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The paradox of collective climate action in rural U.S. ecovillages: ethnographic reflections and perspectives

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Are ecovillages suited to the challenge of climate change and radical social transformation? While often framed as social experiments with the potential to support dramatic social change, we argue that ecovillages should be seen as more than that - complicated sites which both enable and constrain social action in the fight to stem the effects of climate change. As ethnographic researchers with a variety of experiences researching ecovillages, we critically examine some of the factors that affect the power of ecovillages to accomplish this mission, including governance modes that support reduced individual consumption patterns and impact; a commons infrastructure with decreased socioeconomic demands on members, and differing geographic locales with varying socio-political limitations. We conclude this piece by discussing how these factors should inform future research on the transformative nature of ecovillages.

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INTRODUCTION

Ecovillages, and those who do research on them, often proclaim that these intentional communities seek to have an impact on the wider world, especially in terms of taking action and offering models that can help reduce contributions to climate change resulting from human consumption and behavioral patterns¹. Recent work attempts to quantify or clarify the environmental impact of ecovillages²⁻⁵, which is challenging because the impact of the ecovillage is either interpreted largely in the symbolic realms of social connectivity and personal wellbeing^{6,7} or the impacts are highly localized^{8,9}.

In this paper, we use the term “ecovillages” to be inclusive of intentional communities and other expressions of alternative living, similar to the use of “eco-communities” to describe “collective and collaborative housing projects that seek to balance human with environmental needs. We deliberately adopt a broad concept of eco-communities that encompasses ecovillages, intentional communities, low-impact developments and different forms of collaborative and participatory cohousings, baugruppe projects and housing cooperatives, among other interventions”¹⁰. These diverse communities have the common features of aiming to lessen negative environmental impacts and doing so through adoption of alternative technologies and shared access to common goods and services. In this piece, we are specifically focused on ecovillages in U.S. rural regions.

Ecovillages involve forms of collective dwelling where members adopt alternative ways of living in active contrast to mainstream social systems, by building alternative dwellings⁹, approaching technology through an alternative definition of modernism¹¹, or adopting an ethos of degrowth rather than uncontrolled capitalist growth⁴. Often, ecovillage residents promote their way of living as more ecologically responsible than mainstream ideas, mindsets, ways of being, and consumption habits when it comes to taking climate action. However, in this work, we differentiate between the kinds of action that occur at an individual level, including voting and purchasing behaviors, with those that involve collective organization of action to address the causes of climate

change, such as changing building codes to require passive solar design or use of local materials, movement building through collective demonstrations that highlight the linkages between dominant political-economic systems and climate injustice, or advocacy in a wide array of forms that aims to change fundamental socio-economic structures. In other words, we argue that addressing climate change requires radical and transformative collective action, that which is intended to fundamentally change the structural conditions of society that are driving how humans are changing the earth’s climate. We question whether ecovillages are operating as sites of radical, transformative collective action with the potential to create transformative change at the structural level in ways that can avert furthering the ongoing climate crisis. This paper considers how the alternative technologies, practices, and forms of socio-technological organization that characterize rural ecovillages in the U.S. have the potential to translate into broader collective action with radically transformative potential.

We step back from any one study or any one method to reflect on the paradox of collective action, specifically within ecovillages located within rural U.S. contexts. Members of the author team have spent time in multiple ecovillages throughout the U.S. as ethnographic researchers, using participant observation, interviews, and surveys as research tools. In this paper, we examine these collective experiences to consider how these rural U.S. ecovillages are engaged in collective action, and what dynamics about ecovillage life shape how members engage in collective action, meaning collective behaviors intended to influence wider society, beyond acts of individual activism. Together, we recognize three specific paradoxes in the relationship between ecovillage life and collective action for social change that addresses climate change. These three paradoxes, contradictions that are built into the very nature and structure of these rural U.S. ecovillages, characterize the current potential of these intentional communities to contribute to the broader forms of collective action that are needed to address the climate crisis, despite diversity in their size, membership, stated goals, organization, and collective vision.

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Table 1. Author Experiences in U.S. Ecovillages.

Author	Methodologies	Unique Research Sites (State, Founding Year)	Research Sites in Common
Chelsea Schelly	Interviews; ethnographic participant observation	Twin Oaks (Virginia, 1967), The Farm (Tennessee, 1971)	Dancing Rabbit Ecovillage (Missouri, 1997)
Joshua Lockyer	Participant observation; Interviews; Surveys; Quantitative monitoring of resource use	Celo Community (North Carolina, 1937), Earthaven Ecovillage (North Carolina, 1994)	
Zach Rubin	Ethnographic participant observation; Interviews; Surveys	East Wind (Missouri 1974), Earthaven Ecovillage (North Carolina, 1994)	

Based on our combined ethnographic research experiences (see Table 1), we argue that the paradox of collective action within rural ecovillages takes on three specific forms:

1. First, collective action within the ecovillage itself results from mutual coercive control, i.e., community rules or structures to life that can be seen as limiting personal choice for individual members. Governing the commons to achieve desired outcomes comes at the cost of limiting personal choice - a cost that many ecovillagers embrace, but that may limit the potential of ecovillages as models for climate action within the hyper-individualistic U.S. culture. Ecovillages demonstrate the potential for legitimated forms of collective governance as a source of group-level empowerment, but this may be difficult to translate more broadly into collective social life within the hyper-individualistic context of contemporary U.S. culture.
2. Second, ecovillages can create socioeconomic conditions that facilitate increased collective action, by decreasing the socioeconomic dependencies associated with meeting individual subsistence needs. However, creating the time to enable action by reducing the time spent on meeting basic needs through monetary income does not necessarily translate into participation in local democratic processes or broader collective action activities beyond the ecovillage setting aimed at addressing climate change. Instead, ecovillagers may use the extra time afforded to them by the structure of ecovillage life to pursue more individualized rather than collective pursuits. The very structure of ecovillages, which can in some cases even recognize collective action as legitimized labor via the quantification of activism as work, does not necessarily lead to increased engagement locally or regionally.
3. Third, the structure of rural ecovillages in the U.S. often discourages local collective action as ecovillages aim to maintain face in rural communities that are usually skeptical of radical action. By aiming to be good neighbors within the context of rural communities across the U.S., rural ecovillages are constrained in the extent to which they promote localized collective action.

These three paradoxes demonstrate the complex relationship between ecovillages as sites of localized collective action to address climate change and the extent to which they are able to facilitate the kinds of broader collective action that are urgently needed to avert climate catastrophe. Throughout the paper we make reference to the claims and observed behaviors of ecovillages and their members on their own terms and assess these in the context of the paradoxes we have identified through an analysis that worked to understand how ecovillages engage in collective climate action by considering how residents navigate their positionality between ecovillage life and the broader culture and structures of U.S. society. This paper reveals insights about the potentials for, and structural barriers to, ecovillages as experiments in climate action. We conclude by considering research methods that may support future inquiry into the relationship

between ecovillages and climate action impacts with an eye towards moving beyond the paradoxes outlined below and towards more effective climate action. The goal of this work is to describe the three identified paradoxes as a starting point for future research focused on how the dynamics of internal-external relationships intersect with opportunities and practice of collective action at ecovillages, with a goal of increasing the mechanisms for ecovillages to engage in collective action that can have transformative impact on broader society by improved understanding of what may currently be limiting their ability to translate ecovillage practices to broader engagement with system change.

The Weberian concept of “legitimate domination” is a framework for understanding why people will allow themselves to be restrained by social structures: often through tradition, affected feelings, or rationally-calculated benefits. Others¹² proposed further that Weber’s concept of “value rational action” could lead to a “value rational authority” which could also serve as a basis for legitimate domination because people will allow themselves to be restrained and regulated when it is in service to furthering a larger ideal. Rubin¹³ extended this hypothesis to include the study of an ecovillage where members sought to reduce their ecological footprint and saw collective participation in restrictive “covenants” as a more impactful way of accomplishing this goal than individual behavioral choices.

In part, this can be explained using the language of Garrett Hardin¹⁴, who is most infamous for disparaging the potential for “commons” to be managed effectively. Ecovillages represent a manifestation of the commons, in that land, housing, and appliances from cars to toilets to washing machines, along with renewable energy systems, are often managed as part of the commons^{4,15}. Hardin wrote that the only effective means to govern the commons was through “mutual coercion, mutually agreed upon”¹⁴.

Without using the same language, Ostrom^{16–18} has masterfully demonstrated how effective collective action can be mobilized through trusted institutions, shared knowledge, internally derived social norms, and social learning. According to Ostrom’s groundbreaking work, people can and do learn to engage in effective collective action around common pool resources. However, many of the conditions required in Ostrom’s argument in support of collective action’s efficacy (such as credible institutions and transparent monitoring) run counter to the structural and cultural conditions of contemporary U.S. society. As we argue here, the potentially transformative nature of collective action and governance of common pool resources in U.S. rural ecovillages challenges many of the fundamental beliefs about individual liberties in the U.S., creating formidable limitations in how these ideas can translate to broader impact beyond the ecovillage boundaries⁹. Other scholars of ecovillages¹⁹ have also noted that freedom in an ecovillage may be conceptualized very differently than freedom in mainstream societies, and that a form of freedom that recognizes interdependencies and a mutualism with the natural world contradicts many ideas about freedom outside the ecovillage context.

In addition to providing a sense of collective governance of the commons in productive ways that can reduce the impacts of human activities on climate change, ecovillages also provide a structural support system that can reduce barriers to collective action. One very tangible barrier to mobilizing collective action to confront climate change is the lack of time, money, and energy most people can draw on when they choose to get involved. The people who will be most catastrophically impacted by climate change may be working two or three jobs to make ends meet, may not have access to time off work or the funds to pay for childcare to join a collective action event, and may not have the personal vehicle, bus fare, or capacity to (ironically) purchase an airline ticket to join a high profile march in Washington, D.C. or NYC. Americans are notoriously overworked²⁰ and almost half of the U.S workforce is in low paying positions²¹. In contrast, some ecovillages even consider activism as a legitimate form of labor and award labor hours for collective action just as they would for revenue generating or subsistence activities⁹. These communities also count domestic labor like cooking, cleaning, and gardening towards the labor hour requirement, legitimizing what is typically, in mainstream 20th century American society, treated as lesser or “second shift” work^{22,23}. However, as we argue below, providing a structure of support for collective action does not always translate into increased collective action.

This collection was organized to recognize the important role of bottom-up, community-led initiatives in providing experiential living/learning laboratories demonstrating the transformative potential of place-based and grounded collective action for creating the kinds of practices and relationships necessary to address the climate crisis²⁴. In this topical collection, others²⁵ also recognize that community initiatives have the potential as transformative solutions to address the climate crises, but that current community initiatives are largely place-based novelties that have not yet translated into wider scales of impact. Their work reviews the transformative potential of community initiatives in terms of strategies, including capacity building and experiential learning. In our own work, we have seen these strategies in action through ethnographic field work in multiple U.S. ecovillages over the past two decades, yet we recognize that the U.S. rural ecovillages we have studied are embedded in larger relations and structures that may limit the ability to translate their transformative potential into larger impact.

Also in this collection, ecovillages are situated within the pluriverse of community-led alternatives with transformative potential to enact climate action²⁶; our collective experiences researching U.S. ecovillages certainly supports this claim that they are a significant contribution to understanding alternative potentials and are deserving of research attention for their potentially transformative climate impact. However, we also think it is important to unpack the dynamics that may limit their impacts and to focus on these relational paradoxes as opportunities for future research. There are challenges in broadening the impact of ecovillage practice through ecovillage growth²⁷; relatedly, we

identify challenges in translating the success of ecovillages into the wider cultures in which they are situated and argue that these challenges are at least partially “baked in” to the very structure of ecovillages, representing important opportunities for exploring the potential and potential limits of ecovillages to respond to climate change at the pace and scale necessary to address this global crisis through collective action.

RESULTS

The empirical reflections presented below are based on analytical convergence in considering the call for papers in this special topics collection on “Ecovillages and other Community-led Initiatives as Experiences of Climate Action,” systematic discussion of the examples in each community regarding engagement in collective action, and a recognition that much of these discussions focused on how collective action and specifically climate action were limited endeavors within the ecovillages we have studied as social scientists. Given our positionality as social scientists living, working, and writing within the U.S., our analysis is focused on how ecovillages confront the structures and culture of broader U.S. society and how navigating relationships outside the ecovillage boundaries shapes what ecovillage residents do when it comes to collective climate action. This analysis is based on our ethnographic experiences and analysis of the words and actions of ecovillage residents themselves. Although none of the authors of this paper ever asked directly about engagement in climate action, the reflections below are based on our experiences living as visitors and engaging in data collection as scientists. These reflections are intended to provide a starting point for future research.

In this section, we provide empirical substance to demonstrate the three paradoxes we see as shaping the contexts and possibilities for rural ecovillages in the U.S. to translate their activities into the broader kinds of collective action that are necessary to confront the climate crisis. We draw on experiences from our individual research projects, providing examples from six different ecovillages across the rural U.S. Here, we explore how collective governance of the commons confronts dominant U.S. culture; how enabling the potential for collective action often does not translate into broader engagement in practice; and how being good neighbors within rural U.S. communities limits localized collective action behaviors. Our aim is not to argue that these ecovillages cannot impact broader collective action activities outside of the ecovillage boundaries to confront climate change, but that there are real dynamics that limit their potential and that these dynamics offer fruitful opportunities for future research. As such, when we refer to how ecovillagers describe themselves we use those words and terms emically. Whether our subjects’ lives in the ecovillage are “empowering” or “transformative” is from their point of view, and we do not seek to assess those labels or values here. Figure 1 illustrates the overarching argument of the paper regarding the three paradoxes of collective action in ecovillages.

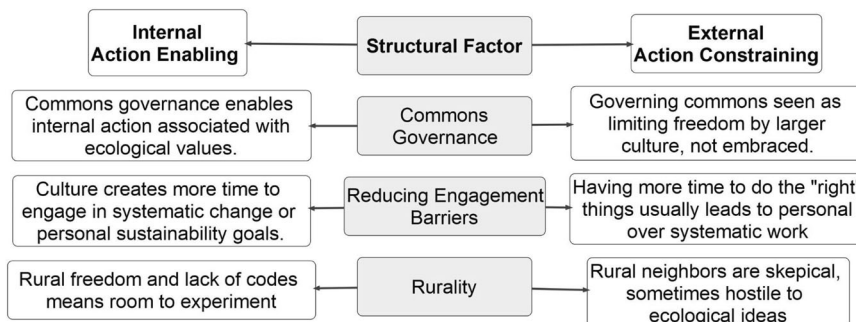


Fig. 1 Three Paradoxes of Collective Action in rural U.S. Ecovillages.

At the top of the Figure, the header (in bold) indicates the structural factors (commons governance, reduction in barriers to engagement, and rurality) and the push-pull dynamics of how these factors are internally action-enabling while simultaneously being externally action-constraining.

Collective action in collective governance of the commons and the paradox of personal choice

Ecovillages often involve substantial shared access to collective goods and services like extensive land holdings and locally produced renewable energy as well as significant forms of social control that shape individual behavior. For example, ecovillages may dictate the size of homes and the materials that can be used to build homes (or whether individual residential homes are allowed at all), the kinds of energy, water and waste systems that can be used in residences, whether individuals can own and use personal vehicles or single-family kitchens, whether individuals can work to accumulate individual finances, or whether an individual can make reproductive decisions without community input. Many of these decisions seem, to outsiders, like unfamiliar limits to personal freedom. Yet it is precisely because of a strong belief in the rightness of their actions that ecovillagers will voluntarily submit their lives to a greater degree of regulation.

Ecovillage members often see their collective decisions as liberating rather than limiting. This is, in essence, what happens within an ecovillage setting: residents agree on the ways that their behaviors will be individually limited in pursuit of a common goal. Another way to conceptualize this is to recognize that ecovillages involve forms of control that are legitimized and even revered as a form of group-level empowerment; limitations to individual choices are seen as serving a better, broader, social goal. In this way, these actions are themselves collective actions that address individual and collective impacts on climate change. Cultivating these decisions and policies - and settling disputes about them when they arise - within the boundaries of relatively small-scale ecovillages is a prime example of enacting Ostrom's design principles²⁸ for commons stewardship¹⁵.

Approaches to collectively imposed limitations take many forms, depending on the route to larger recognition the ecovillage pursues. At Dancing Rabbit ("DR"), members are collectively bound to a series of six ecological covenants restricting the use of personal vehicles, fossil fuels, electricity, building materials, how they grow food, and how they dispose of waste. The outreach mission of DR has also resulted in the formation of a 501(c)3 non-profit tasked with educational programming both to external audiences and visitors to the village. Visitors and potential new members are made aware of these covenants early and repeatedly in the programs that DR hosts. While some of these have changed over the course of the ecovillage's existence to accommodate local possibilities (for example, the lumber covenant used to require reclaimed wood be used, and members eventually ran out of reclaimable wood in the immediate area), they were also reaffirmed last year by membership as "clear bright lines" to which members must adhere. Further, DR has nine less binding "sustainability guidelines" that outline the long-term goals of the village. Summarily, these articulate the worldview of members about a more sustainable and just future and are perceived by members as positive and empowering rather than binding restrictions on behavior.

Some ecovillages rely on the collective identification of new potential members who share the collective's values and priorities and eschew the hard and fast rules. Such is the case with Earthaven Ecovillage, which has a series of thirteen broad rules. One of their rules, for example, says that members should "practice healthy, holistic lifestyles that balance self-care with care for others," while leaving what that looks like undefined and up to individual members as they see fit to enact. Instead, Earthaven

devolves power into neighborhoods set up legally as Homeowners Associations - each of which looks different and adheres to different rules.

We have repeatedly heard ecovillage members talk about these collective limitations as empowering. Who needs 1000 choices when building a home, they ask, when a trusted collective body (that one has chosen to be part of) has already determined what's best when it comes to reducing the environmental impact of home construction? Why is it that we imagine ourselves as free because we have an abundance of bad choices confronting us when we shop for nourishment, tools to support thermal comfort, or ways to manage waste? Yet because these forms of collective action seem from the outside as if they are unreasonable limitations to personal freedom, this aspect of ecovillage life is limited in the extent to which it can shift the dominant narrative of personal freedom and individual choice. This narrative limits the potential for collective actions that can effectively confront the realities of climate change.

The culture and structure of U.S. society both support hyper-individualism; this is apparent in the response to the COVID-19 pandemic and the national epidemic of gun violence (or non-response, as it were, as effective response requires collective action) as well as in the lack of investment in public transportation or health care in a society that treats transport and health needs as individualized commodities. The environmental movement in particular has emphasized individualistic consumer activities rather than collective action for the good of the commons²⁹. The paradox here is that, although they provide clear examples (through living-learning laboratories of experimentation) of how individuals can govern common pool resources in ways that reduce the potential for and provide tools for adapting to climate catastrophe, the very things that make this work in the ecovillage setting create a roadblock for effective collective action outside ecovillage boundaries.

The United States is of course incredibly diverse and fractured, and there are many who do engage in collective action through political protest, localized volunteerism, and philanthropy; rates of philanthropic giving are higher in the U.S. than in many countries³⁰. However, even the forms of collective action that are prevalent in the U.S. are highly individualistic; consider the difference, for example, between private charitable giving and state supported social welfare programs. Further, the forms of collective action that are most common in the U.S. are motivated by personal interests and values, not collective interests (thus, there is comparatively little engagement with collective action problems such as climate change). The argument here is that individualism as a cultural narrative is so pervasive in the U.S. that structural forms of social organization based on collective management of collective goods challenge the dominant culture. This individualism is so culturally pervasive that it does impact action in ecovillages, as we describe below. Here, our point is that the most radically transformative aspects of ecovillages - collective decision making about managing common goods in ways that do limit personal freedoms to benefit the collective - challenges dominant culture but ecovillages are not openly engaging in transforming dominant culture to adopt approaches to the commons that prioritize collective wellbeing over individual choice.

In other words, while living by collectively chosen ecological covenants within the boundaries of the ecovillage commons may work well at that scale, effectively addressing the challenges of climate change will entail a massive scaling up of such actions beyond the boundaries of local ecovillages; the climate crisis is a challenge of the global commons. The dominant society must directly confront the reality that hyper-individualism is not freeing, and in fact may be the very opposite; looking to ecovillages can support this learning but ecovillages themselves are not working to challenge this dominant narrative. This is where we suggest

that ecovillages, and those who study and work with them, could do more work to address some of Ostrom's other design principles for the commons²⁸, especially those pertaining to each local commons' relationship with the state and larger democratic systems where broader collective action needs to be achieved to address the climate crisis.

Socioeconomic freedom can enable the freedom to avoid collective action

Ecovillage membership can often result in reduced dependency on wages and a money economy to meet basic needs. Even in ecovillages where individual members are responsible for subsistence costs for food, housing, etc., collective access reduces costs significantly, and ecovillage culture can provide abundant opportunities for recreation and social connection that do not require money. For income sharing communities, participation in collective action is even sometimes considered a legitimate form of labor. For example, both Twin Oaks and East Wind communities use the "labor credit" system, and members work 32 hours per week in community jobs as their main source of support. They work less than the typical full-time U.S. worker (official measurements from the U.S. Bureau of Labor Statistics show the average work week among full-employed adults is 34.4 h³¹, while polling data puts that number at approximately 47 h a week³²) and are paid in food, housing, health insurance, and a modest stipend for personal spending. While there is no opportunity to increase personal wealth within the village, there is also little chance of someone losing their job or the concomitant financial risks that come with unemployment. Further, domestic labor is counted in labor credit hours. Because ecovillages reduce economic dependencies and provide a social environment that proactively supports personal and social change, they can directly enable and indirectly support greater participation in collective action.

However, this does not always result in greater participation in either local politics or broader collective movements. Many members of ecovillages eschew participation in conventional politics, meaning they do not regularly participate in the democratic act of voting for either local or national representatives. These communities may provide structural support for collective action, and in doing so they provide some clear lessons in how to support greater involvement in collective movements to address climate change (by addressing barriers to participation associated with time, money, and necessary physical support for access such as transportation and childcare). Yet these communities are not monolithic or homogeneous, and members often do not choose to use their additional time or energy to engage in collective action outside their community, or instead use their membership as a means of retiring from direct action politics⁶.

This connects to the argument above, in that U.S. rural ecovillages may, in part, be unintentionally adopting parts of dominant U.S. culture (and emphasis on personal freedom as individual choice) that limit engagement in radically transformative collective action; even if supported structurally, this collective action engagement may not be promoted culturally. We do acknowledge that communities foster very different cultures around broader engagement with collective action outside the ecovillage, and we have seen this diversity firsthand. We also acknowledge that the sense of urgency around broader collective action likely has a temporal component and we have not studied this systematically across time. However, our broader point remains, that removing barriers to engagement in collective action (by counting it as work, providing access to transportation, and reducing individual responsibility for subsistence needs) does not necessarily translate into broader collective mobilization.

Good neighbors don't make waves

The structure of ecovillages has the potential to support broader societal transformations through engagement in collective action to address the urgency of climate change, especially if greater attention is given to the meeting points between local ecovillage commons and broader cultures and systems of governance. As Ostrom²⁸ recognized, every local commons is engaged in relationships with broader systems of governance. Ecovillages clearly provide examples of ways to change human relationships with material things and with one another to reduce the catastrophic impacts humans have on the planet. However, the extent to which these communities can champion their efforts by putting them on display or advocating for broader adoption is often stymied by their need to maintain positive relationships with their neighbors.

For example, community members at Dancing Rabbit sometimes borrow heavy machinery from the very traditional religious group in their county, and the same community regularly hired ecovillage midwives when they lived there. This exchange relies on their good terms; for example, people in the ecovillage are alerted via the internal listserv to change how they dress when visitors from the local religious group come to the ecovillage and do the same when they venture out to establishments owned by members of the religious group. Their success within that rural community is dependent on maintaining positive relationships with groups that may see issues like climate change very differently than they do, and they are thus disincentivized from engaging in local collective action that would potentially harm that relationship.

Similarly, Earthaven ecovillage shares a road with non-ecovillage neighbors. Using the road as a pedestrian space opens regular interactions with those neighbors. This contributes to the community's sense of safety and shared ownership of a public resource but may also limit the kind of signs they put up or other ways that they use the road space to express views that may counter those of their neighbors. As another example, East Wind community runs a business selling nut butters to grocery stores across the region. To the extent that the community's sales are necessary to support their existence, they need to present at least a passable professional picture to the outside world, who might not be so keen on buying their peanut butter from a group of anarchists, socialists, drug users, polyamorists, or members from other marginalized identities that populate the community. This tension, of needing to maintain a profitable business within a conservative community, changes how members of the community present themselves and engage locally. Our point here is not that these identities are central to understanding the dynamics of collective action at ecovillages; rather, we use this example to demonstrate how these communities navigate the dynamics of rurality in ways that constrain their externally oriented collective actions, including those intended to address climate action, which is a polarizing issue in rural communities³³. Engaging in collective climate action in their local communities has the potential to harm their ability to sustain economic activity and right relations with their rural neighbors.

Rural communities often make great homes for ecovillages because land may be available and more economically accessible and because the zoning and building code regulations that limit use of strawbale building, humanure systems, or multifamily occupancy are less likely to exist in rural areas. This means that the lack of legal regulations often found in urbanized areas provides conditions that make ecovillages more feasible across many parts of rural America, and ecovillages provide a particularly salient model for how to reduce the negative environmental impacts of rural life. However, many ecovillages are hesitant about how to navigate good relationships with their rural neighbors given

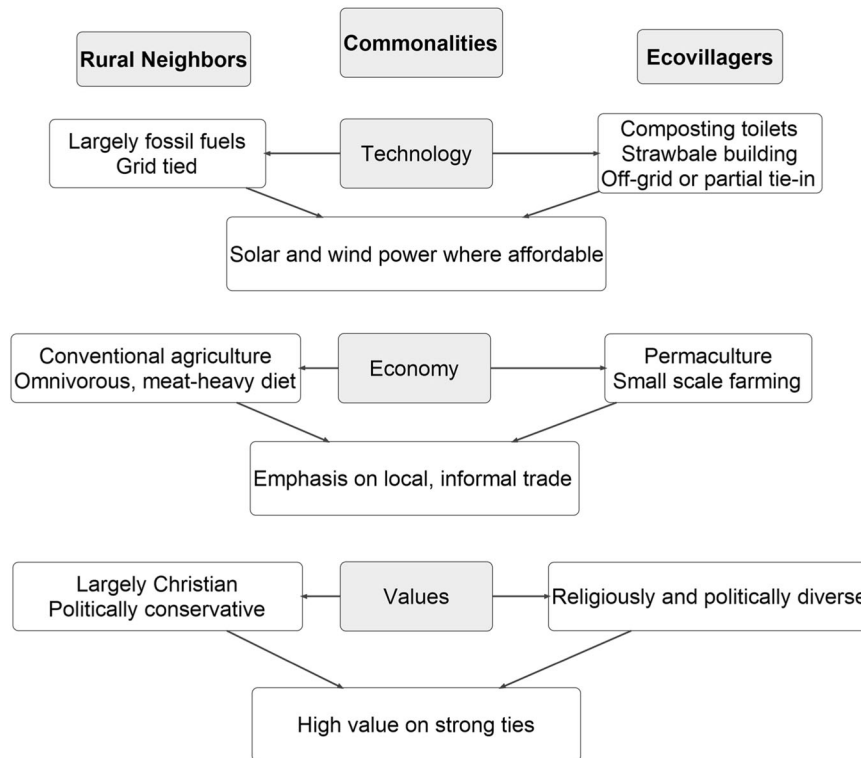


Fig. 2 Convergence Across Diverse Value Systems in Rural U.S. Community and Ecovillage Contexts and Opportunities to Promote Enhanced Collective Action.

diverse and conflicting values. Rural populations tend to be more socially and politically conservative³⁴ and skeptical of common ecovillage artifacts like solar panels, electric cars, composting toilets, and straw bale architecture^{35,36}, even as they may find common ground in home gardening, canning and preservation; do-it-yourself construction and other practices traditional to rural life or necessary for survival in conditions of rural poverty³⁷. This can limit the extent to which rural ecovillagers feel comfortable advocating for broader societal transformations, even when they are able to find points of connection. However, it may also provide fruitful opportunities for new research and engagement to identify specific overlap in values and priorities that can foster broader collective action within U.S. rural communities. Figure 2 illustrates the potential areas of convergence across diverse value systems that could inform future research directions to promote impactful collective action in U.S. rural ecovillages given their relational embeddedness with broader rural communities.

Conversely, urban areas typically present much more significant structural obstacles in the form of policies that impede experiments in buildings, energy, and waste infrastructure that embody collective climate change action taken by ecovillagers. Furthermore, the predominantly technocratic and techno-economic approaches that characterize urban approaches to climate change mitigation so often ignore the cooperative, participatory, and heterogeneous approaches that characterize local ecovillage approaches¹⁰. This suggests that policy reforms in urban and suburban areas are required if ecovillage models are to gain broader traction and impact in the realm of climate action. Collective action to advocate for localized policies that increase opportunities for localized food production, distributed renewable energy systems, improved management of organic wastes for locally beneficial reuse, shared access to commons resources to reduce economic dependencies and environmental impacts of reliance on individualized systems, and other examples simultaneously require collective action to transform systems of social

trust, dependency on consumerist models of access to resources, and engage in stronger social connectivity as a precursor to effective management of commons or collective systems. This points us as ecovillage researchers to the need to not only pay attention to the broader socio-cultural and policy ecosystems within which ecovillages exist but also to direct ecovillage research toward identifying and advocating for necessary change in relevant public policies and structural regulations shaping residential dwelling in diverse (rural, suburban, urban, and global) contexts.

METHODS

This paper draws on the experiences of multiple co-authors who have worked firsthand in rural ecovillages in the U.S. Collectively, we have social science research experience in seven such intentional communities, geographically dispersed, but with the absence of representation of the western U.S. Our work has included interviews, participant observation, and surveys, and we have been active researchers in these communities in a period spanning from 2000 to the present. The perspectives emerging in this piece come from our collective discussions in recent years about the commonalities found in our work and data, warranting a larger analysis of these communities' shared conditions. Table 1 summarizes the communities we have engaged with and the methodologies we have used to provide context for the empirical grounded reflections provided in the following section.

These communities, as an analytical unit, are predominantly white, well educated, and while many members live ascetically or minimally, they largely come from middle class backgrounds. The communities emerged at different points in time relative to contemporary movements: Celo was an outgrowth of Arthur Morgan's rural development programs, based on Quaker ideas. Twin Oaks and East Wind were originally founded based on the Walden Two behaviorist principles of B.F. Skinner³⁸ and both are

labor sharing, income sharing, egalitarian communities that collectively provide for the subsistence needs of their members. The Farm was founded based on the charismatic alternative Christianity of Stephen and Ina Mae Gaskin³⁹, and all three of these communities were part of the back-to-the-land movement of their time⁴⁰. Finally, both Earthaven and Dancing Rabbit represent a more recent wave of communities inspired by the environmental movement, a movement that has also infused the older, existing communities with new purpose and meaning enough to similarly adopt major ecological goals and the ecovillage label. For details on the methods and results from each community, see citations in the References from each author.

Despite differences in economies and governance, these communities share a focus on natural building, land stewardship, responsible consumption and waste management; and sharing their successes with experiments in alternative living by hosting visitor programs, summer camps, internships, or other opportunities to engage with people outside these communities. While we have collectively engaged with U.S. rural ecovillages for over two decades, much of the empirical data presented here was collected over a shorter time period (2005–2017). Thus, the extent to which ecovillage residents may feel a sense of urgency to engage in collective action beyond the ecovillage boundaries could have shifted since this period. Collective action also likely takes different forms and involves different processes in more urban ecovillages and ecovillages outside the U.S. These represent limitations to the current analysis, as these differences are also worthy of future investigation.

DISCUSSION

The paradoxes presented here open opportunities for future research. For example, we are unaware of any systematic attempt to study visitors to these ecovillages and what happens when they return home. Many seem empowered to enact change after they return from their visit; however, many are returning to residential lives that make it challenging or impossible to avoid personal vehicles, compost all organic waste, generate renewable energy, or grow a significant amount of their food locally and organically⁴¹. It is an open question whether the experiential learning of a visit to an ecovillage is, over the long term, empowering or disempowering as they confront the realities of mainstream residential life. Future research should include data that follows up on people who have interacted with communities and left. This is admittedly a less captive and more difficult pool of respondents to reach, yet to understand the actual effect ecovillages have beyond their border will require gathering data that goes beyond their borders.

Ecovillages, like all other social institutions, exist in relation to the broader human communities and ecosystems in which they are situated, as well as sitting in relationship to broader social structures, cultures, and movements. As we demonstrate here, the forms of collective action centered on collective governance that empower ecovillage residents counter the value systems that dominate in broader U.S. culture (paradox one), limiting their potential to translate into larger impacts beyond ecovillage borders. Similarly, Ostrom¹⁶ highlights that clear boundaries can support collective action, which may help explain why ecovillage residents engage in collective action within communities but are less engaged in collective action outside the boundaries of these communities, given that the geo-special boundaries of residential life in an ecovillage are clear but become blurred when we consider collectives such as voting precincts and representational districts, regulatory bodies that regulating building codes and zoning, and inclusion in the broader state, national, and human community. Furthermore, the structures of ecovillage life that enable collective action through commons governance challenge the

structures and culture of broader U.S. society, which are more individualistic and consumer driven, presenting formidable cognitive and structural barriers to engaged collective action²⁹.

Schreuder & Hurlings²⁵ outline key conditions for transformative actions that can help address the ongoing climate crisis: capacity-building, leadership, scaling, and inclusive governance. While the rural U.S. ecovillages considered in this paper support capacity-building and enhance opportunities for experimental living and learning in ways that present real opportunities for collective action that can address climate change, the structural barriers associated with navigating the intersection between ecovillages and broader society limit the scaling potential of these potentially transformative, bottom-up experiments in alternative dwelling. These ecovillages may create new capacities for members, but they have limited impact on the capacities of those outside of ecovillages and, importantly, creating the structural conditions for capacity building may not be enough to challenge the cultural constraints on meaningfully transformative collective action. Ecovillages demonstrate leadership, but that leadership is constrained by their regional relationships with conservative rural neighbors. By exposing visitors to the potential benefits of ecovillage life, ecovillages contribute to the potential to scale out, but they are limited in their proactive work to scale up or scale deep. The paradoxes of enabling transformative change within the ecovillage while constraining opportunities for broader transformative impacts warrant future research inquiry with explicit focus on the intersectional boundaries that link ecovillage life with broader society, locally to globally.

In our analysis, we describe how the structural factors of ecovillage life that reduce the barriers to participation in collective action – such as reducing the time committed to meeting subsistence needs, providing access to transportation, and even treating collective action as a legitimate form of labor – do not necessarily translate into increased engagement in collective action (paradox two), as ecovillagers are free to choose to use this extra time and structural support to engage in personal growth, individual pursuits of sustainable living, and other internalized activities, which suggests that the dominant U.S. culture of individualism continues to influence ecovillage residents in these rural U.S. communities. Finally, their very location in rural contexts enables certain forms of collective action that cannot be translated into more urban contexts due to building codes and zoning restrictions while also limiting their engagement in localized collective action as they aim to be good neighbors with rural residents who do not share their values (paradox three).

To understand the paradoxes of collective action and to fully quantify the potential impacts of ecovillages on climate action will require using interdisciplinary and comparative methods as well as situating ecovillages in that relational context, recognizing that ecovillages can support quality of life⁴² and create contexts for meaningful collective action but that the most impactful mechanisms for doing so and the empirical impacts of these actions are not well understood. For example, team science linking social and ecological researchers could address the empirical impacts that ecovillages are having on soil, water, and air quality through their practices. Physical and policy scientists could work together to consider how to scale up these practices to larger, more urban, or less intentional settings. Comparative research could consider how the governance and economic models of ecovillages link to their collective action behaviors, as governance and economic structures vary even among our small sample and have wide diversity across rural vs urban, U.S. vs non-U.S, and ecovillages with religious or other ideological goals. In other words, to evaluate the extent to which ecovillage are able to meaningfully contribute to the kinds of radical and transformative collective action that are necessary to address the ongoing climate crisis requires research that crossing disciplinary boundaries and situates

ecovillages within relational and comparative contexts to understand how structurally and culturally transformative practices can be documented, extended, and replicated and the existing constraints on doing so in ways that support longevity and sustained impact⁴³. To more fully investigate the paradoxes introduced herein requires research that explicitly examines the intersection between ecovillages and broader society, how these intersections are navigated by ecovillage residents and non-residents alike, and how this relationality can be more effectively navigated so that the ecovillages can have a bigger impact on society – something arguable necessary to avert climate disaster.

Reporting summary

Further information on research design is available in the Nature Research Reporting Summary linked to this article.

DATA AVAILABILITY

Data presented in this paper are available in summary form from previously published work, as cited in the literature review.

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AUTHOR CONTRIBUTIONS

All authors contributed equally to idea formation and manuscript preparation.

COMPETING INTERESTS

Zach Rubin currently sits on the board of the Center for Sustainable and Cooperative Culture, a non-profit whose mission is education and outreach on behalf of Dancing Rabbit Ecovillage.

ADDITIONAL INFORMATION

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