping aware of self and others. This activity is a pulse check. TLI uses planning meetings, organizational consultants, and informal discussions to reflect on its own position and that of others. This reflective process is a continuous internal dialogue. Keeping aware is a way for TLI to remain viable. This cultural activity entails making declarations, agreeing and disagreeing, posing questions, researching, and evaluating conditions and opportunities as a way to learn and grow. Research for evidenced-based facts is a primary value in keeping aware of self and others. Not only does TLI conduct

research as a function of its cultural form, but the organization also uses research to inform its cultural activity for work.

In 1988, TLI embarked on a Long-Range Plan in order:

to state a clear vision of The Land for the coming years, and to decide how we'll get there (KHS, 1988_3759.3769-3722).

In a 1988 Planning Meeting Minutes document, we see that TLI's strategy is to survey the landscape for opportunity and to assess if and how its work can fit while being cautious to not compromise its work:

[Research]: Influence land grant university research programs. Selectively seize opportunities to influence national thinking and actions on sustainable agriculture. Promote philosophy: protect long term ability of land to support a variety of life and culture

Course of Action: Evaluate K-St "sustainable" ag research as ex; Publish land grant university ratings; Lobby for sustainable agric support in KS legislature

[Education – Elites] Discussion & Observations: John argued for more emphasis on shaping public opinion...Wes wants it noted that if we go after power, money, and opinion-makers, we are as vulnerable to corruption as the less virtuous... Wes mentioned Conn's belief that where you send your writing is at least as important as what you write. Op-ed pieces in the NY Times get clipped and put in legislators' files...John said...The Land is doing good work. We can influence people. We must promote that which we stand for...Dana mentioned...K-State claims to have 16 sust. ag. research projects. These must be critically evaluated and supported if good. Such accountability would get at the soft underbelly of the beast, Wes added. We could rank sust. ag programs at land grants and provide the rankings to the Wall Street Journal or New York Times (KHS, 1988(3662-3668)).

A politics of possibility is about staying conscious, recognizing that all of our actions and non-actions contribute to what happens next. Subjects become aware of their interrelated roles and stay aware of what is happening. In making and delivering its work, TLI is staying aware of self and others.

10.2 Work as Product

As we have seen, TLI is a part of the movement for a sustainable agriculture. Its research program and its development team are mechanisms for carrying out their agenda. The content of TLI's unique research program is long-term, more risky, and less easily understood compared to other sustainable agriculture research programs. In this section, I highlight the main narrative of TLI's work as a representation of: place-based consciousness, prairie roots, a brand of science, and a revolutionary contribution..

TLI's revolutionary contribution is made possible by its location on the prairie. The location of TLI's headquarters is a representation of its place-based work and has influenced its research program on perennial grains in polycultures. As Jackson writes in the organizational newsletter back in 1998, the location of TLI, out in the middle of nowhere in the heart of Kansas prairieland, is important for "carrying our work into the next realm" (LR(62), 1998, 4).

Jackson states:

I can't resist a final word in support of the placement of the center at The Land Institute here in Salina. I bring up this subject because a few friends and thoughtful critics have suggested that we should be closer to a major university. The argument is that it will be easier to attract the necessary staff where the accoutrements are available which ordinarily attend universities. More positively, why not use our location as a filter for the serious applicants? (LR(62), 1998:4).

TLI's work is a representation of place because the organization assumes that context matters. Thus, location has been central to TLI's comprehensive agenda. Place-based work shows up in its research efforts for developing perennial grains in polycultures based on the Great Plains Prairie System. With never-plowed native prairie in their backyard, TLI is able to look to nature's prairie, which features perennials grown in mixtures, as a model for their work. As Jackson states in a newsletter:

Beyond the filter justification, however, is an ecological reality that makes us perfectly positioned. We are in the land of the mixed grass. The heart of tallgrass prairies is a few miles east, short grass prairie a few miles west. The Land

Institute is within an hour or so of each...Here we are favorably positioned...here we are in the midst of one of nature's standards, a genius far wiser than any campus assembly. (LR(62), 1998:4).

One of the scientists explains the principles for place-based research:

Obviously, understanding the plant community that has been tailored to the Great Plains environment is crucial to our efforts to devise an agriculture that exists in harmony with nature. The agriculture we envision, modeled on the prairie, would be composed of herbaceous perennial seed crops grown in mixtures. These mixtures will take advantage of differences among species in growth period, nutrient use, and water requirements. We will incorporate into the design of perennial polycultures various principles of ecosystem function discovered in studies of the prairie ecosystem. Thus we will address nutrient cycling, ecological succession, long-term stability of yield, and biological management of insects, diseases, and weeds within agroecosystems. (LR(23), 1988:23).

TLI's work produces a place-based consciousness in which the local is connected to the global. This is evident in TLI's collaborative efforts with scientists around the world. The research clusters work within the context of their place, be it the rainfed and falling flood systems of Mali, the rice paddy systems in China, the dryland farming systems in Australia. This means, based on ecological principles applied to place, perennial grains in polycultures will not be a universal, standardized form but will be a place-based product.

The sentiment for place is echoed in TLI's development efforts by one of the staff who observes the significance of physical place for inspiring visitors who come out to tour the plots and research buildings, making the ideas of TLI more tangible while creating a whirlwind of "like-minded energy." This "magical" place fosters "out of the box ideas" and "allows for ideas to take shape" because it is an "accepting environment." Going on, the staff member says that going out to TLI "hits those light bulbs" for constituents. The location instills a sense of place. Seeing TLI's work, visitors walk away with a place-based consciousness.

In 1986, TLI changed its logo, replacing the original windmill logo with its current prairie roots design. The windmill symbolized the early years of the organization's dedication to

alternatives in shelter, energy, waste, and transportation. One of the interns from the first cohort group built and installed a wind generator as a research project on sustainable and appropriate technology. With the organization's shift in focus – from broad-based alternatives in all parts of society to an emphasis on Natural Systems Agriculture – came the prairie roots⁵⁴. In 2007, one of the former scientists dug a trench as a walk-in subterranean exhibit for Prairie Festival attendees. TLI used the trench to display the significance of perennial roots, demonstrating the comparison of roots of TLI's intermediate wheatgrass, a perennial stretching more than six feet down and alive year-round, to those of wheat, an annual reaching about two feet and dead by late June. The scientist later appeared in the "Inside Geographic" section in *National Geographic*, which featured a story about soils. In the article, an accompanying photo shows the scientist in a trench with 10-foot roots. This impressive trench display was turned into a life-size image on a black background poster, showing the comparison of perennial to annual roots. Before the poster, Jackson and the scientists would haul around the actual roots themselves to presentations and talks, but the poster now is used to demonstrate the stark contrast between perennial and annual roots, a symbolic representation of TLI's work.

Jackson connects the significance of the prairie roots as the foundational material for its work in a conference invitation for the Ecospheric Studies event in the summer of 2015:

Our perennial grain mixtures, still in a juvenile stage for sure, are material representations of our ecological world view. Our germplasm is in the hands, labs and fields of several institutions here and abroad. But material representation, as important as it is, is half the story. (ARCHIVE: Jackson letter 5/20/2015, Ecospheric Conference Invitation)

⁵⁴ TLI requested help in designing the new logo. Friends of The Land and former students submitted designs for review. TLI selected the design of a law student at the time who latter became a Land Institute intern. The former intern has stayed connected to TLI, showing up as a regular part of the Prairie Festival as a local songwriter with music that reflects life out on the prairie.

Again, in an interview, Jackson explains how prairie roots provide both the material and information for developing perennial grains in polyculture systems:

Nature's prairie is about the opposite of the vast acreage of such annual monocultures as corn, sorghum, sunflowers and soybeans, which usually feature soil erosion along with, in industrial times, the use of fossil fuels for traction and commercial chemicals. Nature's prairie features perennials grown in mixtures. There is no plowing (and, therefore, little to no soil erosion), no planting every year, no fossil fuels necessary for growth, no chemical fertilizers, no insecticides, no herbicides—all of which are deemed necessary for grain monocultures.” (White, 2016).

The goals of an industrial-agronomic cropping system⁵⁵ designed for global markets are productivity, efficiency, and organization. As a result, these cropping systems are highly specialized and uniform. The cropping system goals inform research and plant breeding goals. Increased yield is the primary plant-breeding goal that supports agricultural productivity goals for industrial agriculture. Input-dependent cropping systems of the industrial-agronomic model have relied heavily on irrigation, tillage, and application of chemical fertilizers, herbicides, and pesticides.

For scientists at TLI, the primary goal of a perennial-polyculture cropping system is to maintain ecosystem health. Specifically, this type of cropping system is being designed to provide food while protecting soils, water, and biodiversity. This type of design incorporates the characteristics of the region. Rotational management and livestock are features of this type of cropping system.

At TLI, the goal of the research team is to develop diverse perennial grain production systems that are ecologically efficient and resilient like natural ecosystems. Specifically, plant breeding efforts are dedicated to perennializing the major grain crops and domesticating wild

⁵⁵ Crop production can be increased by three main strategies: expanding arable land, increasing cropping intensity (the frequency with which crops are harvested from a given area), and improving yield.

perennials for grain. While breeding is the top priority of the research team, TLI has ramped up its ecological research to understand and compare different crop management strategies for growing perennial grains. The criteria TLI scientists use to select for a perennial, mechanically harvested grain include: hardy persistence; stiff, erect culm; synchronous seedset; resistance to shattering; rapid dry-down at maturity; easy threshing; relatively large seed; and good seed flavor (Cox et al, 2006).

There is debate in the field on what constitutes classical techniques versus modern plant breeding. Scientists at TLI consider the techniques they use as mostly traditional breeding augmented by some of the modern techniques, such as marker assisted selection. However, the scientists have not turned to modern Genetic Engineering techniques (also referred to a genetically modified organisms, or GMOs) because the approach reflects reductionist principles: “Traits like perenniality that involve complex genetic control and interact with the environment are not susceptible to improvement through manipulation of individual genes. Therefore, there is little chance that transgenic technology can dramatically speed up the development of perennial grains from annual × perennial hybrid populations” (Cox et al, 2006).

TLI’s perspective for breeding perennials along with their assumptions on GMO’s also signifies a brand of science. In an interview with two other grower-researchers and leaders of the global movement for a natural, permanent agriculture, Jackson takes on the role of modern science stating:

Our current scientific knowledge has come at the expense of forests, soils, and fuel. To regard that knowledge as damnable simply because it was accumulated at a cost of a lot of ecological capital is to treat it the same way we treated those forests and soils. We can't do that now. We need to turn that knowledge to work toward the regeneration of the earth. It has the potential to be regenerated, just like any smaller landscape does... ever since the beginning of agriculture, we've had to figure out how to work with nature as much as possible. To do it well, I think we must ask, Is science an inherently alienating force in society? That

question should always be before us, because if we are scientists first and human beings second, we can't afford to ask that question. But if we are human beings first and scientists second, we can't afford *not* to ask that question... I don't believe that science has to alienate us from nature. Let's hope a future science would have high precision along with a higher measure of humility about its own imperfections and the mysteries of nature (Mother Earth News, 1987).

He goes on to explain the type of science that TLI uses (holistic, interdisciplinary, systems approach), suggesting that a shift in how science is done is necessary for addressing the problem of agriculture:

We're trying to become *ecosystemologists* who use a dialectical whole-system approach, not a Cartesian part-over-whole approach. And let me tell you, that's hard. To help us maintain such an interconnected approach, we're hoping to create a natural, physical connection between our soil scientist, plant breeder, ecologist, entomologist, and plant pathologist. They'll use the same laboratory facilities and all have their names on any papers produced. We hope that shared environment will help dictate a pattern of holistic, ecosystem thought and behavior (Mother Earth News).

Jackson's thoughts on science show up in a more recent interview:

All of this will require different ways of thinking about science. Artists will come front and center in the minds of scientists, not for nicety, but for the practical necessity of helping us all expand our imagination as we expand our collective consciousness.

If we can grant priority to the ecosphere as our creator and our protector, we will also want to look downward in the hierarchy of the sciences to ecosystems, to organisms, organs, tissues, cells, molecules, and atoms. We will want a new synthesis, a new understanding of our place in the world. Doing so, we will want to ponder the twelve laws of integrative levels (first articulated by James Feibleman in 1954). Reading and studying these laws will serve as "finger exercises" to assist the mind as finger exercises limber up the fingers of the pianist. In my view, the current field of environmental studies falls short of truly integrated, inclusive thinking. Perhaps ecosphere thinking can be more fulfilling. At any rate, we need a fundamental reconstruction in our thoughts.

In one sense, there is no "them" or "us." We are all in this together. In another sense, some have and will join the struggle, others not. Once a person has joined the struggle, so to speak, then let that person follow his or her passion. This makes us colleagues. None of us will know how our paths will converge on this journey. I don't expect every agricultural researcher to want to work on

herbaceous perennial seed-producing polycultures. We have always taken a long time horizon in our work. If here-and-now agriculturalists want to work on improving the software for the annual hardware, go ahead. Such research is needed.

The point is, we do need a shared vision built on ecology, which is nature's economy, if we are to replace the industrial mind whose primary features are consumerism, accumulation, and extraction. The ecosphere has, to date, been more beautiful than useful. To expand the ratio to increasingly favor the beauty side will require healing. (White, 2016)

The sentiment that TLI has a brand of science has been with the organization from the beginning, as we see co-founder write in TLI's *Land Report* newsletter in 1987:

No other organization takes the concept of sustainability so far as to explore the fundamental change from annual monocultures to perennial polycultures. Although we agree that diversified grain/livestock farms are certainly more sustainable than specialized, factory-like operations, and we support research and education which will help all of us be better stewards of the land, we have a different agenda for research at TLI. Even the best organic farmers still have soil erosion in their corn, wheat and milo fields. In the long run, we need agroecosystems more closely modeled after natural ecosystems. We seek a sun-powered system with built-in elements to prevent erosion and repel epidemics of insects and pathogens. This ideal requires an application of ecological principles to agriculture to a degree never before imagined. With this focus, we are still not in the mainstream" (LR(31), 1987:39).

While TLI recognizes the importance of other sustainable agriculture programs, it provides a friendly critique to "alternatives" that do not go far enough in transforming agricultural systems. TLI recognizes the similarities while calling attention to the differences of other alternatives:

The discipline of agroecology arose out of a concern that many of the energy-intensive and chemical-intensive agricultural practices are not sustainable in the long run, because they rely on nonrenewable resources and have degraded agricultural soils and ecosystems. Agroecology research is based on the premise that an agricultural system is an ecosystem within which concepts and theories of ecology can be systematically tested through rigorous experiments. Through such experimentation, sustainable agroecosystems can be developed. Our research at The Land is based on this premise...but there is a distinction between our research and agroecology research. Agroecology research designs agroecosystems based on the current domesticated crops; whereas our research

goes beyond design. Through wild and domesticated plants, we hope to breed new herbaceous perennial grain crops that are to be the basis of agroecosystems. If perennial grains are to be bred from domesticated annual grains, it is important that breeding methods reconstitute the ecological genes that were left behind as the annual grain crops were domesticated (LR(18), 1983:6).

Moreover, TLI uses its science to serves as a critique of industrial agriculture:

our science is devoted to building an agriculture nearly opposite of industrial agriculture, one which mimics Nature's never-plowed native prairie. That prairie features perennial species grown in mixtures as opposed to our high yielding crops which are annuals...The implementation of an ecological agriculture, however, means that we feature a more creaturely life, with the potential to turn the tide away from the extractive economy toward a renewable economy...The modern industrial mind assigns high standing to the rigor characteristic of high energy physics, mathematical game theory and molecular biology (LR(70), 2001:21).

Like its education program, TLI's brand of science is interdisciplinary:

Our long-term plan for NSA calls for ecologists, plant breeders, modelers, environmental historians, and biotechnologist (but under strict conditions!), working under one organizing umbrella. We believe it is possible to open new interdisciplinary pathways as well as new ways of working, thinking, and interacting. For a more interactive science to take hold, this new paradigm requires nothing less" (LR(66), 2000:22).

While TLI has a brand of science that represents its research work, TLI also has a unique story that is a representation for its development work. TLI's comprehensive vision and educational program has been a key selling point for prospective donor foundations. In the early years, TLI was one of the few organizations that provided education in sustainable agriculture. TLI presented a compelling story, opening up imagination of foundations that had leanings toward progressive social change and capturing funds.

TLI's work represents a brand of science as produced by the scientists and a unique story as delivered by development staff because its work also signifies a revolutionary contribution. As a cultural product circulating in and out of TLI headquarters, its science is a revolutionary

contribution to solving the problem of agriculture. Jackson uses the newsletter to highlight TLI's revolutionary contribution by pointing to the recognition TLI receives from external authorities:

Scientific American's August issue features an eight-page, illustrated story about the need and promise of perennial grains, by our scientists Jerry Glover and Cindy Cox, and John Reganold of Washington State University. The editors wrote, "The challenge is monumental, but if plant scientists succeed, the achievement would rival humanity's original domestication of food crops over the past 10 millennia— and be just as revolutionary." (LR(88), 2007:3).

In Jackson's interview for *Rural America* we see that he Jackson predicts TLI's revolutionary contribution:

I envision a future wherein food being produced by a resilient system that mimics nature's economy serves as a model for society in general.

The transformed agricultural system we have in mind **in our work** would be information- rather than energy-intensive. A study of natural ecological systems should enhance our ability to imagine expanded possibilities for a future in which people, land, and communities interact as one to create shared prosperity, rather than compete in ways that undermine the well-being of the whole.

To ask agriculture to point the way forward for cultural and economic transformation seems like such **a tall order that it receives little attention**. But as we solve the 10,000-year-old problem of agriculture, our imaginations are sure to soar, for adequate solutions will be mimicking nature's ancient economies. Agriculture may be the best place to begin, given that land use is the number two source of greenhouse gases, behind power plants and ahead of all transportation. The biggest component of agriculture is grain production. So if we draw attention to saving our soils and use the advancement of knowledge out of ecology and evolutionary biology, perhaps we can begin to get a grip on what we must know and do to shift toward a truly ecological paradigm. By 2070, I believe such a shift can be regarded as the way to go. **Any industrial agriculture still with us will simply be on the wrong side of history** (emphases added) (White, 2016).

In the field of science, revolution as a concept holds significant weight for many scientists because their work is directed at scientific investigation, aiming to find the next major advance in their field. Revolution in science is not a regular occurrence, making it one of the highest premiums for a scientist. Science is about finding a groundbreaking phenomenon. One of

the scientists wrote about the “First International Perennial Grain Breeding Workshop” in a newsletter, depicting TLI’s revolutionary contribution.

In a major expansion of The Land Institute’s vision of soil-conserving, grain-producing agriculture, in September scientists from three continents gathered in Kunming, China, to exchange data and seeds. The workshop was hosted by the Yunnan Academy of Agricultural Sciences...We will look back on this workshop as the international launching of the perennial grain revolution (LR(95), 2009:7)

Jackson and the scientists are not the only ones to see TLI’s work as a revolutionary contribution. Constituents also refer to TLI’s science as revolutionary. In one newsletter, a professor of biology and a member of TLI’s Natural Systems Agriculture Advisory Group proclaims the significance:

Jackson, The Land Institute, and many other people and organizations have embraced this ecological revolution. The institute’s objective is to abandon dead-end, industrial agriculture and replace it with a natural systems agriculture. The larger vision is to create a natural systems living, grounded in and abiding by the principles of ecology and evolution. Making global culture consilient with the principles of biology would be to make the impossible possible—what Thomas Berry calls “The Great Work.” The visionaries in Wisdom have challenged us to roll up our sleeves and get to it (LR(84), 2006:7)

As part of TLI’s revolutionary contribution is its philosophy or worldview. Not only do constituents refer to TLI’s science as a revolutionary contribution, but the cultural component is just as significant for many supporters. As one of the Prairie Festival guest speakers suggests:

If we are interested in a new kind of culture, then it won’t do to simply tweak the old forms. We need a revolution. So imagine if, for the next 400 years, instead of striving toward ever greater abstraction in our thoughts—the goal of goals being a unified theory of everything—we cultivate a thinking modeled after concrete living phenomena. This shift from abstraction and object-thinking to a plantlike dynamic thinking would help us develop the capacities we need to truly ground our understanding and interactions with nature in nature (LR(85), 2006:12).

We see that TLI’s values-based work is symbolized by both material and cultural products: a place-based consciousness, prairie roots, a brand of science, and a revolutionary contribution. So how do participants respond to TLI’s values-based work?

10.3 Reception of Work

Staff and scientists embody TLI's philosophy in their work. When speaking about their work, staff use some of the technical language of the scientists, such as the "hardware-software" analogy. They also use some of the same explanations for perennial grains in polycultures as a solution as Jackson uses in his speaking and writing. When staff describe their work, they include reference to the problems – soil erosion, water pollution, climate change. Staff are concerned with the issues. They believe that TLI is unique in its long-term approach and its position outside of the land grant system, i.e. the agro-capitalist research complex.

Staff's perception for the uniqueness factor of TLI also plays out in the development work in which staff describe its approach as an "unconventional funding model" because they have a high success rate and a high retention rate. For development staff, the message requires "thought and effort" or "slow communication" in which they need to have time to have a dialogue with prospects. TLI's vision and work do not necessarily fit the contemporary social media communication approach of instant, short messaging.

Work is place-based for staff and scientists too. Living and working in Salina or Kansas is an important factor for many staff who have familial connections to the place. Many of the staff found out about TLI's work through some type of social tie. For many, TLI is like family. As one scientist remarked, "Wes likes to keep it in the family" when hiring and/or working with consultants. Using "heredity" as a metaphor, the scientist remarked that TLI breeds for a staffing "progeny."

Both staff and scientists believe in TLI's mission and paradigm – perennial grain agriculture is THE solution to the problem of agricultural unsustainability. Their passion and commitment to the work is a reflection of the shared vision. They believe in both the philosophy

and the science. They view the work as a paradigm shift. Both staff and scientists are excited about the new source of long-term funding that the organization has received because they believe this will allow them to take their work to the next level by bringing in more people and extending out to more researchers across the world.

Many of the Fellows perceive TLI as the hub and catalyst for research, leading the efforts on research and development on perennial grains in polycultures. For many Fellows, the program created a research community, a “cohesive group,” a “peer network” in which the Fellows can collaborate and share common research interests. TLI’s work is important for these Fellows. Many find ways to stay connected to TLI even though their current job does not necessarily provide support to conduct the type of work directly relevant to TLI’s research and development for perennial grain agriculture. Some will work with TLI outside of their day-to-day work as a side project, whereas others conduct projects that have

“TLI has it right” is another perspective that Fellows share. As one Fellow explains, alternative approaches in agriculture represent “tweaks versus transformations.” Tweaks are the piecemeal solutions, such as organics, whereas transformations are the systemic, long-term solutions. For this Fellow, TLI’s work represents transformation.

When going to funders, TLI brings its unique story of complexity and difference. TLI’s story is both a benefit and a barrier when seeking support. It has been a barrier when foundations do not have “agriculture” as part of their funding criteria. But TLI has been creative in linking aspects of its work to what is important to the foundation.

I had foundation officers tell me that they just didn’t get proposals that were so interesting and so well written. [Jackson] was just always fascinating (interview).

For some funders, education was the important part of TLI’s work:

So I think the people in the foundations felt that [education] was invaluable, they

could see the need for something that wasn't being provided anywhere else in the country pretty much at that point. A little later there were several universities that were teaching more seriously the environmental topics (interview).

For these foundations, TLI's educational work reflected TLI's vision, using a "comprehensive curriculum" adapted from Jackson's textbook reader *Man and the Environment* covering history, agriculture, philosophy, environmental policy, and the psychology of rural towns. Here we see that TLI's cultural activity is intertwined – its vision, education, and work are a package – the whole is greater than the sum of its parts.

In sum, I described TLI's cultural activity doing place-based work. As a cultural-based strategy for a counterhegemonic project, TLI uses the following techniques to make and to deliver place-based work: establishing infrastructure and coalitions; leveraging; gaining legitimacy; and staying aware of self and others. These cultural activities produce a symbolic narrative for TLI's work, including: place-based consciousness; prairie roots; revolutionary contribution; and TLI's brand of science. In the next chapter, I present the final thematic finding of TLI's cultural work: gathering together.

11 GATHERING TOGETHER

In this chapter, I present the last set of findings on TLI's cultural work facilitating its counterhegemonic project – gathering together. I start with the context for the activity. Like the previous chapters, I then go into the active making and delivering of gatherings followed by the gathering as a product and ending with the reception of gathering together.

Gathering together has been a long-standing ritual throughout TLI's history. Both informal and formal, gatherings are moments when TLI and its constituents come together to share in the various forms of work – intellectual and physical. Gatherings include luncheons, barbques, and potlucks with staff, board members, and students; onsite classes and events hosted by TLI for the public; the Prairie Festival for constituents; and workshops for Graduate Fellows. Gatherings are moments for nurturing a politics of possibility, articulating new language and creating new experiences for subjects to inspire collective action.

Because TLI is interested in building its network of constituents, targeting “objective the right way” individuals, gathering together is a way to interact with folks and to cultivate relationships. Time spent gathering together inspires collective action. Scholars of social movements refer to these types of interactive settings, or micromobilization contexts, as a feature of collective action. According to Snow and colleagues (1986), micromobilization signifies the interaction and communication processes used to influence different target groups to pursue common interests (465). With participation as the outcome of interest, scholarship on micromobilization tends to look at the potential to mobilize supporters; the capacity to access recruitment networks, or social ties; the level of intensity and commitment of participants; or the willingness of supporters to participate (Ward, 2015). What I am presenting here is the cultural

work of gathering together to illustrate what is happening on the ground of a SMO – the active making of gathering together and the gathering as a product.

11.1 Active Making of Gatherings

In this section I show how TLI makes and delivers its gathering together cultural activity. In the active making process, I emphasize the techniques for brining TLI's gatherings to life, including: planning the agenda, inviting intellectual stars, and emboldening participants to discuss big ideas.

Gathering together requires time and resources to plan and to organize. As host, TLI pulls out the hospitality carpet ensuring that guests are taken care of. Staff coordinates invitations and registrations, food and travel logistics, and answers participant questions. For TLI, gatherings are on top of the regularly scheduled speaking engagements that mostly Jackson and increasingly the scientists attend. Jackson, as the charismatic leader, attends many of these events. His presence as a prophetic speaker has played a big part in the ritual for gathering together because of his proselytizing speaking style.

Gathering together is embedded in TLI's organizational structure shaping the type of work that gets done throughout the year. Gathering is a practice in which TLI embodies through its all-staff meeting held once a month. One by one, each staff member, including the seasonal interns, reports to the group what they have been working on and what is new. They also share food. Alternating turns, one or two people sign up to bring in a dish for the group. After the meeting, staff will go on their way, out to the field, back to their office, or stay to mingle. The meeting functions as an exchange of information and staff update, brining an awareness to the different types of work whereby the scientists and the administrative staff have an opportunity to see into the other's world. One of the rituals of the scientists is their lunch-hour ping pong match

in which the scientists gather in the basement of the science building to play one another over the lunch hour everyday. Another ritual is Thursday happy hour in Jackson's office among TLI's scientists who gather to chit chat about their musings on either personal or professional matters.

More formally, TLI created a "Visitor Day" policy to manage its cultural activity for gathering together. TLI informed readers in its newsletter the benefits of its policy:

An informal policy has evolved of having two days a year when visitors are welcomed at The Land with a special program...We have found it convenient for us and enjoyable for our visitors to present a program of substance, rather than have an open house with people wandering around all afternoon (LR(09), 1980:3-4).

Here we see the organization's need to strike a balance between effectively using its time and resources and putting on a satisfying event for its constituents.

The more formal gatherings represent different types of special meetings that have their own flavor. These events range in size, target different audiences, and cover different topics. TLI also covers many of the costs for participants to attend these special meetings, including meals at minimum, along with travel and lodging in some cases. Thus, gatherings are an expense item, so TLI develops proposals to secure funds to cover costs for some of the meetings. TLI refers to many of these special meetings as "milestone events" in its history because the gatherings have been significant in bringing people together to engage in the knowledge production process, advancing TLI's work.

One type of special meeting is the small networking gathering that targets new stakeholders and funders. These meetings are designed to engage involvement. The meetings are small and intimate with six to ten participants including TLI. At these meetings, the group is "wining and dining," meaning TLI puts on the "dog and pony show," the "full shebang" in order to cultivate interest for TLI's work. The process is a courting of new relationships leading up to

the meeting. The audience is not necessarily made up of scientists, but they are intelligent individuals who understand the complexity of TLI's story. The gathering allows for the story to unfold.

Then there is the scientist meeting where TLI hosts scientists from LGUs in order to build and maintain collaborations with peers who are interested in the work of TLI. These are meetings with researchers who believe in TLI's philosophy, use NSA principles in their work, and who can get the necessary work done to scale up perennials in polyculture systems.

Finally, there is the "Wes Jackson meeting." These are the meetings influenced by Jackson's impulse to bring people together to discuss topics that he is particularly interested in, one of his working ideas. These meetings tend to be broad in topic focusing on the social-political context and TLI's work. In each of these meetings, the common thread is TLI's story and approach – the problem-solution whereby NSA is used to develop perennials in polycultures.

TLI has hosted many of their gatherings onsite or in Matfield Green. Other gatherings have been held at retreat centers, such as the Stanley Hotel in Estes Park, Colorado. Unlike a hotel conference center in a central city, the prairie setting is unique for many of the attendees, providing a backdrop of ecological magnificence. The intimate setting provides an opportunity for people and place to connect. TLI's headquarters are erected on an ecological diversity that is in stark contrast to the industrial farms of monolithic uniformity surrounding The Land. The place itself helps to reinforce TLI's message.

While location plays an integral part in TLI's gatherings, location is also the biggest constraint of TLI's gathering together. Salina is not a straightforward route for most people to get to because the closest major airport is Kansas City International Airport, 160 miles away. Also, the town is mostly set up like a standard retail-box format not offering city-like hotels,

restaurants, and entertainment. But Jackson views this limitation as a benefit, a litmus test, in which people committed to the vision will make the pilgrimage to TLI's headquarters in Salina, Kansas.

The gathering is structured by an agenda that is sent out before the event. Gathering together is a way to raise awareness along with highlighting TLI's contributions. The agenda is arranged with the time to tell the full story. Time is spent interacting in various activities, including: listening to presentations, breaking out into small discussion groups, breaking for meals, going on walking tours of the facilities, plots, and prairie, dancing contra in the Big Barn, viewing art exhibits, or listening to live musical performances. The agenda allows time for participants to informally mingle in between sessions to play with the ideas from the sessions. TLI uses the time gathering with participants to highlight its vision. Gatherings also take place with participants sharing a meal together.

As one of the Fellows suggests, TLI has been effective in keeping participants connected to its work by inviting them to participate in its work.

The continuity we've had, whether it was Estes Park or I was invited back to be part of this planning meeting completely separate from the Fellows Program with TLI when they were thinking of pitching a big idea to the Gates Foundation or something. So there's been this continuity and connections I've had with TLI staff. So even though the Fellows Program hasn't been around I feel like they have kept a lot of us tied into meetings and activities over the years (interview).

With the exception of the Prairie Festival, gatherings are by special invite. There have been times when someone will hear about the gathering and ask to join, and TLI tries to accommodate these requests to make everyone feel welcome. The challenge is to make sure they have the space and the money to accommodate everyone. The Prairie Festival has attracted as many as 1,000+ participants while the other gatherings are small, ranging from 10 to 40.

Gathering together is also a way “to hold the line” and “to prevent drift” when delivering the agenda, meaning TLI recognizes the potential for individuals to stray from the mission, to be tempted to institutionalize parts of the work while leaving out important pieces for comprehensive transformation. By gathering together, TLI coordinates efforts to advance its agenda.

Part of the appeal of TLI’s gathering together is the guests that they bring. Guest scholars often are invited because they not only provide expertise and legitimacy to the discussion, but they also contribute a “radical” or “alternative” view from mainstream thinking.

At the invitation of The Land Institute, Robert Rodale will spend a few days in Salina during the third week of June. In addition to serving as a visiting scholar in class sessions with students and staff, Mr. Rodale will meet with prospective leaders in the Salina community and present a public lecture... The premise behind the Institute’s work, and the focus of Rodale’s talk in Salina, is the potential for people to regenerate their communities, much as natural systems can often regenerate when temporarily disturbed...Like Greenfield, Salina faces a formidable array of social, economic and environmental challenges, both now and into the twenty-first century. Bob Rodale will visit Salina to discuss these challenges and how they might be imaginatively approached (LR(29), 1987:6)

In a newsletter announcement to readers of an upcoming Prairie Festival, Jackson is quoted as saying:

“Christian monk, Biblical scholar, India critic, scientific rationalist, Whiteheadian philosopher, historian of Russia, wildlife conservationist – that’s the lineup for Prairie Festival 2014,” Wes Jackson said. “Their challenge: what does your passion or knowledge have to offer with the need to protect our ecosphere?” (LR(109), 2014:19)

In its 20th anniversary newsletter to readers, TLI highlights the intellectual lineup of stars that has been part of the gatherings over the years starting with:

March 8, 1977. E.F. Schumacher visits The Land Institute and gives a public lecture in Salina. Schumacher becomes the first honorary board member.

October 21-22, 1978. Amory Lovins visits The Land Institute and a “Soft Energy Paths” conference in Salina.

June, 1979. Dr. Charles Washburn, Professor of Engineering at California State University, Sacramento, teaches an energy course at The Land Institute.

May 31-June 1, 1980. The 2nd Prairie Festival features John Todd of the New Alchemy Institute.

May 28-29, 1988. The 10th Prairie Festival, "Health, Beauty, and Permanence," features J. Stan Rowe, Conn Nugent, and David Orr.

October 20-22, 1989. The Land Institute sponsors a symposium on "The Marriage of Ecology and Agriculture," dedicated to Paul Sears. Participants include Wendell Berry, Donald Worster, Donella Meadows, Jack Ewel, David Ehrenfeld, David Pimentel, and David Orr among others.

May 24-26, 1996. The 18th Prairie Festival, "The Marriage of Ecology and Agriculture, the Next 20 Years," features Conn Nugent, Kathleen Merrigan, Jose Lutzenberger, Donald Worster, and Wendell Berry (LR(55-56), 1996).

Each of these intellectual stars brings ideas that align with TLI's vision. In making and delivering gatherings, TLI emboldens discussion among participants for new ideas. Gathering together is about sharing big ideas, allowing for a deep dialogue process, and in turn, cultivating new language and ethical, ecological subjects. Gathering together is a cultural activity that nurtures collective action bringing people together to pursue their self-interests more effectively than they could alone. TLI's method for making and delivering gatherings is emboldening participants to discuss big ideas.

In 2014, TLI held one of its milestone events, writing about it in its newsletter. As part of the production process, TLI gathers around ideas, which means TLI makes the space for participants to feel comfortable to grapple with big ideas:

Late this October, The Land Institute and a fledgling organization called Estes Institute brought to a historic hotel in the Rockies researchers from five continents. The congregation, mostly biologists, but also social scientists, was asked to huddle over **advancing globally The Land Institute's goal**, development of perennial grains grown in species mixtures. Two days into the four-day meeting, longtime observers of work toward the goal told participants that they sensed a **watershed**. Never had so many – more than 50 – from so

many nations – 10 – **gathered around the idea of perennial grains**. Not until the past decade had there developed the biological insight and know-how necessary for the work's success. Not until the past few years had the worlds of science and funding paid it as much attention (LR(110), 2014:5, emphases added).

Emboldening participants is a subtle but important activity for delivering the gathering.

The article goes on to say how the gathering fuels idea generation:

Talk covered technique, results, and coordination of efforts, along with **curiosities** like the high altitude disrupting sheep, and elk grazing in yards. The conversation about a **new agriculture** stretched beyond scheduled morning and afternoon sessions, to drinks, to meals, and to after meals. “It was fantastic to see the people I have been working with from around the world on wheatgrass finally getting to meet each other,” Land Institute breeder Lee DeHaan said. “It was great to see them **interacting and generating ideas**, which would have been nearly impossible without this meeting (LR(110), 2014:5, emphases added).

TLI actively makes the space for gathering together by inspiring participants to discuss new ideas. In one of its early gatherings, TLI held a training seminar on site for employees from the Environmental Protection Agency (EPA). In the *Land Report*, TLI writes about how ideas percolate through its gathering

The Land made a contract with the EPA to present general background material, to provide **information and ideas** which would **inspire** employees to work with dedication to **protect the environment**... Theme of EPA seminar at TLI: “Sustainability: A New World View”...The ideas [of sustainability] were not new to everyone, but spending time **discussing a new world view and long-term goals and options** was a new experience for them as EPA employees. The EPA has its share of idealistic people who become disillusioned about really doing an effective job protecting the environment within a federal bureaucracy (LR(12), 1981:6)

Through the active making and delivering process, TLI's gathering together activity is based on a set of techniques, including: planning the agenda, inviting intellectual stars, and emboldening participants to discuss big ideas. Through these cultural production methods, TLI generates cultural products, which I outline in the next section.

11.2 Gatherings as Product

Now I turn to the cultural products of TLI's gathering together activity. TLI's gathering together is a symbolic narrative, a representation of: community and celebration, intellectual hootenanny, and knowledge network.

Gatherings are an opportunity for TLI to showcase its work – vision, education, and/or research – by enacting shared experiences for new subjectivities. For TLI, gathering together is about community and celebration. Once again, community is the underlying value for this ritual. In the process, TLI is both building and celebrating community.

Gathering together means a spirit of community, a network of friends, a network of allies, and groups interested in alternative ways for living. These friends and allies are involved because they believe in the ideas and the work of TLI. Involvement includes attending an event, making a financial contribution or material donations, working as a volunteer work, and/or helping out during the rebuilding efforts.

The narrative for community in TLI's gathering together is evidenced in its first newsletter. When TLI opened its school doors, the organization experienced a set back shortly after the first cohort of students had started in the fall semester. A fire had burned the building to the ground, destroying all tools and projects in the workshop, the office, the classroom, and the library. This was a major loss for the organization just starting its first session. The students still wanted to continue the program despite the setback, and the Jacksons adapted accordingly by temporarily setting up shop in their home. TLI writes about the rebuilding efforts that took place in which friends of The Land gathered together:

It was strenuous **work**, requiring **problem solving** and **cooperative efforts** to get the logs into place. The **joking and teasing**, and a plentiful supply of **good food** provided by wives of the workers, made it seem more like a **party**...when it was too dark to work any longer, thirty people, men, women and children,

gathered in the Jackson house for a turkey dinner. It was a mellow **celebration** of the day's **accomplishments** and an **experience of community** (LR(01), 1976:9, emphases added).

In 1986, TLI put on its “Tenth Anniversary Celebration,” inviting “everyone” to “come celebrate with us.” The program included an open house for former students, Friends of The Land, and visitors; a special display of photographs of TLI over its 10-year period by one of the Board members; a dedication of the Wauhob Prairie; a buffet dinner, including a vegetarian option; and an evening concert at the local high school auditorium. In their newsletter announcing the celebration, TLI remarked:

it is an important milestone for us [10 years], and we intend to celebrate! We think that it is important to look back and appreciate what has been accomplished, and to look forward and make plans for the future (LR(27), 1986:4).

A gathering is as an “intellectual hootenanny⁵⁶,” in Jackson’s words, where staff, scientists, students, board members, guest speakers, constituents, and/or the public come together to connect with others to discuss and hear big ideas while being entertained. A gathering is where ethical thinking takes place. Gathering together is also about having fun, sparking imagination, and challenging ideas. In its newsletter, TLI shares the gathering experience in “Ideas in a Little School on the Prairie:”

People migrate to our Prairie Festival each fall for a shot of what I’ll call enlivening enlightenment. It’s not just education that entertains. It’s something like a revival meeting. It’s an energizer for those who want to better fit us humans into our homes, the land, and who might feel they’re at least a bit of a minority...

We stage a similar meeting each June...a week rather than two days...the language gets more arcane. But there’s a dance, a talent show, a visit to high prairie at sunset and conversation late into the nights. It’s called the Graduate Fellows Workshop, and it’s for students whose work in our research vein we fund...These young scientists can use major universities’ tools, and their studies

⁵⁶ “Intellectual hootenanny” was used by a guest speaker, Bill Vitek, at one of the Prairie Festivals, and Jackson immediately adopted the phraseology using it ever since. He likes to give credit to where credit is do when it comes to ideas he draws on in his thinking.

to plant our ideas at institutions that might otherwise find the pursuit to lengthy, or unnecessary for agriculture today (LR(88), 2007:4)

An intellectual hootenanny is also an expressive format of culture. For example, TLI's annual event, the Prairie Festival, takes place on the Konza Prairie where Jackson and his constituents intentionally practice science-art-beauty-life-nature. A look through all the past programs is the first indicator that cultural expression is an important aspect of the event for Jackson, organizers, and attendees. Since the beginning, some type of art exhibit has been included on the Festival program, including photography, poetry, painting, and music. The Friday night barn dance has also been an installation of creativity over the years. In 2014, morning yoga out on the prairie was added.

The Festival is an intellectual hootenanny, an expression of the connection among science-art-beauty-life-nature. In 2002, the program included "Theater in the Ground":

Kaiulani Lee stood on the earth floor of a barn in Kansas, with a desk, some books and a teapot, the cool night wind swirling dust around her, and brought her audience to a cabin in Maine, into the mind and heart of *Silent Spring* author Rachel Carson. This was *A Sense of Wonder*, A plan atou our Prairie Festival on Sept. 21. Alone on stage through the piece's two acts, under the focus of about 200 gathered in the Land Institute barn, Lee as Carson presented the very private scientist's love of the natural world, and her battle with both cancer and the chemical companies whose results *Silent Spring* passionately and thoroughly exposed 40 years ago. Lee returned after her ovation to answer questions about the play. The actress, who has performed on Broadway and television, crafted *A Sense of Wonder* with the help of Carson's friends and colleagues, building it directly from the scientist's published writing and personal journal. She has presented the play for some 10 years. Lee was joined in answers by Maril Hazlett, a University of Kansas doctoral student in environmental history addressing concerns of pesticides and human health. Her dissertation examines the controversy that followed *Silent Spring*. Hazlett's essay on this will appear in *Fertile Ground: Knowing Nature Through Gender*, scheduled for publication by the University Press of Kansas next fall (LR(74), 2002:25).

An intellectual hootenanny is a radical moment of transformed consciousness in which participants engage in big ideas, thinking outside the box. In its newsletter, TLI shared with

readers an image of participants joining in on the big discussion of climate change – one of the leading issues of our time – from one of TLI’s annual Prairie Festivals with the following caption:

A show of hands at the Prairie Festival for action to check human addition to greenhouse gases. The “350” written on the barn with perennial grasses – complete with carbon- sequestering roots – is a level of atmospheric carbon dioxide that many scientists estimate is needed to avoid catastrophic climate change, and the number chosen for the activist group founded by writer Bill McKibben, 350.org. The preindustrial level was 280 parts per million. The level now is 385. Scientist and festival speaker George M. Woodwell said we should shoot for below 300. For more about sending a message with perennial plants, see page 20 (LR(95), 2009:8).

An intellectual hootenanny is a conversation that brings together “thinkers and doers.”

Among the many thinkers and doers who have spoken at the Prairie Festival over the years, there are two who have had a particularly important influence on many of us here at The Land Institute...The conversation continues (LR(55-56), 1996:62).

TLI refers to long-standing board member, Don Worster, and friend, Wendell Berry, who have spoken at the Festival and other gatherings. In its 20th anniversary newsletter edition, the editor shares with the reader excerpts from Worster’s and Berry’s speeches – the conversation from the gathering continues on the pages of its newsletter.

TLI has attracted the cream of the crop of intellectuals and activists, generating a network of experts. E.F. Schumacher, Wendell Berry, Bill McKibben have been part of the line up. TLI has created an informal network of knowledge sharing that operates outside the confines of the academic institution. Exchange of ideas has been the value proposition throughout TLI’s history. The value is in the creative space where constituents are free to share in radical ideas and pose critical questions with other intellectuals. From the beginning, gatherings have been a core practice of TLI. Strong personal relationships and an intellectual network have emerged from these gatherings.

As an intentional cultural activity, TLI receives support to host these gatherings. The intent is to produce a knowledge network of experts who can carry on or legitimize TLI's work. TLI announces to newsletter readers its efforts to bring together influential individuals as a way to produce new positions in the field of agroecology:

The Rockefeller Brothers Fund has given The Land Institute a grant to host a two day meeting in October of **highly-respected** ecologists and agriculturalists, representatives of the scientific press and mass print media, and **individuals who influence** agricultural policy at the federal level... There is a groundswell of concern about the brittleness of industrialized agriculture in this country. People want to get agriculture back on its biological feet and away from the soil wasting, chemicalized, fossil fuel-dependent approach that industrialized agriculture has championed...A desired **outcome of this conference** is an emphasis on nature-as-standard reflected in **new positions in agroecology** with the U.S. Department of Agriculture and agricultural universities. The **ultimate benefits** will go to the farmer and the consumer in a food system that is healthy for both people and the land (LR(35), 1989:9, emphases added).

TLI shares the experience of these gatherings with newsletter readers. As part of the description, TLI highlights the expertise involved in deliberating together:

In 2011 the institute hosted and Angus chaired a meeting of twenty-some professionals: a World Bank economist from the Netherlands, a member of the National Academy, an ecological agriculturist from Australia, a rural sociologist, several ecologists, geneticists, and historians. We deliberated how to advance our ecological agriculture agenda so that the foundation world would take it seriously (LR(104), 2012:22).

Who TLI invites to its gatherings is important. It uses its gatherings to extend its reach, to produce a worldwide knowledge network of experts who have the authority to speak on TLI's work. In one of its international gatherings, TLI brought together "UN's food and farm branch" to learn about perennial grains. Highlighting the significance, TLI shares the event in its newsletter with readers:

Land Institute scientists joined other researchers in Rome in late August to tell officials of the UN's Food and Agriculture Organization about developing perennial grains. The FAO serves as a "**knowledge network**" and sharer of policy **expertise** (LR(107), 2013:8, emphases added).

The pages of the *Land Report* are consistently filled with descriptions of these gatherings:

[with over eighty people attending Visitors' Day]...We started with refreshments and short talks about the history, philosophy and goals of The Land Institute inside the classroom, then divided into groups for outside tours. At 3:00 P.M. the guests were invited to participate in one of four discussion groups led by students. The topics and leaders were "Solar Greenhouse Construction with Mark Lieblich and Karl Parker, "Soft Agricultural Paths" led by Marty Bender, "Impacts Upon the Land From Waste Disposal to Transportation" with Mari Peterson and Jay and Pam Ellinghouse, and "Soil Health as Related to Human Health" led by Kelly Kindscher and Ali Henderson. Following the group discussions, held on the north porch, east porch, greenhouse area, and classroom, everyone came together again for a wrap-up talk by Carter Henderson of the Center for Alternative Futures. Carter gave an informal presentation and then there was time for questions and answers. His understanding of ecological and resource limits upon investments and growth of the economy gives him a point of view which is rare among financial experts. Carter Henderson's perspective of the future and how one should prepare for it was extremely interesting to the visitors, and a lively discussion followed his talk (LR(09), 1980:3-4).

In this sketch, we see that TLI's cultural activity for gathering together generates its particular symbols, including: community and celebration through "refreshments and short talks;" an intellectual hootenanny through a "lively discussion;" and a knowledge network of experts through "topics and leaders" and a "point of view which is rare among financial experts." So how do participants receive these gatherings?

11.3 Reception of Gatherings

In this section, I depict the reception of gatherings by participants as part of the circulation of culture. The themes for reception of gatherings include: hospitality, congeniality and collegiality, and appeal in hearing TLI's message for systemic alternatives and connecting with like-minded people.

Among participants, TLI is "famous for its intellectual hospitality," giving attention to people, taking the time to converse. TLI invites people out to visit their headquarters and

someone will show them around the land – the greenhouse, the scientist building, the research plots, and now the new threshing facility. TLI is also known for helping people.

What is clear from observations is that participants feel honored to attend gatherings at TLI, especially the ones that are by special invite. Speakers often mention their trepidation for speaking at such an event because they want to “get it right,” meaning they feel they have to say the right thing in their speech, hoping Jackson will approve. They graciously thank Jackson for the opportunity to be part of the event.

Jackson’s sentiment for congeniality and collegiality at the Estes Park event in 2014 was echoed by many of the Fellows who attended the event.

President Wes Jackson later said, “I sensed congeniality, and collegiality. It was ‘What can we do about making the great transformation?’” Jackson, who founded the institute 38 years ago, said, “It was maybe our finest hour.” (LR(110), 2014:5)

In 2006, TLI had a record number of attendees at its annual Prairie Festival with over 800 people overflowing their Big Barn. Through informal interviews, TLI asked why they came to the Festival and shared some of the responses in its newsletter. TLI opens by showing gratitude for its constituents and acknowledging the significance of its gathering together:

Really, we are grateful. This annual event on our grounds outside Salina, Kansas, is a lot of work for us, but to see the faces of supporters from around the continent, to be with kindred spirits in our work to develop perennial grain crops out of caring for land and country—it is wonderful (LR(86), 2006).

TLI shares with newsletter readers “What Draws Them:”

A participant “from Bennet, Nebraska, and who teaches environment and resource economics in the agriculture department of the University of Nebraska: It’s the coming together of people that are engaged. And, quite honestly, a lot of times you don’t see that **engagement**—you see people with ideas, but they’re not putting them to work. And I’ve always appreciated that this is **hands-on**, this is **applied** work here.” (LR(86), 2006:18)

Participant from “Lawrence, teaches at Rockhurst University in Kansas City,

Missouri: I'm a business professor, and I frankly feel a calling to send this **message** we just heard to the business community, because without **that kind of change**, we're doomed." (14).

A participant "who is studying at Oklahoma State University, in Stillwater, for a doctorate in sustainability: I came because sustainability is such a broad field and I don't have a lot of experience in sustainable agriculture. I wanted **to learn** about people who were pioneering the effort." (18).

Participant is "a Kansas native now of Sylvan Lake, Michigan, and assistant director of Cranbrook Art Academy: "The **speaker lineup**—Wendell Berry, Ray Anderson—and I hadn't ever been to it, and I was really intrigued with being here, to see what The Land Institute does. **I'm a real environmentalist**. In my art jobs I've tried to attract people to sustainability issues like green building, and build awareness to the public through great art and design. I was a curator at the zoo, teaching people to fall in love with nature through art and theater. **I'm green to the core**." (15).

One participant is "a rancher and farmer in St. Francis, Kansas: I come to the Prairie Festival to **connect with other people, people who have a deep understanding** of the whole issue of food—where it comes from, how it's processed, distributed and delivered to people. And how that can really somehow make a difference in the environment, in the sustainability of our system in agriculture." (15).

A participant "of Oklahoma City: I'm looking very intentionally for a way to be more **comprehensively free and ethical** ... and I think the ideas and methods of living that The Land Institute promotes and studies are the best way that I've found to see those things ... **The closer I can be to people** who are trying to follow that road, the stronger I'll be in my own journey" (19).

TLI's message is an important part of the gathering together. So are the people. The people who deliver the message contribute to the experience along with the people who gather to listen to the speakers. Listening to the ideas directly from the thought leaders is an opportunity to get to know TLI and a learning experience. Gathering together with people who share similar interests creates a sense of connection to ideas and practices. The activity also builds a type of strength for the self by affirming ideas and practices. Gathering together means that you are not alone in thinking about ideas and practices that seem otherwise radical to the average person. The experience is freeing, providing time and space for intentional ethical thinking.

One Fellow remarked on how he did not understand TLI's approach for "getting together" because it was "strange." But then he recognized the bonding value created by the gathering with like-minded individuals.

In sum, TLI circulates culture through its active making and delivering of gathering together that turns into a gathering as a product that is received by participants. TLI circulates gatherings by: planning the agenda, inviting intellectual stars, and emboldening participants to discuss big ideas. These gatherings are symbols of: community and celebration, intellectual hootenanny, and knowledge network of experts. With the close of the final findings chapter, what we see is an intersecting of cultural strategies in which envisioning, educating, working, and gathering together reinforce each other. The next chapter will summarize the research.

12 CONCLUSION

In this study, I investigated the question: *how does a SMO outside a field of power advance a progressive agenda without being coopted by the dominant position?* To move toward an answer, I sorted through a multitude of concepts constituting this process-oriented question. First, I reviewed the sociology of agriculture literature on the dominant position setting the national agenda for agricultural research, showing the interlocking relationship of the USDA-land grant university system-industry, what I referred to as the *agro-capitalist research complex*. I integrated literature from social movements to explain factors contributing to success (or failure) by social movements responding to the negative consequences of the agro-capitalist research complex. Then, I examined the concept of *pre-emerging social change* as a dynamic process in which actors in some measure formulate new experiences that are not workable to the dominant position. I grounded the pre-emergence concept in Bourdieu's and Williams' relational theory models to help explain power dynamics. Next, I used a *politics of possibility* framework to understand the features of a counterhegemonic project, including the politics for creating new language and new subjects and inspiring collective action. I also introduced the concept *liberated ecosystem* to visualize TLI as an SMO of actors, policies, and institutional practices standing outside the dominant system that has not been incorporated as other forms of alternative agriculture have been. I made a case for cultural analysis as a way to shed light on scholarship that tends to emphasize the structural dynamics of agricultural research systems. Putting forth my answer, I argued that *cultural work* investing in a politics of possibility is a significant factor for bringing about transformation. Making the answer evident, I conducted a holistic and interpretive *cultural analysis* of an *ethnographic case study* to assess the cultural strategies contributing to TLI's counterhegemonic efforts. In the first set of findings, I presented TLI's *cultural logic*

reinforcing its cultural activities, focusing on the assumptions and values that are qualitatively different from mainstream culture. In the thematic findings chapters, I introduced the *four cultural-based strategies* investing in a project aimed at transforming the social-ecological order, including: sustaining a shared vision; delivering values-based education; doing place-based work; and gathering together.

For this research, I selected The Land Institute (TLI) as a case study of a SMO promoting a marginalized, progressive agenda for social change. I used TLI as a case to investigate two conceptualizations: illustration of pre-emergence as a process and politics of possibility as a counterhegemonic project.

I use the remainder of this conclusion to summarize the key points of this research. I then consider three matters outstanding. First, to what extent can a liberated ecosystem be a mechanism for social change? Second, how can integrative cultural work for a politics of possibility be infused into social movements so that social-ecological transformation can occur? Lastly, I end by bringing attention to future considerations for TLI.

As a recap, I have aimed in this dissertation at establishing the significance of cultural work nurturing a politics of possibility in the process of pre-emerging social change. I began in **Part One** with the background context of power dynamics in agricultural research systems. I attempted to show the reinforcing structural and cultural dynamics of power relations.

Starting with Chapter 2, I used a power-elite model to explain the interlocking power structure of state-science-market driving the agenda for agricultural systems in the U.S. (and increasingly across the world). Made up of the USDA-Land Grant University system-Industry, I referred to this power structure as the agro-capitalist research complex. While political economic analyses have emphasized the structural dynamics of agricultural research systems, I attempted

to integrate cultural logic as an important part of the analysis. I connected the scholarly political economic perspective to a cultural assessment by showing that historical dominating ideas and practices have reinforced the interlocking relationship. What we saw was a reinforcing structure-culture dynamic – structural processes of industrialization, globalization, and capitalization are being upheld by a system of beliefs (statism, scientism, and marketism) based on a limitless growth and profit imperative and reductionistic logic that sees humans separate from and superior to nature. We saw the rise of agronomy as the dominant discipline in the agricultural sciences while agroecology was marginalized from the national agenda. I argued that agronomy fits, *both structurally and culturally*, within current trends of globalization and liberalization of commodity markets, while the principles of agroecology for “farming in nature’s image” challenge the very nature of the current agricultural system dominating the global landscape.

Understanding cultural logic is important because principles of modern industrial agriculture, or sustainability, frame the way researchers see the world, pose questions, define problems, and set priorities for research. We saw how the dominating *structure and logic* of the agro-capitalist research complex has been associated with negative social, economic, ecological, and political consequences across the world. The problem of agriculture is that the industrial model producing the majority of the food we eat today is not sustainable.

In response to the negative consequences of industrial agriculture, I introduced the significance of social movements as a mechanism for social change. Here, I discussed the terms alternative agriculture, sustainable agriculture, and agroecology to understand the various efforts being undertaken by activists. I showed how each term represents a moving away from the development of an industrial agricultural model.

I used this background context to situate my entry into my research. Instead of viewing cultural logic as a given to the political economic structure, I parsed out ideology, or cultural hegemony, in order to show that cultural-based strategies are just as important as market-based strategies when considering social change processes. Through cultural analysis, I used my research to get at a SMO's ideas and practices interacting with political economic factors.

In **Chapter 3**, I used a relational theory model to explain power positions and relationships: the dominant as represented by the agro-capitalist research complex interacting with the subordinate, such as SMOs. I used Pierre Bourdieu's field of power concept to mean a structure of relations based on capital and legitimacy. I integrated Raymond Williams' interpretation for hegemony and counterhegemony into a field of power relational model. What we saw was a spectrum of relationships struggling over resources and legitimacy. I represented the struggle as a recursive countering between dominating and dominated – the dominant trying to maintain its position and the dominated trying to transform the dominant culture. From here, I responded to Williams' distinction between opposition and alternative. I applied this integrated relational model to calls for new models for agriculture, ranging from full transformation of the system, referred to as *oppositional* or *systemic alternatives*, to fractional changes, referred to as *alternative*. I used this distinction to consider pre-emerging social change. Following Williams, fractional changes, or alternatives, can be *incorporated* into the dominant position because the dominant can reinterpret, dilute, and discriminate the meanings and practices in a way that upholds its position. Also from Williams, I defined pre-emergence as an unfolding process in which actors are *in some measure* formulating new experiences *not compatible* to the dominant position. From this theoretical synthesis, I posed the question how does TLI, as an SMO outside the dominating system advance a progressive agenda without being incorporated into it like other

alternatives have?

My findings are broadly similar to scholars of social movements who have written on the significance of resource mobilization, framing, identity, and networks in the origination, maintenance, and success (or failure) of SMOs. If resource mobilization, framing, identity, and networks play a significant role in TLI's origination, maintenance, and success as an SMO, then I picked up on culture as an important part to the puzzle.

In **Chapter 4**, I introduced key concepts to help understand the nature of TLI, as a case of an SMO, standing outside a field of power advancing a progressive agenda without being coopted by the dominant position, including: cultural work as a strategy, a politics of possibility as a counterhegemonic project, and a liberated ecosystem as a concept to help bridge the social and the ecological. I outlined the politics of possibility framework, which gets at efforts of resistance through innovative imagination, or the politics for creating new language, cultivating new subjects, and inspiring collective action to transform the social order. I defined a liberated ecosystem as an SMO, including its actors, policies, and institutional practices, that stands outside the dominant system without being incorporated as other forms of alternative agriculture have been.

In **Part Two**, I showed how a single case can be used to explore and to generate theoretical concepts as a way to illuminate a new perspective on a phenomenon. By using a single case and adopting a qualitative approach to the study, I was able to investigate the more nuanced cultural strategies for pre-emerging social change.

In **Chapter 5**, I outlined my methodology based on an interpretive, multi-method qualitative ethnography. This means, I used multiple data sources, including interviews, participant observation, and historical documents to interpret the story of TLI. I used cultural

analysis as an approach for explaining the empirical evidence. Through cultural analysis, I looked at TLI's cultural work as three moments of production, including: production, representation, and reception. In the moment of production, TLI used a set of techniques in the active making and delivering of cultural work. In the moment of representation, we saw certain narratives, images, discourses, and representations within culture as product. In the moment of reception, we saw participant's responses to TLI's cultural work.

In **Chapter 6**, I provided background information on TLI, showing that the organization was established during the environmental movement era. From the start, we saw that TLI was on the periphery – taking on a deep ecology philosophy, a radical perspective compared to mainstream environmentalists, while also critiquing the dominant position in agricultural research systems, i.e. industrial agriculture. Establishing TLI was a deliberate move by co-founder Wes Jackson who gave up his tenured post in academia to start a non-profit organization as a way to be separate from the agro-capitalist research complex, the institutions claiming to feed the world while contributing to the problem of unsustainable agriculture. Throughout, I depicted TLI as a counterhegemonic project working towards more sustainable agricultural systems in the pursuit of sustainability. Creating an ecological consciousness is at the foundation of TLI's project. I conceptualized TLI as a liberated ecosystem functioning outside a field of power and investing in cultural work for a counterhegemonic project.

The substantive chapters focused on TLI's cultural logic (Chapter 7) and key strategic cultural activities (Chapters 8 – 11). Throughout my analysis, I suggested that intentional cultural work plays an important role in promoting a progressive agenda while resisting cooptation by the dominant position. I organized the cultural activities into the moments of cultural production: active making of culture, culture as product, and reception of culture.

In **Chapter 7**, I highlighted the cultural logic significant to TLI's work. I outlined the assumptions and values that make TLI's model qualitatively different from the industrial model. I found that the essential elements to TLI's oppositional paradigm include its political-economic context along with its assumptions for property, temporality, epistemology, place, ecology, and nature. These underlying assumptions and values, I found, motivate TLI's main ideas and practices, including Natural Systems Agriculture, perennials in polycultures, marriage of ecology and agronomy, and Ecospheric Studies. In turn, TLI's ideas and practices inform the organization's work. I connected TLI's logic as the foundation for the last set of findings that I thematically organized as TLI's four key cultural strategies for nurturing a counterhegemonic project: sustaining a shared vision, delivering values-based education, doing place-based work, and gathering together.

Starting with **Chapter 8**, I presented TLI's first key cultural strategy, *sustaining a shared vision*, for a counterhegemonic project. The main techniques TLI uses to make and deliver its vision include: spreading the word through Friends of The Land; using slow communication; using a historical imagination to make connection; and introducing intellectual influencers. The vision as a product is a symbolic narrative of: a utopian, ideal; a call for a paradigm shift; a complex story of difference; and a problem-solution. We saw that the positive reception of TLI's vision is an indicator for the organization's success in making people feel like they are part of the collective.

In **Chapter 9**, I depicted TLI's cultural work *delivering values-based education*. The key methods TLI uses for making and delivering values-based education include: managing and organizing multiple program formats; partnering with "objective the right way" individuals; and showcasing guest scholars. TLI's cultural production process generates key representations for

education, including: alternative education; values-based worldview; and people, land, and community in education (PLACE). In looking at reception by participants, we saw that TLI's values-based education was a transformative experience.

In **Chapter 10**, I showed the significance of TLI *doing place-based work* as a cultural activity for nurturing a counterhegemonic project. The main methods TLI uses to make and deliver its place-based work include: establishing infrastructure and coalitions; leveraging; gaining legitimacy; and staying aware of self and others. These cultural activities produce a symbolic narrative for TLI's work, including: place-based consciousness; prairie roots; TLI's brand of science; and revolutionary contribution. Reception by participants took on an embodiment character in which TLI's mission and paradigm played out through their work.

In the final set of findings, **Chapter 11**, I demonstrated the importance of TLI's cultural work *gathering together*. TLI's techniques for making and delivering the cultural activity gathering together include: planning an agenda; inviting intellectual stars; and emboldening participants to discuss big ideas. TLI's gatherings as a product is a symbolic representation for the following: community and celebration; intellectual hootenanny; and knowledge network. We saw that participants found value in gathering together, specifically, participants welcomed these gatherings embracing TLI's message for systemic alternatives and connecting with like-minded people.

Together, TLI's vision, education, work, and gatherings function together as a liberated ecosystem that invests in a new social-ecological order. This cultural work is a reflection of TLI's value for PLACE, or people, land, and community in education. And PLACE is a reflection of TLI's worldview on human-nature relationships. TLI ends up at its "watershed moment" in Estes Park because it has been deliberately investing in the cultural activities of

sustaining a shared vision, delivering values-based education, doing place-based work, and gathering together. In turn, these cultural activities are cultivating a counterhegemonic project for a new social order while resisting cooptation by creating new language and new subjects and inspiring collective action. TLI is able to advance its progressive agenda outside the dominating system without being incorporated into it *because* of its cultural work for a politics of possibility.

With the findings presented before us, we now have three matters outstanding. First, to what extent can a liberated ecosystem be a mechanism for social change? What the case of TLI could mean broadly is that the potential for systemic change lies in deliberate, long-term and multi-faceted cultural work. Each cultural activity is made possible by one another. What makes TLI unique is its model for thinking and doing. While its thinking overlaps with other alternatives, TLI's approach, or strategies, for changing the way of thinking is unique. While previous alternatives have used market-based strategies (i.e. the case of organics), TLI has emphasized cultural-based strategies to introduce not only a product but also a worldview. TLI's worldview – an ecological perspective on human-nature interactions – or, more precisely, nature – informs the product innovation. Using the cultural-based strategy model from this dissertation, future research can be used to conduct comparative case studies to see how much culture and what type of culture are necessary for an SMO to function outside the dominating system.

Second, how can robust cultural work for a politics of possibility be infused into social movements so that social-ecological transformation can occur? This is not to say that other projects are not contributing to transformation. Rather, the outstanding issue considers how organizations can find the capacity to sustain a shared vision through values-based education while doing place-based work and gathering together. The caveat being doing all this based on a logic not compatible to the industrial model. How can SMOs break free and step outside the field

of power in order to open up imaginations? TLI's thinking and doing is an oppositional logic to the dominant social order. This requires more PLACES that nurture learning a qualitatively different logic from mainstream culture. Here we can conduct inventories and assessments of SMOs working towards a more sustainable, democratic society. The inventory assessment can start with a reflexive gaze, identifying the organization's logic that is qualitatively different from the mainstream in order to inform its cultural work. Oppositional logic is a pre-cursor for the cultural work that gets done in PLACE. From here, the assessment can be used to identify which cultural strategies are in place and which ones are missing (shared vision, values-based education, place-based work, or gathering together). The results can be used to put in organizational policies and an agenda that support cultural work.

Finally, TLI faces three future challenges that could have an impact on its vision, agenda, and/or organizational persistence. First, TLI is at a turning point – Jackson retired in the fall of 2016 and the organization has received new, long-term funding that will require “professionalization” of the organization to manage, meaning the amount is significant and allows the organization to greatly expand its resources requiring a new way of mobilizing and organizing. Moreover, Jackson has been at the helm of the ship from the beginning. The beginning was a building period, laying the groundwork for TLI's science, with inventorying and designing experiments going on, working with interns, and pounding the pavement for funds and hiring staff. The surge came in the 2000's after TLI secured the necessary funding to hire good scientists and to get the research up and going. Jackson's charismatic leadership style and persistent vision have been rooting for close to 40 years. Staff and scientists believe that the organization has transitioned from charisma to science, with the vision still in tact. But what about the cultural strategies, what will change, what should change, what should continue?

Selecting for progeny, TLI chose a former Fellow to be the new leader of the organization. This Fellow had been out to TLI on multiple occasions, as a participant receiving TLI's multi-cultural forms – vision, education, research, and gathering. How will these cultural activities be translated? What will be up next for TLI's vision and agenda? As TLI transitions into its next phase for growth, how can the organization sustain a more complex, long-term structure – a structure with a progressive agenda that does not fall prey to the dominating system? Will its vision, education, work, and gatherings continue to cultivate a new worldview for new subject positions who take action?

Second, TLI will have to contend with trends in the external environment that has been increasingly shifting away from plant breeders to molecular biologists to conduct agricultural research. Plant breeding programs are in competition for funds with molecular biology programs. Molecular biology programs have been receiving increasing funds at the expense of plant breeding programs across the nation. The decline of capacity building, both in education and training and hiring, within plant breeding and the parallel increase in capacity building in molecular biology already has had and will continue to have an impact on the type of research that gets done in the agricultural sciences, as in the case of genetically-engineered crops herbicide resistant Roundup Ready and Bt insecticide resistant crops. TLI incorporates both plant breeders and molecular biologists from the LGU system, hiring them to follow their model for agriculture. However, TLI will face the challenge of a decreasing pool of plant breeders and an increasing pool of molecular biologists for hire. For TLI, both plant breeders and molecular biologists are important in conducting agricultural research that incorporates both agronomic and ecological perspectives. If plant breeders are not available for hire, but molecular biologists are, how will this impact TLI's research program and what type of science will become undone?

Finally, TLI's approach for product-to-market (i.e. marketization) will be the most telling of its struggle. Is TLI truly an emergent formation or simply a residual that will be incorporated into the dominant order? Some scientists at TLI recognize a need for and hope that a new social-economic order will be underway by the time that their product is ready for market. Also, the scientists have talked about other mechanisms, such as open source seed, that could potentially protect the product from incorporation. The scientists steer clear from "social engineering" and turn their attention to "ecological engineering," but they recognize that the current social order is not sufficient to transform agricultural systems. Even within TLI, perspectives vary when it comes to engaging in the market – with some scientists ready to fully engage with corporations who are interested in perennial grain crops while other scientists are more cautious, asking critical questions of the prospective stakeholder and their intentions for the product. Meaning, some of the TLI scientists are more wedded to a "market-capital logic" while other scientists are leery of the "market-capital logic" that dominates the current landscape of agricultural systems. How will TLI's engagement in market mechanisms play out in a field of power? Will a capitalist, quick-fix market strategy wipe out a slow-rooting, philosophically grounded educational approach? The race of the tortoise and hare continues.

Jackson argues that the social is a derivative of ecological sustainability – "if we do not get sustainability right in agriculture first, we will not get sustainability at all." Where will Jackson's vision to "institutionalize" an "ecospheric" worldview go from here?

Distinguishing models for sustainable agriculture is relevant to the current global food crisis marked by a paradox embedded in our orientation towards agriculture – the main institutions, or the agro-capitalist research complex, supporting various, yet limited, solutions to the problem of agriculture are the same institutions contributing to the problem of agriculture.

This means that the solutions are embedded in the very logic that has contributed to the problem of agriculture. The state-science-market power relationship is maintaining the values, meanings, practices, and relationships for both problems and solutions.

While activists continue to focus on strategies and actions to bring about change in the agricultural system, the pursuit requires new ways of thinking, valuing, doing, and relating to augment collective action. In order to keep these new ideas and practices afloat, activists need to continue to find ways to sustain as a liberated ecosystem functioning outside a field of power and investing in cultural work for a politics of possibility. A PLACE for proposing new language that opens up possibility; nurturing critical, ethical thinking that brings about new subjectivity; and inspiring collective action directed at transformation, working in-between liberation and domination. How we see our place in this world is at the heart of our actions. While our heart and acts are not always aligned, we need to start with the right intention – that of comprehensive sustainability in which humans take part in interconnected, dynamic, complex ecosystems, submitting to the greater, mysterious power of the Ecosphere.

APPENDIX 1: CONSENT TO PARTICIPATE IN A RESEARCH STUDY



Department of Sociology

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University of Kentucky
Lexington, KY 40506-0027

PI Name: Alicia Hullinger

Date: April 17, 2015

Study Title: Scaling Up: The Research and Development of Alternative Agricultural Systems

Greetings! I am a graduate student at the University of Kentucky working on my dissertation research project being guided by my Faculty Advisor, Dr. Shannon Bell. Thank you for agreeing to participate in research to better understand the strategies, successes, and barriers to the research and development efforts modeling alternative agricultural systems. This interview will take approximately 60 – 90 minutes, depending on how much you want to talk.

As explained in a previous e-mail message, the purpose of this project is to learn about your motivations, ideas, and day-to-day practices concerning research and development of alternative agricultural systems at [The Land Institute] or [Rodale Institute]. I will interview various scientists, staff, and board members at The Land Institute and Rodale Institute to analyze the dynamics for scaling up an alternative research agenda as represented by alternative organizations.

If you volunteer to be interviewed, you will be one of 50 people who work with The Land Institute or Rodale Institute to participate in an interview for this study. You may choose the date, time, and location of the interview. Upon your consent, our interview conversations will be audio-recorded. If you do not want to be audio-recorded at all or wish certain portions to be excluded from recording, please let me know. I would gladly take notes of our entire interview conversation, or stop the recorder for certain parts of the conversations. All recordings will be destroyed after I type them up. I will assign a fake name so that I can contact you later this semester if I have questions about our interview. All write-ups from the interviews will only include your fake name.

We may be required to show information which identifies you to people who need to be sure we have done the research correctly; these would be people from such organizations as the University of Kentucky.

I do not anticipate that there are any risks to you in participating. However, I cannot promise that

your participation will result in any personal or immediate benefits to you or your community.

Your participation is fully voluntary. Your decision whether or not to participate will have no affect on your relationship with me, the University of Kentucky, or any other entity. You are free to decide to withdraw from this study at any time, even after the interview has begun. You are always free to refuse to answer any question you are not comfortable with.

There are no costs outside of your transportation to our mutually convenient location and your time to participate in this study.

You will not receive any payments or rewards for participating in this study.

I would be happy to answer any questions you may have about this study and/or the interview procedures before asking you questions. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the principal investigator, Alicia Hullinger at alicia.hullinger@uky.edu or 303-818-8854. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky between the business hours of 8am and 5pm EST, Mon-Fri. at 859-257-9428 or toll free at 1-866-400-9428. We will give you a signed copy of this consent form to take with you.

Your signature indicates that you understand the information provided above, and that you willingly agree to participate, that you may withdraw your consent and stop participation at any time, that you have received a copy of this form, and that you are not waiving any legal claims, rights or remedies.

I agree to audio taping ____ yes ____ no

Signature of person agreeing to take part in the study

Date

Printed name of person agreeing to take part in the study

Name of (authorized) person obtaining informed consent

Date

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APPENDIX 2: SEMI-STRUCTURED INTERVIEW GUIDE

I am very interested in learning about your experiences as a [scientist, board member, staff member] of The Land Institute. Your interview is part of my dissertation research project at the University of Kentucky on alternative organizations in the field of agricultural research systems. The interview should take about 60 – 90 minutes. I want to thank you in advance for your willingness to participate and your time. Your insights will be valuable to the research study.

INTRODUCTION

1. Tell me a little about how you started working with The Land Institute.
 - a. Tell me a little about your work.
 - b. What is your position/role, what do you do here?
2. What motivated/interested you the most to work with [The Land Institute or Rodale Institute]?

DAY-TO-DAY ACTIVITIES

[MEASURES = Resources (material and cultural); Model for Alternative Agriculture; Historical Development; Activities]

3. Tell me a little about the history of your organization.
4. Tell me a little about your day-to-day [research/board/staff] activities.
5. What type of resources do you need to do your work?
6. How is the work for your research agenda communicated to an external audience (media, journals, conferences, etc)? And to whom is this work communicated to?
7. Who do you collaborate with (internally and externally)?
8. Who are your competitors? Who challenges your research claims?
9. What type of challenges do you face in your work?
10. In your opinion, what are the barriers to growing this type of science, or awareness for this type of work?
11. Tell me a little about the funding process to support your work.
12. The international agenda on sustainable development has identified different domains for sustainability, including economics, ecology, politics, and cultural. How do the principles for your research align with economic, ecological, political, and cultural goals?
13. How does/has [The Land Institute or Rodale Institute] overcome major challenges?
14. [For TLI] What are your thoughts on Wes Jackson as a leader? How will his legacy continue, or who will carry on his legacy?
15. In your opinion, what is the definition for alternative agricultural systems? Alternative science?
16. In your own words, tell me about a) your model for alternative agricultural systems, b) your research agenda?

FINAL QUESTION

17. How would you describe your work on alternative agricultural systems and research agenda to someone who has never heard of these concepts before?

APPENDIX 3: QUALITATIVE CODEBOOK

Code Info	Code Groups	Type of Code	Comments
Agro-Capitalist Research Complex	A	Deductive (Sociology of Agriculture) Inductive (TLI's account)	Any mention, reference to Agro-Capitalist Research Complex, including: USDA, LGU, Industry
Contestation: Alternative	B	Deductive (Williams, R.) Inductive (TLI's account)	(Williams): Alternative From TLI's perspective; Other "brands" of resistance, contestation; "Half measures"; Sustainability lite
Contestation: Opposition	B	Deductive (Williams, R.) Inductive (TLI's account)	(Williams): Opposition; cultural practices, new meanings and values, new practices, new kinds of relationships; new experiences not legible to the dominant culture; new material-cultural forms From TLI's perspective; Comprehensive Model for Sustainability
Context	C	Inductive	Situation in which something happens (place, time)
G&G: Collective Action	D		(Gibson-Graham): Coordinated action; Conscious and combined efforts to build a new "economic" reality; Constructive content of actions; Experimentation; Intervention
G&G: Ethical Practices	D		(Gibson-Graham): Engage in ethical practices of freedom (to negotiate power)
G&G: Ethical Thinking	D		(Gibson-Graham): Engage in ethical thinking through self-awareness and reflection to transform practices of the self (ethical subject being)
G&G: Language	D		(Gibson-Graham): Strategy = reading for difference; Discourse of difference and diversity; Process of deconstruction; Dislodge discursive dominance, hegemony; Counterhegemonic Project;

			<p>Discourse is a relational process, fixing and signifying meanings; Negotiating equivalence and difference; -Representations; Articulations; Politics of Possibility = recognizes and negotiates possibility of remaking economy in alternative terms;</p> <p>(Other Theories): Appreciations/Classifications (Bourdieu); Framing/Identity (Social Movements); New Phenomenon (Jasanoff);</p> <p>Examples from TLI: Perennials + Polycultures; Long-term research (25 - 50 years); Sustainable agriculture; Soil - foundation of civilization; NSA - nature as standard/measure, mimic; A new idea, i.e. Ignorance or Ignorance-Based Worldview</p>
G&G: Place	D		(Gibson-Graham): Grounded in place-based consciousness that extends local to global politics
G&G: Subject	D		(Gibson-Graham): Creating conditions for new views, experiences, values, knowledge, qualities, relations, attributes of the self; Agency; New practices of the self, alternative ways of being [values-based scientist, the practice of ecology]; Engage in new practices of self by cultivating subjectivity + ethical thinking; New subject positions; “What practices of thinking and feeling, what dispositions and attitudes, what capacities can we cultivate to displace the familiar mode of being of the anticapitalist subject, with its negative and stymied positioning?” (xxxv); “How do we become not merely opponents of capitalism, but subjects who can desire and create

			‘noncapitalism’?’ (xxxvi); “the subject as both powerfully constituted and constrained by dominant discourses, yet also available to other possibilities of becoming” (xxxvi); Process of “resubjectivation” “the mobilization and transformation of desires, the cultivation of capacities, and the making of new identifications with something as vague and unspecified as a “community economy”” (xxxvi)
G&G: Vision of Transformation	D		(Gibson-Graham): Envision transformation, struggle to change subjects, places, and conditions of life
Inspirational Influences	E	Inductive	Individuals who have informed TLI’s philosophy or model
Knowledge Production	E	Deductive-Inductive	Making social order (Jasanoff); Generating understanding of a science, art, or technique; Creating conditions for learning (science, art, or technique)
Legitimacy	E		Legitimacy = belief in the rightfulness of a rule, knowledge claim, or person; Legitimation = process in which actors strive to make rule, knowledge claim, or person legitimate (strategies include: material incentives and normative appeals)
Micromobilization Contexts	F	Deductive: Resources Mobilization Inductive: TLI’s account	Definition = interaction and communication processes used to influence different target groups to pursue common interests (Snow et. al); potential to mobilize supporters; the capacity to access recruitment networks, or social ties; the level of intensity and commitment of participants; or the willingness of supporters to participate From TLI’s perspective: “Gathering”; On-site at TLI =

			workshops, meetings, Prairie Festival; Off-site = TLI as participant at conferences, meetings, face-to-face interactions
Organizational Structure	G	Inductive	TLI's structural features (relations, processes) as an organization
Resources	H	Deductive: Resources Mobilization	(Flora and Flora): Community Capitals; Capital = resources capable of producing other resources; what type of resource has been produced (output resource) vs. what type of resource produced (input resource); Capital/Resources used interchangeably
Resources: Built	H	Deductive: Resources Mobilization	(Flora and Flora): Includes: infrastructure, facilities, permanent structures
Resources: Cultural	H	Deductive: Resources Mobilization	(Flora and Flora): Cultural capital is a filter generally expressed through institutions (including family, educational system, media) and varies by social status/position; Includes: values, symbols, rituals, status at institutional level; Legacy: transmission of values; Socialization process
Resources: Financial	H	Deductive: Resources Mobilization	(Flora and Flora): Money
Resources: Human	H	Deductive: Resources Mobilization	(Flora and Flora): Includes: education, training, personal attributes/characteristics that contribute to ability to make a living, strengthen community, and contribute to self-improvement, family, and organizations Individual level = Perceptions, Classifications Appreciations, Dispositions "a sense of one's place" + "a sense of the place of others" (Bourdieu, 1989, p. 19)
Resources: Natural	H	Deductive: Resources Mobilization	(Flora and Flora): Includes: land, water, biodiversity, climate; Ecosystem Services

Resources: Political	H	Deductive: Resources Mobilization	(Flora and Flora): Ability to influence distribution of resources; Including: standards, rules, regulations, agenda
Resources: Social	H	Deductive: Resources Mobilization	(Flora and Flora; Bourdieu): Social Capital is a configuration of interactions; Includes: networks, norms of reciprocity, trust, coordination, cooperation, collective action; Social level
Struggles	I	Inductive	A long, difficult, strenuous effort to achieve something; Barriers; Something that prevents movement, makes something difficult, specifically something that prevents TLI from moving forward with their agenda
TLI Model: Education	J	Inductive	TLI's Brand of Education = interns, fellows, constituents, awareness raising
TLI Model: Research	J	Inductive	TLI's Brand of Research = R&D of Perennial Grains and Polyculture Systems; Natural Systems Agriculture; Intern Projects (early years)
Transitions	K	Inductive	Firsts; Change in conditions; Shift from one stage to another stage

APPENDIX 4: TLI'S FINANCIAL AUDIT FOR SELECT YEARS*

	1977	1993	1998	2014
PUBLIC SUPPORT + REVENUE				
Individuals		\$ 250,996	\$ 268,473	\$4,074,742
Foundations		\$ 335,660	\$ 398,177	\$1,099,725
Corporations + Partnerships		\$ 3,750	\$ 42,170	\$ 248,647
<i>Total Public Support</i>	\$ 15,908	\$ 590,406	\$ 708,820	\$5,423,114
<i>Total Revenue</i>	\$ 4,774	\$ 46,586	\$ 56,833	\$ 76,596
TOTAL PUBLIC SUPPORT + REVENUE	\$ 20,682	\$ 636,992	\$ 765,653	\$5,499,710
EXPENSES				
Education & Public Policy		\$ 244,001	\$ 231,253	\$ 476,970
Research & Conservation		\$ 228,343	\$ 222,894	\$1,419,908
<i>Total Program Services</i>		\$ 472,344	\$ 454,147	\$1,896,878
Management & General		\$ 38,080	\$ 46,644	\$ 278,183
Fundraising		\$ 49,771	\$ 92,748	\$ 529,724
<i>Total Supporting Services</i>		\$ 87,851	\$ 139,392	\$ 807,897
TOTAL EXPENSES + LOSSES	\$ 18,736	\$ 560,195	\$ 593,539	\$2,704,775
TOTAL LIABILITIES + NET ASSETS	\$ 2,141	\$1,574,058	\$2,022,637	\$14,380,242

* 1977 = first financial audit year; 1993 = Jackson becomes sole proprietor; 1998 = start of Graduate Fellows program; 2014 = “watershed moment” event at Estes Park

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The Land Report (LR), No. 27. Summer 1986. The Land Institute's Newsletter: Tenth Anniversary Celebration.

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The Land Report (LR), No. 36. Fall 1989. The Land Institute's Newsletter: The Marriage of Ecology and Agriculture.

The Land Report (LR), No. 55-56. Summer 1996. The Land Institute's Newsletter: 20 Years.

The Land Report (LR), No. 59. Fall 1997. The Land Institute's Newsletter: Agriculture as a Mimic of Natural Ecosystems.

The Land Report (LR), No. 60. Spring 1998. The Land Institute's Newsletter: Start of Fellows Graduate Research Program.

The Land Report (LR), No. 61. Summer 1998. The Land Institute's Newsletter: Start of Fellows Graduate Research Program.

The Land Report (LR), No. 62. Fall 1998. The Land Institute's Newsletter: Start of Fellows Graduate Research Program.

The Land Report (LR), No. 69. Spring 2001. The Land Institute's Newsletter: 25th Anniversary.

The Land Report (LR), No. 70. Summer 2001. The Land Institute's Newsletter: 25th Anniversary.

The Land Report (LR), No. 71. Fall 2001. The Land Institute's Newsletter: 25th Anniversary.

The Land Report (LR), No. 75. Spring 2003. The Land Institute's Newsletter: Half Life of Fellows Program.

The Land Report (LR), No. 76. Summer 2003. The Land Institute's Newsletter: Half Life of Fellows Program.

The Land Report (LR), No. 77. Fall 2003. The Land Institute's Newsletter: Half Life of Fellows Program.

The Land Report (LR), No. 90. Spring 2008. The Land Institute's Newsletter: End of Fellows Program.

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The Land Report (LR), No. 90. Fall 2008. The Land Institute's Newsletter: End of Fellows Program.

The Land Report (LR), No. 93. Spring 2009. The Land Institute's Newsletter: First International Perennial Grains Workshop.

The Land Report (LR), No. 94. Summer 2009. The Land Institute's Newsletter: First International Perennial Grains Workshop.

The Land Report (LR), No. 95. Fall 2009. The Land Institute's Newsletter: First International Perennial Grains Workshop.

The Land Report (LR), No. 96. Spring 2010. The Land Institute's Newsletter: 2nd International Conference on Developing Perennial Grain Crops.

The Land Report (LR), No. 97. Summer 2010. The Land Institute's Newsletter: First International Perennial Grains Workshop.

The Land Report (LR), No. 98. Fall 2010. The Land Institute's Newsletter: First International Perennial Grains Workshop.

The Land Report (LR), No. 99. Spring 2011. The Land Institute's Newsletter: Kellogg Biological Station.

The Land Report (LR), No. 100. Summer 2011. The Land Institute's Newsletter: Kellogg Biological Station.

The Land Report (LR), No. 101. Fall 2011. The Land Institute's Newsletter: Kellogg Biological Station.

The Land Report (LR), No. 102. Spring 2012. The Land Institute's Newsletter: The University of Manitoba.

The Land Report (LR), No. 103. Summer 2012. The Land Institute's Newsletter: The University of Manitoba.

The Land Report (LR), No. 104. Fall 2012. The Land Institute's Newsletter: The University of Manitoba.

The Land Report (LR), No. 105. Spring 2013. The Land Institute's Newsletter: Food and Agriculture Organization of the United Nations: "FAO Expert Workshop on Perennial Crops for Food Security.

The Land Report (LR), No. 106. Summer 2013. The Land Institute's Newsletter: Food and Agriculture Organization of the United Nations: "FAO Expert Workshop on Perennial Crops for Food Security.

- The Land Report (LR), No. 107. Summer 2013. The Land Institute's Newsletter: Food and Agriculture Organization of the United Nations: "FAO Expert Workshop on Perennial Crops for Food Security.
- The Land Report (LR), No. 108. Spring 2014. The Land Institute's Newsletter: New Roots for Ecological Intensification.
- The Land Report (LR), No. 109. Summer 2014. The Land Institute's Newsletter: New Roots for Ecological Intensification.
- The Land Report (LR), No. 110. Fall 2014. The Land Institute's Newsletter: New Roots for Ecological Intensification.

VITA

ALICIA HULLINGER

EDUCATION

- Ph.D. University of Kentucky, Lexington
Sociology, expected May 2017
Dissertation: “Rooting a Successful Model of Agriculture in a Politics of Possibility: The Case of The Land Institute”
Committee: Julie Zimmerman (co-chair), Shannon E. Bell (co-chair), Thomas Janonski, Shaunna Scott, Krista Jacobsen
Emphasis: Sociology of Agriculture and Food, Environmental Sociology
- M.A. University of Kentucky, Lexington
Sociology, 2012
Policy Paper: “*How Proud is Kentucky Food? Meanings and Practices of Local Food for Stakeholders*”
Committee: Keiko Tanaka (chair), Shannon E. Bell, Tad Mutersbaugh
Emphasis: Rural Sociology and Agriculture
- Graduate Coursework Capella University, Minneapolis, Minnesota
Emphasis: Business-Environment Relationships, 2006
- B.A. University of New Hampshire, Durham
Political Science, Minor in Geography, 1999
Emphasis: Interdisciplinary Studies
- Study Abroad University of Utrecht, The Netherlands
Emphasis: Dutch Culture and Politics, 1999

RESEARCH AND TEACHING INTERESTS

Agriculture and Food Systems | Agroecology | Environmental Sociology | Inequalities in Society
Qualitative Methods | Political Economy | Social Movements | Science, Knowledge, Technology

PUBLICATIONS

Peer-Reviewed

- Hullinger, Alicia** and Keiko Tanaka. 2015. "Agriculture of the Middle Participation in State Branding Campaigns: The Case of Kentucky." *Journal of Agriculture, Food Systems, and Community Development*. 6(1):107-120.
- Bell, Shannon, **Alicia Hullinger**, and Lily Brislen. 2015. "Manipulated Masculinities: Agribusiness, Deskillling, and the Rise of the Businessman-Farmer in the United States." *Rural Sociology*. 80(3):285-313 [**lead article**].
- Fisher [Hullinger], Alicia**, John-Mark Hack, Ryan Cooper, and Benjamin Golder. 2013. "Food Labels: Branding Place of Origin." In Darin Jensen and Molly Roy (Eds.) *Food: An Atlas*. San Francisco, CA: Guerrilla Cartography.
- Fisher [Hullinger], Alicia**, Gabriele Ciciurkaite, and Ryan Cooper. 2013. "Which Came First, Food Policy or Food Hub?" In Darin Jensen and Molly Roy (Eds.) *Food: An Atlas*. San Francisco, CA: Guerrilla Cartography.
- Fisher [Hullinger], Alicia**. 2013. "How Proud is Kentucky Food? A Look at the Commonwealth's Agricultural Brand in the Post-Tobacco Landscape." *Sustain Magazine*. 27:55-65.
- Fisher [Hullinger], Alicia**. 2012. "How Proud is Kentucky Food? A Survey of Environmental Conditions of Local Food." *Kentucky Journal of Anthropology and Sociology*. 2(2):101-113.

RESEARCH EXPERIENCE

- Historian Assistant, Rural Sociological Society Annual Meeting. Julie Zimmerman (supervisor). 2015.
- Research Assistant, Department of Community, Leadership & Development, University of Kentucky. Keiko Tanaka (supervisor). Fall 2012 – Spring 2015.
- Research Assistant, Department of Sociology. University of Kentucky. Shannon E. Bell (supervisor). Fall 2011 – Spring 2012.

Research Projects

- "Program Evaluation: University of Kentucky Partnership Project in Indonesia (at University of Lampung and University of Udayana)" (USDA-sponsored, PI Tanaka). Summer 2014.
- "NC1198: Renewing an Agriculture of the Middle: Value Chain Design, Policy Approaches, Social and Environmental Impacts" (USDA-sponsored, multi-state initiative). Fall 2012 – Spring 2015.
- "Farming Masculinities in Industrial Agriculture" (PI Bell). Fall 2011 – Spring 2012.
- "Kentucky Proud Program Evaluation" Kentucky Department of Agriculture (PI, Paid Research Internship). Summer 2011.

PROFESSIONAL PRESENTATIONS AND CONFERENCES

Paper Presentations

- Hullinger, Alicia. "Rooting an Emergent Model of Agriculture: The Case of The Land Institute." 2016. International Rural Sociological Association XIV World Congress, Toronto, Canada.
- Fisher [Hullinger], Alicia. "Breeding for an Agricultural Revolution: The Case of The Land Institute." 2014. Dimensions of Political Ecology Annual Meeting, Lexington, KY.
- Fisher [Hullinger], Alicia. "Knowledge Rooted. Digging into Another Reality for Sustainable Agriculture." 2013. Rural Sociological Society Annual Meeting, New York, NY.
- Bell, Shannon, **Alicia Fisher [Hullinger] (Presenter)**, Lily Brislen. "Manipulating Masculinities: Agribusiness and the Social Construction of the Businessman-Farmer." 2013. Rural Sociological Society Annual Meeting, New York, NY.
- Tanaka, Keiko (Co-Presenter) and **Alicia Fisher [Hullinger] (Co-Presenter)**. "Consumer Cooperative as a Catalyst for Building Local Food Economy: A 40-year Journey of the Good Foods Co-op in Lexington, KY." 2013. Rural Sociological Society Annual Meeting, New York, NY.
- Fisher [Hullinger], Alicia. "Knowledge Rooted: Digging into the Structure of the Perennial Grain Network." 2013. Agriculture Food and Human Values Annual Meeting, East Lansing, MI.
- Fisher [Hullinger], Alicia. "Disappearing Agriculture of the Middle: A Preliminary Look at the Case of Kentucky Context." 2013. Southern Rural Sociological Association Annual Meeting, Orlando, FL.
- Fisher [Hullinger], Alicia. "A Socio-Technical Case Study of Farm Management Information Systems." 2013. Southern Rural Sociological Association Annual Meeting, Orlando, FL.
- Fisher [Hullinger], Alicia. "How Proud is Kentucky Food? An Evaluation of Local Food Practice." 2012. Rural Sociological Society Annual Meeting, Chicago, IL.
- Fisher [Hullinger], Alicia. "How Proud is Kentucky Food? What Local Food is and Does for Actors." 2012. Sociology Speaker Series. Lexington, KY.
- Fisher [Hullinger], Alicia. "How Proud is Kentucky Food? Narrating Local Food." 2012. Southern Rural Sociological Society Annual Meeting, Birmingham, AL.
- Fisher [Hullinger], Alicia. "How Proud is Kentucky Food? A Socio-Spatial Matrix for Negotiating Local Food." 2011. Hoosier Area Food and Sustainability Symposium, Bloomington, IN
- Fisher [Hullinger], Alicia. "How Proud is Kentucky Food? What Local Food Means to Stakeholders." 2011. Rural Sociological Society Annual Meeting, Boise, ID.
- Fisher [Hullinger], Alicia (Presenter)**, Lily Brislen, and Dr. Keiko Tanaka. 2011. "From Family, Rural Farm to Urban Table: Lexington Community Food Assessment 2010." Southern Rural Sociological Society Annual Meeting, Corpus Christi, TX.

Session Chair

- "Food Policy and Political Economy." 2013. Dimensions of Political Ecology: Conference on Nature-Society, Lexington, KY.
- "(De)Valued Landscapes." 2012. Dimensions of Political Ecology: Conference on Nature-Society, Lexington, KY.
- "Food Production." 2011. Dimensions of Political Ecology: Conference on Nature-Society Research, Lexington, KY.

TEACHING EXPERIENCE

Undergraduate Instructor

SOC235 Inequalities in Society (designed syllabus, conducted classroom sessions, graded assignments and papers). Fall 2015, Fall 2016, Spring 2017.

SOC360 Environmental Sociology (designed syllabus, conducted classroom sessions, graded assignments and papers). Spring 2016.

Undergraduate Teaching Assistant

SOC101 Introduction to Sociology (designed and conducted weekly recitation sections, graded assignments and papers). Fall 2011, Spring 2012.

SOC350 Latin Culture, Identity, Community (graded assignments). Fall 2010.

SOC420 Sociology of Communities (graded assignments). Spring 2011.

Invited Guest Speaker

“Do Your Part: Cooperate: The Case of Good Foods Co-op.” 2016. ANT160-001. University of Kentucky.

“Digging into an Oppositional Organization: The Case of The Land Institute.” 2015. Plant and Soil Sciences Departmental Seminar. University of Kentucky.

“Local Foods Systems: The Case of Kentucky Proud.” 2013. GEN100-001. University of Kentucky.

“Survey Methods: The Case of Kentucky Proud.” 2012. ENV360-001. University of Kentucky.

AWARDS AND FELLOWSHIPS

Summer Fellowship Session on Environmental Sociology and Environmental Work in Science and Technology Studies at Vanderbilt University (PI David Hess). 2014.

The Land Institute Weeklong Conference on New Roots for Ecological Intensification, Estes Park, CO. The Estes Park Institute. **\$1,500**. 2014.

The Land Institute Annual Prairie Festival, Salina, KS. Department of Community, Leadership & Development, University of Kentucky. **\$600**. 2013.

Competitive Travel Funds. The Graduate School, University of Kentucky. **\$1,600**. 2012 – 2016.

Competitive Travel Funds. Department of Sociology, University of Kentucky. **\$800**. 2012 – 2016.

Rural Sociological Society Master’s Thesis Award. **\$1,500**. 2011.

University of Kentucky Department of Sociology Beers Summer Fellowship. **\$2,000**. 2011.

PROFESSIONAL SERVICE

Service to the Profession

Communications Committee, Agriculture Food & Human Values. 2014 – 2015.

University Service

Treasurer, Political Ecology Working Group. 2010 – 2011.

Organizing Committee, Dimensions of Political Ecology. 2010 – 2014.

Departmental Service

Representative, Professional Development Committee. 2013 – 2016.

Representative, Personnel Committee. 2013.

Community Service

Board President, Good Foods Co-op. 2014 – 2017

Board Member, Good Foods Co-op. 2013.

Project Consultant, Good Foods Co-op. 2013.

Volunteer, The Berry Center Conference: Resettling of America. 2013.

Research Internship (paid), Kentucky Department of Agriculture. 2011.