Seeding Ecologies of Interventions: Relating Transition Design and Ecological Restoration

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Abstract: Ecological restoration is the practice of repairing relationships in living systems. Most restorationists base their work on ecology, which provides a solid scientific foundation for interventions. However, these practitioners must look elsewhere to conceive of new change pathways and to engage with the social and political complexity of restoration. Tools and theories from Transition Design can fill these gaps. This piece articulates why a shared interest in designing for transitions is a useful point of connection and collaboration between design and ecological restoration. By bringing these fields into conversation, this piece outlines the contributions that each offers so that both may realize their full transformative potentials.

Keywords: Restoration - Ecology - Ecosystems - Transition Design - Wicked problems

[Resúmenes en castellano y en portugués en la página 79]

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1. Introduction

Ecological restoration is a vast amalgam of material practices that have emerged from multiple cultures, places and sciences. These practices, though varied in scale and context, share a common motivation: to repair that which is broken in living systems. Ecological restoration has been practiced and named as such for nearly a century, and likely practiced under other names for centuries more. The act of moving earth so a river can flow

in its original meanders, the practice of removing young pine trees from a meadow of mountain aspen, and the creation of suitable habitat for displaced beavers or endangered salmon are all examples of ecological restoration. Restoration describes a process and a product. The process from start to finish can take anywhere from hours to decades. A finished restoration project is often a dynamic, ever-changing system that requires ongoing care and engagement from experts and non-experts alike.

Design is similarly both a process and an outcome that experts and non-experts enact on a daily basis (Manzini, 2015), and many restoration efforts include an official or unofficial design phase. However, despite sharing some significant common ground in both approach and applications, the scholarly and practical fields of design and ecological restoration lack a strong relationship and shared discourse (Egan *et al.*, 2011; Higgs, 2003; Martin, 2022). These two fields rarely make significant use of the theoretical and practical strengths of the other, to the detriment of both. This gap appears even more glaring in light of the significant recent developments in the field of designing for transitions and the emerging Transition Design approach (Irwin, 2019).

This piece articulates why a shared interest in designing for transitions is a useful point of departure for connection and collaboration between design and ecological restoration. To do so, I introduce ecological restoration to a design audience and explain the common ground that Transition Design and restoration share. For both Transition Design and ecological restoration, I identify several contemporary challenges and gaps that each field faces in theory and practice. I suggest how each field offers something to push the other forward–in other words, I frame up what each field stands to gain from greater engagement with the other. Finally, I will suggest how practitioners and scholars might practically engage with one another, as well as discuss what challenges such collaboration may present.

My primary intent in writing this piece, which I address to readers interested in designing for transitions, is to inspire designers' interest in the study and practice of ecological restoration. I believe that those who do take an interest in ecological restoration will find ample opportunities to engage in and contribute to the work of restoration, as well as find their own design postures and change theories influenced by that engagement.

2. What is Ecological Restoration?

Much like studying the vast and ever-growing field of design, making sense of the diverse and expansive realm of ecological restoration is an inspiring but daunting prospect. Here, I introduce ecological restoration to readers who may not be familiar with the subject before bringing it into conversation with Transition Design. For the sake of specificity and brevity, I limit my discussion to the North American context; the one I am most familiar with. I am a settler scholar living and working in the United States, specifically in Wašišiw lands known today as California and Nevada. As a design researcher with an academic background in the natural sciences, I recognize that the ways of knowing that I am trained in are often prioritized in restoration work, to the exclusion of other types of knowledge.

With this piece, I mean to advance a kind of discourse and way of designing that invites multiple perspectives to guide restoration practice, which I hope might be facilitated by bringing design and restoration into a closer relationship.

The process of restoration is typically divided into three phases: planning, execution, and follow-up. Planning typically involves observing and describing a place or ecosystem of interest, taking stock of what is functioning well ecologically, and what might be missing or not working, and identifying the kinds of interventions that address the gaps. Interventions carried out in the execution phase range widely. Some examples are: removal of non-native species, planting of native species, cultural or prescribed burning, forest and vegetation thinning, stream bank stabilization, removal of dams and other built infrastructure, habitat creation using onsite or exogenous materials, keystone species reintroduction (e.g. wolves, beavers), wetland creation and earth movement to reconnect rivers with their floodplains. Following these interventions, which may take days or decades to enact, restorationists will typically monitor the site for key indicators of ecosystem health, such as water quality or species biodiversity, to determine if the restoration was successful and beneficial to the site. Restorationists, that is to say, those who initiate and guide a restoration, may be professional scientists, government officials, farmers and other people who work land, community organizers, and indigenous leaders.

Ecological restoration is commonly considered the "third option" for land management, in comparison to conservation and preservation, the two other two prominent schools of thought in mainstream American discourse. The United States National Park Service differentiates these schools of thought, clarifying that "conservation seeks the *proper use of nature*, while preservation seeks *protection of nature from use*" (emphasis original) (U.S. National Park Service, 2019). Together, these two approaches uphold a view of nature in which its primary value originates from its wildness. In this vision, then, restoration may be viewed as a threat to wildness, a "destructive interference" (Chapman, 2006). Increasingly, however, restoration has been selected by those in power as their best choice for managing land. Yet, the choice to restore comes with no shortage of philosophical and practical complications.

Ecological restoration, like design, cannot be described as a singular field of research or community of practice. It has been described as a "heterogeneous apparatus of multiple discourses concerning how humans should relate to nonhuman nature and human living environments" (Tomblin, 2009, p. 187). Tomblin (ibid) suggests that these multiple discourses of restoration comprise four adjacent and connected epistemic sub-cultures. The subcultures are: environmental justice restoration, holistic restoration, indigenous peoples restoration, which are all often grassroots cultures, and institutional restoration. Each of these groups practices restoration in slightly different ways that serve their communities or institutions differently. The key attributes that differentiate restoration approaches and projects are typically: their goals and, in particular, how they relate to historic conditions, how groups relate to state power, how groups obtain funding for restoration, the physical methods used to restore land and how the physical labor required in the project is done. Together, the attributes make up distinct theories of change for restoration. Theories of change are ideas explaining why and how restoration creates change (Sides *et al.*, 2022).

Restoration is always a highly political act of changemaking. As such, restoration has been used to serve many different political agendas over time. Tomblin observes that "the recent emergence of an increasingly pervasive restoration narrative in no way consists of a unified vision promoted from a singular institutional standpoint." (Tomblin, 2009, p. 187). The pervasive restoration narrative he mentions is perhaps best represented by the official designation of 2020-2030 as the UN Decade on Ecosystem Restoration. The designation of restoration, with an "optimistic 'win-win' framing" (R. M. Anderson & Woelfle-Hazard, n.d.), is a nice thought, but pushing to scale restoration practices without questioning the politics of "restoration for whom, by whom?" (Elias *et al.*, 2021) will not address the root causes of environmental degradation (R. M. Anderson *et al.*, 2022). A group of scholars and practitioners who identify as "critical restorationists" are advancing, through research, practice and teaching, critical "social-scientific questions" (R. M. Anderson & Woelfle-Hazard, n.d.) about the work of restoration.

In the United States, the politics of restoration have been playing out for about two hundred years. In North America, institutional restoration work has long been entangled with federal and state agendas relating to the control and management of land, including controlling the movement and settlement of native people, as well as native flora and fauna who call those lands home (Martin, 2022). The history and heroes of American restoration sits on a fairly shaky foundation when reviewed through a lens of environmental and social justice, as restoration has all too often served intentionally extractive or racist agendas (Elias *et al.*, 2021; Kimmerer, 2011; Martin, 2022).

At the same time, restoration has also seen meaningful success in promoting the flourishing of natures and cultures by offering ways to invite reinvention, practice justice and seed a better future. Restoration is a "pathway to the recovery of previously degraded, damaged, or destroyed ecosystems" (Egoh *et al.*, 2021) in a range of settings from rural to urban, and offers people who have either been the perpetrators or victims of environmental injustice to right past and present wrongs (Hall *et al.*, 2021). Through restoration, the topsoil of mined sites can be rehabilitated (Sansupa *et al.*, 2021), once-dry wetlands can be replenished, and culturally significant runs of salmon can be invited to return (House, 1999; Office of Governor Gavin Newsom, 2022). Much like design, restoration can be used to serve myriad purposes and context, goals, and leadership will significantly affect project outcomes.

2. Current Challenges in Restoration

In this section, I identify and describe some of the contemporary challenges faced by those who practice ecological restoration, particularly within the institutional setting and in some cases within the other grassroots subcultures. There are many works that advance sophisticated critiques of ecological restoration across sub-cultures, particularly when the restoration is initiated by governments and other powerful institutions (Elias *et al.*, 2021; Klein *et al.*, 2022; Martin, 2022). My goal in this piece is not to advance a new critique of restoration, although some critique is included. Rather, I identify and discuss some

of the common challenges and gaps in mainstream practice that restorationists face in their work, particularly in medium to large-scale projects connected with multiple interest groups. Addressing these challenges in practice has the potential to make restoration more effective, thoughtful and transformative.

2.1. Problem Framing

In the institutional setting, restoration projects are often initiated on the basis of and guided by ecological and scientific agendas. A scientific perspective is often helpful and necessary in restoration, however, science alone is insufficient in addressing the human dimensions of restoration, which are often at the heart of a given challenge (Christoffersen, 2011; Egan *et al.*, 2011). The story of how an ecosystem came to be regarded as "degraded" and in need of restoration is often a highly political and very human story. Grasping and representing these dimensions is necessary because the way that a problem is framed in a restoration proposal has significant bearing on how the project will unfold. Backers of restoration often struggle to frame "the problem" or problems that motivate a restoration in ways that are compelling to multiple interest groups while also representing the true range of perspectives connected to a restoration site. In a 2014 study of conflict in Skagit Valley, WA salmon restoration efforts, scholar Sara Jo Breslow observed that articulating and defining a central problem of concern was a key source of conflict, noting that "interviewees constructed the problem, its causes, and its rightful solutions in mutually incompatible stories" (2014, p. 314). Restorationists need to develop problem framings that reflect this complexity.

2.2. Connecting past, present and future

Early definitions of ecological restoration and practitioner efforts emphasized that restoration should recreate historic conditions that have been lost over time. The goal of historic replication presents several issues. The first is the challenge of appropriately and fairly selecting, representing and articulating a particular version of the past to be recreated. In the American West, Euro-American colonization obscures and manipulates truth in history, with implications for restoration. American restoration projects too often aim to recreate a "wilderness ideal" (Comer, 1997; Cronon, 1996), which is a vision of nature that is free from human presence or interference. This version of history reflects a colonial nature-culture divide while erasing the ways that people lived in and beneficially disturbed places in ways that promoted ecosystem health (M. K. Anderson, 2013; Kimmerer, 2011). All too often, the historical baseline that government or even non-profit actors seek to replicate never existed and, in reality, the true story of a landscape is marked by significant injustice and indigenous land dispossession. Instead of creating a faulty history, restoration ought to prioritize repairing relational harm from past or ongoing injustice (Almassi, 2017) while ensuring it does not further alienate or remove indigenous peoples from their land.

How can restorationists bring about future conditions that honor what was an ecologically sound past, without blindly replicating an incomplete or problematic understanding of history? The leadership of indigenous people in restoration, such as Dennis Martinez and the Indigigenous Peoples' Restoration network, have advanced a vision for restoration as "restoring a way of life" (Tomblin, 2009). This vision is a useful departure from the goal of replicating a historical aesthetic, yet, the challenge of creating future visions for life and place remains for all restoration cultures. In all contexts, restoration creates a meaningfully different future that departs from both present and past, which is no small task. The reality of climate change adds another layer to the challenge, as what once worked well in a place, ecologically speaking, may not be viable in the future (Almassi, 2021; Coleman *et al.*, 2020). As such, restorationists must become adept and skillful painters of a vision as well as architects of a plausible future.

2.3. Widening the Solutions Lens

In addition to framing problems and articulating futures in compelling and equitable ways, restorationists should also aim to work in ways that address the root causes of ecological degradation. Those root causes are often simultaneously ecological, social and political (Swart *et al.*, 2018). For example, a restoration problem might manifest physically as excess silt flowing into a lake because the upstream river banks are eroding. The restoration solution likely focuses on how the stream banks can be stabilized, or in a process-based approach, how the processes that would prevent erosion can be returned. This is the case of the Upper Truckee River restoration project currently playing out in South Lake Tahoe, CA. The physical manifestation of the erosion problem connects to many other stories and contributing factors. In the Upper Truckee River case, a golf course has operated next to the river for 50 years, making erosion and water quality worse. Yet, the golf course continues to operate because the local economy depends on recreation and tourism. Stopping erosion completely might mean shutting down key golf holes. Very quickly, discussion of the restoration challenge enters the realm of mindsets and values, but actions remain in the realm of the physical. Too often, restorationists scope their interventions to concern just the symptom of the problem (such as the streambank erosion), leaving the other related factors unexamined and untouched.

3. Transition Design

How might design, and specifically Transition Design, fill these gaps? A brief discussion of Transition Design's unique proposals, current shortcomings, and common ground with Ecological Restoration is a helpful starting point. The term Transition Design refers to a research community and set of approaches to designing for transitions advanced by a multinational group of scholars and practitioners. The Transition Design framework advanced by scholars such as (Irwin *et al.*, 2013) outlines the way that the approach makes

four key contributions for effecting systems change in the face of wicked problems: visions for transition, theories of change, new ways of designing, and postures and mindsets. Transition Design writings suggest that transition designers make change through three main actions: situating, reframing and intervening (Sides *et al.*, 2022). The knowledge that Transition Design weaves together, increasingly practiced as an "applied Transition Design approach", advances meaningful change in the world of design by encouraging designers to view themselves as agents of systems-level change to promote socially just and ecologically sound futures.

Despite significant activity in the movement toward designing for transitions, which has been taken up by researchers and practitioners worldwide, the field and practice is still growing and developing. One of the challenges that Transition Design faces is locating or creating opportunities where a holistic Transition Design approach can be utilized. These opportunities may be few and far between, and to grow the field, practitioners will likely need to be somewhat opportunistic in finding good fits for a Transition Design approach. The perfect conditions for Transition Design probably do not exist, and developing the field requires designers to find opportunities to refine the theory and practice of designing for transitions.

Orienting design processes and interventions toward longer time horizons is an essential part of the changemaking that Transition Design proposes. However, creating continuity in a Transition Design effort over long periods of time is also a challenge in practice. The posture of designing within "radically large spatio-temporal contexts" (Irwin, 2018) is a departure from design's norms, where practitioners and even researchers are rarely able to sit with the same project for more than a few months at a time. Finding the support, patience and appropriate context for long-term thinking in design is one of the more significant challenges that transition designers face in creating lasting change. A closer engagement with ecological restoration, however, might provide the right context to address both of these challenges.

3.1. Common Ground

Why does it make sense for ecological restoration and Transition Design to be in a closer relationship? There are historic, practical and theoretical reasons that suggest the two fields can be more connected. Transition Design traces some origins of its ideas and approaches to the Transition Town movement from the UK, which itself drew inspiration from the ideas of permaculture. Permaculture is a design science framework for self-sufficient homesteads, farms and communities originating from 1970s Australia, and the writings of David Holmgren and Bill Mollison. The ideas of permaculture, of course, are largely a synthesis of existing local knowledge, Traditional Ecological Knowledge, and systems thinking. Yet, permaculture is a theoretical bridge between Transition Design and Ecological Restoration, as restorationists in the holistic culture often make use of concepts and methods from permaculture, and may even come into an interest in restoration through training or practice of permaculture.

Looking beyond the particular histories of Transition Design and Ecological Restoration, it is generative to consider what designing for transitions has in common with restoring the function of an ecosystem. Perhaps the most significant point of commonality is that both activities are fundamentally based on a commitment to create thoughtful interventions to purposefully change existing systems. In other words, both are advancing ways of designing that refute the idea of designing onto a blank slate. Blank slate thinking, which we see too often in the halls of power, has been a significant shortcoming of many past and present initiatives to design and restore, particularly in the realm of land and landscapes. This kind of thinking appears in initiatives from Smart Cities to wilderness conservation. Both ecological restorationists and transition designers have developed sophisticated methods of observation and contextualization that support thoughtful interventions in acknowledgement of existing systems.

Given that the two fields share an expertise in intervening in complex systems, it follows they also share an interest in addressing wicked problems – problems that, among other things, defy conventional boundaries, have no final solution, are interdependent and resistant to change (Rittel & Webber, 1973). Transition Design has made wicked problems a core area of focus, offering a variety of tools to tame wicked problems, ranging from water scarcity to various problems in urban contexts (Kossoff & Irwin, 2021). Ecological restoration shares this interest, as the need for ecological restoration emerges from wicked problems while also generating wicked problems of its own. Restorationists have begun to embrace the wicked problem terminology. Discussing the challenges of rural conservation and restoration projects in the Western US, and in particular a lack of public capacity to address changing conservation needs, restorationist and scholar Nils D. Christoffersen writes, "These are 'wicked problems' as described by Rittel and Webber (1973): problems with no clear solution, no indisputable public good, and no objective definition of equity" (2011). Critically, Christoffersen also acknowledges that "Science alone and professionals in various relevant fields cannot solve these wicked problems" (ibid). The fact that scholars in both fields make use of the wicked problem terminology is a convenient point of departure. Yet, even without the term, those in each field would be likely to find resonance in the complex and interconnected nature of the challenges that both face in their work. Scholars and practitioners in both of these fields are advancing essential capacities to work with wicked problems and ought to learn from the relative strengths that the other offers.

4. What Transition Design offers Ecological Restoration

Three of the challenges that ecological restoration currently faces are: the difficulty of problem framing, the need to articulate a compelling future, and the limitations of strategies confined to exclusively ecological interventions. Different restoration groups and cultures have developed approaches to untangling these challenges, such as weaving education and community engagement into a restoration project. What methods and approaches from Transition Design might also help in taming these wicked problems? A design approach alone cannot instantly change the fundamental dynamics of restoration or

suddenly make a government capable of respecting multiple ways of knowing. To be clear, even if all restorationists were to fully embrace Transition Design, these problems would still be significant challenges. Yet, I hope to show how restorationists with an opportunity to do restoration differently might be helped by engaging with Transition Design.

4.1. Problem Framing Gap

Transition Design embraces the idea that every problem is made of multiple, interrelated problems, and that no singular understanding of a problem or a context is correct and true. Individuals, communities, and organizations connected to a restoration challenge will all hold their own understandings of what "the problem" is. Institutional approaches to restoration will likely emphasize a singular definition of a problem, which can alienate others who hold different understandings of the situation (Tomblin, 2009). In a Transition Design project, that difference in understanding of a problem is expected and accepted. Two key ways that transition designers make change is by situating and reframing (Sides *et al.*, 2022). Situating encourages changemakers to consider their own relationship to the problem, and how their own geographic, social, political and system situating informs their perspective (ibid). Transition Design's engagement with the idea of theories of change can support situating work in ecological restoration (Carey *et al.*, 2022). Reframing, which is aided by mapping tools and frameworks from the social sciences such as STEEP analysis, the Multi-Level Perspective and Causal Layer Analysis, can help create space for multiple perspectives of a problem to co-exist (Geels, 2011; Inayatullah, 1998). Bringing in tools and ideas from other disciplines is a contribution that Transition Design can make to helping ecological restoration projects frame problems in ways that are more expansive, inclusive and compelling.

4.2. Futures Gap

Framing restoration as the work of return to the past is a fraught and, often, unhelpful, premise. Yet, restorationists struggle to articulate the future their projects seek to create in ways that are compelling and resonant. Describing restoration as designing ecological transitions, rather than replicating ecological pasts may be a more compelling orientation. This spin puts the emphasis on change. In a restoration project, the designed output is often a change process, or a designed ecosystem transition. Transition designers recognize the importance of articulating a compelling "vision for transition" in their work (*The Transition Design Framework–Transition Design Seminar CMU*, 2022) and make use of design tools from adjacent disciplines such as futures and foresight studies, and speculative design. Some restoration projects already do some form of futures work, at times including sketches, renderings or narrative descriptions of their future visions for a site or community. Transition designers working with restorationists and futurists might be able to add depth and clarity to their visions by engaging additional creative methods or even experiential scenarios to co-create a vision of ecological restoration success in a community.

4.3. Diverse Solutions Contribution

One of the most significant contributions that a Transition Design approach might make to ecological restoration is promoting ecologies of interventions when problem solving (Irwin & Kossoff, 2019). The third kind of action that transition designers make, alongside situating and reframing, is intervening, or "making change through careful disruption" (Sides *et al.*, 2022). Transition design, drawing on learnings from activists and other changemakers, proposes that by connecting ecological interventions with other extant or planned social and political interventions, we can weave together ecologies of interventions that will be more effective in making change than any singular intervention alone (Irwin & Kossoff, 2019). This process encourages conceiving or identifying interventions that are both material and non-material in nature, synergistic with one another, act across different scales, and acknowledge that human needs must be satisfied along the way (ibid). Ecological restoration projects tend to emphasize and be funded on the basis of material interventions. Transition designers, working as metaphorical acupuncturists, connectors, and gardeners of change can support restorationists, community groups, governments or even activists in making connections between interventions in a restoration challenge to increase a project's transformative potential.

5. What Ecological Restoration offers Transition Design

While designers may feel called to action by this outline of what they might offer to ecological restoration, it's worth identifying what the Transition Design field also stands to gain from engaging in restoration collaboration. As mentioned earlier, two of the challenges transition designers face are locating practical opportunities for their work, and creating opportunities to design over long time horizons. Engagement with ecological restoration projects might address both of these challenges.

One need not look very far or wide before finding ecological restoration at work in their community or bioregion. If we view restoration projects and groups as fertile ground for Transition Designing, suddenly more opportunities to design appear than designers to meet them. In particular, projects emerging from community watershed groups, local nonprofits or regional land trusts might be places where a Transition Design approach is welcomed. On the other hand, a Transition Design approach might also be useful in building community power in response to an institutional restoration project that ignores the concerns and wishes of those with less power. Of course, not every restoration project can or should be the site of a Transition Design effort, yet, these initiatives have much to offer the growth and strengthening of Transition Design theory and methods. Through involvement with such efforts, transition designers will be challenged to adapt their methods and theories to a very specific context, build trust in a community, and determine what aspects of their process are applicable to the challenge at hand. All of this work will make Transition Design more relevant and resonant in the future.

Restoring ecosystems requires a great deal of patience and attunement to how change happens in living systems. Transition designers who engage in restoration projects will almost certainly find that restoration, by proposing work that often cannot be done in one lifetime, changes the way they relate to time and longevity in their own design philosophies. Designers may be experts in syncing their designing with seasonal manufacturing schedules, but in a restoration project, a relevant time horizon may be anywhere from three to three hundred years. This ongoing bias toward efficiency and time-bound engagements in design can make it hard for transition designers to find institutional support for their longer-term way of working. Restoration projects, on the other hand, are often conceived of as decades-long efforts that require ongoing care and attention. This orientation toward protracted interaction without expectations of quick-wins or instant successes sets restoration apart from other realms of design. As such, restoration projects might be an ideal home for the kind of work that Transition Design requires.

6. Coming Together

Ecological restoration and Transition Design both have a great deal to offer in the efforts to address contemporary wicked problems. The two fields also offer a great deal to one another, yet there are several practical and theoretical barriers to closer engagement. One of those challenges may be a hesitancy about or misunderstanding of design by restorationists and in restoration communities. This hesitancy may stem from two places. The hesitancy among restoration scientists to self-identify as ecosystem designers may come from a kind of thinking in Western restoration ecology that argues humans should hold back from manipulating wild nature. This mindset, while trying to honor nature, also appears mechanistic or even colonial. This way of thinking separates humans from nature and ignores the work of indigenous and other land-based peoples to cultivate nature-positive disturbance regimes over millennia (M. K. Anderson, 2013; Kimmerer, 2011). In this mindset, restoration presents a "destructive interference" (Chapman, 2006). Recent conceptual developments in the field see ecologists leaving behind this thinking, and embracing a dynamic model where humans have key roles to play in ecosystem stewardship. Yet, this transition of thinking is not complete, and the hesitancy among ecologists to foreground human disturbance regimes in restoration, where humans are ecosystem designers, may indicate the remnants of this previous point of view.

The second source of hesitancy may be that restoration scientists and others in restoration hold a strong association between design and technology. Technology, ranging from GPS monitoring to seed enhancement, is an increasingly prevalent feature of restoration projects, to both the excitement and dread of those in the field (Perring *et al.*, 2015). Those who question technology in restoration may also question design's role. Restorationist Eric Higgs notes that, with its increasing entanglement with technology, design in restoration may just be "paving the way for a further entrenchment of technology", instead of "attune[ing] us to critical responsibilities" (Higgs, 2003). In engaging with restoration, I hope that those who design for transitions might find a way of designing that both re-

spects and challenges these various meanings of design that appear in the minds of those who practice restoration.

As a doctoral researcher in Transition Design, entering into conversations and spaces shared with those who practice ecological restoration has prompted me to reflect on my positionality and both the contributions and theoretical baggage that design brings to restoration. I am grateful to have had opportunities for hands-on participation in restoration projects, through which I've found my ideas about restoration and design challenged and expanded.

7. Conclusion

Ecological restoration and Transition Design are two fields that offer compelling ways to address wicked problems and realize desirable futures. Scholars and practitioners in each field have developed sophisticated and nuanced approaches to designing for transitions in complex living systems and share some key approaches and terminology. Restorationists specifically excel at conceiving of transition pathways that help non-human nature thrive, yet the challenges of framing problems from multiple perspectives, envisioning plausible futures and intervening across multiple scales and modalities and still hold back many restoration initiatives. Design, and specifically, Transition Design, offers compelling frameworks and ways of designing that might lend new energy and options to untangle the challenges that restorationists face. Engagement with restoration might also provide transition designers with new opportunities to practice and develop their approaches, as well as to hone a way of designing that engages with slow, long-term change. Finding enough common ground to collaborate may prove challenging as those who move in each space may not understand the other, or clearly see what they have in common. The two fields will likely always remain distinct, but a future in which they collaborate more closely holds great promise. In that future, perhaps ecological restoration is considered as a possible intervention in more Transition Design projects, and restoration projects ally with changemaking efforts outside of ecology, yielding beautiful new ecologies of interventions.

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Resumen: La restauración ecológica es la práctica de reparar las relaciones en los sistemas vivos. La mayoría de los restauradores basan su trabajo en la ecología, que proporciona una sólida base científica para las intervenciones. Sin embargo, estos profesionales deben buscar en otra parte para concebir nuevas vías de cambio y comprometerse con la complejidad social y política de la restauración. Las herramientas y teorías del Diseño de Transición pueden colmar estas lagunas. Este artículo explica por qué el interés común por el diseño para las transiciones es un punto de conexión y colaboración útil entre el diseño y la restauración ecológica. Al poner estos campos en conversación, este artículo esboza las contribuciones que cada uno ofrece para que ambos puedan desarrollar todo su potencial transformador.

Palabras clave: Restauración - Ecología - Ecosistemas - Diseño para la Transición - Problemas perversos

Resumo: A restauração ecológica é a prática de reparar as relações nos sistemas vivos. A maioria dos restauracionistas baseia seu trabalho na ecologia, o que proporciona uma base científica sólida para intervenções. Entretanto, estes profissionais devem procurar em outro lugar para conceber novos caminhos de mudança e para se envolverem com a complexidade social e política da restauração. As ferramentas e teorias do Projeto de Transição podem preencher estas lacunas. Esta peça articula por que um interesse compartilhado no projeto de transições é um ponto útil de conexão e colaboração entre o projeto e a restauração ecológica. Ao trazer estes campos à conversa, esta peça delineia as contribuições que cada um oferece para que ambos possam realizar seus potenciais transformadores completos.

Palavras-chave: Restauração - Ecologia - Ecossistemas - Projeto de Transição - Problemas perversos