

Experiences from the Deeper Sense of Place T-Lab: Transforming Coastal Stewardship Action in Casco Bay, ME

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Abstract

In a global Workshop/Transformations Lab (T-Lab) focused on transformation systems at a bioregional scale, a process to better understand the effect of the workshop on participants' capacity to navigate emergence was designed to develop a deeper understanding of cross-scale systems reflexivity and apply both of these concepts to inspire coastal stewardship action at a bioregional scale. We developed this analysis because T-Labs have the potential to support transformation at a bioregional level to inspire coastal stewardship action. The "Deeper Sense of Place" T-Lab focused on applying these frameworks through three distinct perspectives: indigenous, Western, and the perspective of the bioregion as imagined through the lens of the health of two nearby seagrass meadows in Casco Bay, Gulf of Maine. We summarize the design and implementation of this workshop, which was about deepening ways of seeing, connecting, and amplifying social innovation at a bioregional scale.

As a direct result of the three-day workshop, participants were better able to see complex system dynamics that were previously unidentified, which, in turn, allowed participants to see opportunities for stewardship action from a greater sense of increased agency to participate in and lead transformative change in new ways. Participants are better able to identify different kinds of stewardship opportunities and better describe the generative potential that can lie within social-ecological systems at a bioregional scale. A thoughtfully designed multi-day T-Lab that emphasizes multiple perspectives, seeing systems and building agency can directly inspire coastal stewardship action and long-term commitment to social innovation for transformative change.

Introduction

In the wake of increasing environmental disasters influenced by the anthropogenic impact of climate change, we are observing how the climate and ecological crisis is transforming the very life support system of our Earth. Historically, the dominant social response to this environmental polycrisis has been deeply connected to a mindset of efficiency and

dominion over nature (which is still reeling from the pandemic), to systemic racism and structural inequities facilitating division, and to growing social division at community levels (Whiting 2023).

Crises can have varying impacts on place, culture, and socio-economic systems depending on the context and magnitude of the crisis. A crisis can lead to transformation in one place or a “locking in” of unsustainable and unjust practices in another. (Geels et al. 2022; Herrfahrtdt-Pähle et al. 2020; Novalia and Malekpour 2020; Folke et al. 2005). They have the power to destabilize systems and make them more susceptible to change (Cumming and Peterson 2017; Turnheim and Geels 2013). In order to address concrete crises and the greater polycrises, we need social-ecological innovations, innovations that inspire direct action and build agency to fundamentally change, or transform, the current systems that created these polycrises in the first place (Waddock 2022; Westley 2013). One approach to foster social-ecological innovations is Transformations Labs, also known as T-Labs.

The concept of T-Labs was developed during transformations conferences and was first discussed across the “Pathways” Transformative Knowledge Network (TKN) at the inception workshop in April 2016 (Olsson 2021; Ely 2022, 53) and later applied at a wider scale during 2017 Transformations Conference in Dundee Scotland (Ely 2022, 45). T-Labs build upon the concept of social innovation labs, which are designed and facilitated processes aimed at supporting multi-stakeholder groups to address complex SES problems by creating “safe” spaces to discuss and launch innovations (Westley and Laban 2012). Further developed to incorporate social-ecological dynamics, T-Labs aims to produce innovations that help to create a more just and sustainable outcome for people and other parts of nature (Ely 2022, 54; Schöpke et al. 2018). In other words, T-Labs help us combat the aforementioned polycrises by driving people to produce transformative innovations.

There are three fundamental dimensions of T-Labs that must be considered: systems, pathways, and framings. Systems can be described as the “particular configurations of dynamic interacting social, technological and environmental elements,” the patterns of which we are trying to identify during a T-Lab (Leach et al. 2010). Pathways are “the particular directions in which interacting social, technological and environmental systems co-evolve over time,” while framings are “the different ways of understanding or representing a social, technological or natural system and its relevant environment” (Leach et al. 2010). In other words, T-labs are centered around identifying past pathways and framings and reframing stakeholders' ways of thinking to develop innovative solutions to transform systems by transforming the trajectory of their pathways. They aim to frame a challenge, find changemakers and strengthen their individual and collective capacities to address said challenge, develop strategies that test multiple solutions for the challenge, create early prototypes of intervention, and ultimately, support the generation of social-ecological innovations (Ely 2022, 54-55; Olsson 2021).

T-Labs are designed to offer a diverse group of people the opportunity for deeper reflexivity and engagement. However, they tend to overlook human-environment relationships and the connection between nature and human society (Zgambo 2018;

Pereira et al. 2020; Ely 2022, 55). The Collaborative for Bioregional Action Learning and Transformation (COBALT) addressed this gap by designing a T-Lab as part of the Transformations 2023 Conference Series held in Greater Portland, Maine, on Casco Bay in the Gulf of Maine, one of the most rapidly warming systems on the planet undergoing a period of immense transformation (Mills et al. 2022). In the past, we have already observed a sort of “locking in” of the aquaculture system in the Gulf of Maine after a transformative event when overfishing led to the depletion of cod in the Gulf of Maine, forcing local fisheries to shift to catching lobster, which, though not overfished, are now severely depleted (Grabowski et al. 2010; NOAA 2023).

In order to not repeat past mistakes and attempt to transform the bioregion in a state of crisis, the focus of this T-Lab was on understanding the power and purpose of bioregionalism as an integrated framework to develop a deeper sense of place rooted in deep history and the primacy of multiple perspectives. Bioregions are spatial units with ecological and cultural coherence, meaning they are living systems defined by social-ecological boundaries rather than political boundaries (Berg and Dasmann 1977; Hubbard et al. 2023). Bioregionalism is growing in popularity because it offers a more appropriate framework for environmental action and regenerative living (Eanes et al., 2018; Bhowmik et al., 2020). Bioregionalism is described as an eco-philosophy where “natural ecosystems and cultural contexts should dictate, or at least influence, how humans organize their relationships with the environment” (Ankersen et al. 2006, 408).

Through the Deeper Sense of Place T-Lab, the design appreciated the patterns of disruptions and crises over the past 500 million years and, notably, the effectiveness of the indigenous people who have lived in this bioregion for over 10,000 years to adapt in place with a rapidly changing climate and the transformations that have occurred. In our current context, one of the presenters noted the importance of the right balance of multiplicity and institutional flexibility to create a transparent context where multiple actors with some overlap can interact to reasonably mobilize resources and transformational efforts by creating a space for transformational innovation during this period of disruption (Moore et al. 2023). This article offers an analysis of participant experience with The Deeper Sense of Place T-Lab and explores the ways in which the experience influenced participants' sense of agency, perspective, and commitment towards stewardship action as a potential transformative pathway.

Methods

Design Process: Creating Deeper Sense of Place T-Lab

The design of the Deeper Sense of Place T-Lab focused on how to better see, connect, and amplify transformative change at a bioregional scale. To do this, the COBALT team integrated a wide range of meta-frameworks that serve to underscore the concept of Bioregionalism, including Systems Storytelling as developed by the Collective Change Lab (Kania and Kramer 2011, Saltmarshe 2018), Regenesi Framework (Mang and Haggard 2016), Phases of Transformation (Folke et al. 2021). The design featured a wide

array of learning styles, including didactic, participatory, and action-learning methodologies (Ciobanu 2018).

For six months leading up to the T-Lab, the COBALT team convened six working groups that integrated these frameworks, as well as a focus on bioregionalism and seagrass conservation through Team *Zostera*, a COBALT-affiliated group, focused on advancing eelgrass-related (*zostera marina*) Stewardship in Casco Bay and the greater Gulf of Maine Bioregions (Page et al. 2022). Working groups included leaders from the Casco Bay Bioregion and experts from across the globe as a co-creative space for a group of motivated changemakers. The working groups agreed that participation should be limited to roughly 60 people, ideally a diverse set of participants with a wide range of perspectives to reveal dilemmas and generate creative, collaborative dialogue.

The rationale for the T-Lab was to bring diverse actors together over three days, with a primary goal to deepen a sense of place through both Western and indigenous ways of knowing, engage with multiple frameworks described above, and see if this can inspire action. The T-Lab focused on building three capacities: (1) to see complex system dynamics that were previously undetected to participants, which, in turn, allows participants to see opportunities for stewardship in their own bioregion; (2) to identify different kinds of stewardship opportunities; and, (3) participate in more direct stewardship, drawing on content presented during the T-Lab.

This T-Lab design required diversity in age, discipline, perspective, and culture (Ely 2022, 58). These efforts were successful as the participants described their colleagues in the T-Lab as uniquely diverse, with a wide range of professional affiliations, expertise, native languages, and cultures. The T-Lab was designed to attract a balance (goal of 50/50 mix) of participants from the Casco Bay Bioregion and those from bioregions across the world (see Fig. 1-3). This, too, was successful.

For this research, we are most concerned with understanding the participant experience. We seek to understand to what degree a Bioregional-focused T-Lab can influence agency and inspire stewardship action.

Design Process: Deeper Sense of Place T-Lab Agenda

The COBALT design featured a biomimetic framing of breathing in (day 1) and breathing out (day 3), with the second day framing a holding of the breath, anticipating potential discomfort with the multiple frames. We applied a “play on words” for Day 2 as the breadth of the material was very wide, so we also referred to it as “holding the breadth.” A brief description is attached below, and more details can be found in the [COBALT Story Map](#) created as the agendas for participants. Days 1 and 2 were held at Wolfe’s Neck Center for Agriculture and the Environment in Freeport, Maine, and Day 3 was held at the Osher Map Library and Smith Cartographic Education Center on the campus of the University of Southern Maine in Portland, Maine.

Day 1: Breathing In

The design of Day 1 focused on identifying the patterns/essence of the Casco Bay Bioregion by starting with trust-building and story weaving, identifying perspectives, introducing the first of four Systems Storytelling modules, and exploring the historical perspectives of the bioregion.

To center the indigenous perspective, two fluent Passamaquoddy speakers (one being the Passamaquoddy Language Keeper and the other being the co-author of the Passamaquoddy-Maliseet dictionary) filled the room with words of welcome to each other and then looked into the audience to welcome all. With an authentic replica of a birch bark canoe, they welcomed everyone to “board” the Magic Canoe to paddle together. They first invited the Chief of the Peskotomuhkati Nation in Skutik (St. Andrews, Canada), together with the founder of COBALT, to “board” the canoe (Paul and Briony 2019). They both greeted each other “aboard the canoe” and welcomed all other participants to join. That invitation led to an opening traditional indigenous ceremony of dancing together “in the canoe” as one with Mother Earth.

After the opening Ceremony, we began with an introduction to Systems Storytelling as the first of four modules to be presented over the three days. After lunch, the COBALT lead pointed to six 20-foot-long panels installed on the walls of the T-Lab convening space. Each of the six panels featured a distinct timeline over the past 500 million years with a major focus on the period of pre-, during, and post-colonial settlement/invasion and subsequent genocide of the local peoples. The COBALT lead then introduced an immersive/experiential learning component in the form of a unique, educational performance-art piece. He asked if participants would like to take a journey in the magic canoe over the 500-million-year timeline of Casco Bay that was displayed around the perimeter of the meeting hall (Rizzo and Page 2023). Participants agreed, and the COBALT lead invited participants to experience three perspectives of this “story.” The first was his, that of a Western white male. The second is from an indigenous leader, the Chief of the Peskotomuhkati Nation in Skutik. The third perspective was that of the bioregion itself, giving voice to “Mother Earth.” That perspective was voiced by the Director of the Osher Map Library, who offered a feminine perspective, and she was called “Gaia.” Each of the three interpreted the same timelines, each through extremely different perspectives.

Afterward, breakout groups were formed to see if and how that framing helped to better understand a deeper sense of the Casco Bay Bioregion. The evening meal featured a bioregional feast curated by a local chef that featured ingredients entirely sourced from Casco Bay. The final evening event was the second of four System Storytelling modules, where participants were invited to gather in a circle, reflect on the day’s lessons, and share stories relating to the sense of place.

Day 2: Holding the Breath (Breadth)

The second day was centered around understanding the essence and current state of the bioregion, identifying the emerging potential, and exploring what it means to cultivate a field of relationships to support the ongoing evolution of a bioregion. After a morning orientation session, six experts presented on the bioregional dimensions of fiber, food, energy, finance, culture/language, and - significantly - their interrelationships across the Casco Bay Bioregion. Leaders from the Stockholm Resilience Center presented research related to Phases of Transformation. A leader from the Regenes Group introduced the Regenes Framework, which emphasizes focusing on the “essence of place” as an integrating concept through an open-forum type discussion. A third Systems Storytelling module about complicating the narrative was presented in the afternoon. Additionally, because the event was timed with a new moon, and the sitting of the event was selected based on access to nature, all participants were invited to experience the high tide as a bioregional framing of how estuaries “hold the breath” as tidal rivers swell and peak, particularly at lunar phases such as new moons. The second day concluded with a bioregional feast curated by a highly successful local chef.

Day 3: Breathing Out

On the morning of Day 3, when it was lunar low tide, we invited participants to swim in the seagrass meadows and learn about the phenology and conservation efforts in the bioregion. Roughly half of the participants attended the 7:00 am session that included a detailed description of the critical importance of seagrass conservation and restoration for a myriad of social and ecological benefits. We continued the event at the Osher Map Library to identify and discuss a wide range of practices related to bioregional stewardship and how these practices require agency and may lead to pathways of long-term stewardship action. The COBALT lead offered a new technology, unveiling a glimpse into a Bioregional Digital Twin that could serve as the container for navigating bioregional stewardship within a given location. A Bioregional Digital Twin is a vast, rich, living 3D model of the bioregion that people can explore and interact with, and appreciates and weaves advances in social and digital technology and emphasizes the critical importance of ethics, stewardship, and bioregional governance by driving real-world action through play mechanics to better see and grow a more regenerative approach to life in the Anthropocene.

On this day, the Bioregional Digital Twin enabled a deeper exploration of actions, including the importance of data and visual representations of complex, interconnected, interdependent systems. The final systems storytelling module was presented, with a focus on the story of transformation. A closing ceremony was led by the Passamaquoddy Language Keeper to mark the amazing journey of the Magic Canoe that included all participants “transforming” into a species that is related to seagrass ecosystems in Casco Bay. On the final event on the third day, we invited participants to showcase their work including art and innovations relating to the theme of bioregional transformations in a gallery-like setting.

Developmental Evaluation Framing: Survey Methods

A pre-post survey process was designed to better understand participant experience. In preparation for the T-Lab, we asked all participants (including facilitators) to complete a pre-event survey during the month leading up to the T-Lab. This pre-survey included questions that allowed us to plan logistics, create a database of participants' profiles, provide a source that fosters connection during and after the event, and get a glimpse of who participants are and their frameworks. In order to acquire an understanding of our participants and their frameworks prior to the event, we asked them to identify something they'd like to cultivate within themselves (inner development), what they would like to offer to the T-Lab, and what they're paying attention to, orienting towards, and what action they are taking in relation to their bioregion.

During the month after the T-Lab, we asked the same group of participants to complete a post-survey reflecting on the event and asked similar questions as before the event. We asked participants to identify what they'd like to cultivate within themselves, what they now realize they have to offer, what they're paying attention to, orienting towards, and what action they are taking in relation to their bioregion as a direct result of the T-Lab. This survey focused more on the direct impact of the Deeper Sense of Place T-Lab, so we also asked participants to evaluate their level of transformational change by answering questions related to their level of learning and collaboration, informing us of unique network connections that arose from the event while summarizing their experiences. We analyzed the survey responses by graphing in Google Sheets and taking note of immeasurable patterns. We coded all long-answer survey responses using the simple coding process explained below and then graphed the codes in Google Sheets for analysis.

Simple Coding Process

We created a coding index that was used to analyze survey responses and transcripts of the event. The codes were used to identify when a particular topic/category was mentioned or alluded to. After skimming through the answers, most codes we created related to different meta-frameworks of the T-Lab, personal identity and framing, and common themes that came up in the pre-T-Lab survey responses; these kinds of responses were coded inductively. The rest of the codes were coded deductively, where we had a predefined set of themes inspired by Adrian Ely's *Transformative Pathways to Sustainability: Learning across Disciplines, Cultures and Contexts*, including categories related to theoretical anchors (systems were coded with "SSS," framings was coded with "FFF," and pathways was coded with "PPP") and methodological anchors (action-learning was coded with "AL," didactic learning was coded with "DL") of Transformations Labs, and the United Nations Sustainable Development Goals (SDG01 - SDG17).

Table 1. Table of all Codes Used for Analysis

Code	Category	Code	Category	Code	Category
ID	Inner Development	IN	Innovation	PPP	Pathways
O/G	Offer/Gift	Lang	Language / communication	SS	Systems Storytelling
Cx	Connections	Lead	Leadership	RF	Regenesis Framework
Co	Collaboration	Li	Listening, Asking Questions	B	Bioregionalism
Cm	Community	MH	Mental Health, Health, Sickness, COVID	PhoT	Phases of Transformation
Ax	Action	N	New ways of thinking	SDG01	End poverty in all its forms everywhere
A	Attention	Nat	Engaging with nature/being concerned about climate change	SDG2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
O	Orientation	Opp	Openness/being open to change	SDG3	Ensure healthy lives and promote well-being for all at all ages
IL	Indigenous Learning	P	Staying present/attention span	SDG4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
IC	Indigenous Connection	Pat	Patience	SDG5	Achieve gender equality and empower all women and girls
SoP	Sense of Place	Re	Reflexivity/Regenerativity	SDG6	Ensure availability and sustainable management of water and sanitation for all
SS	Systems Storytelling	RS	Religion/Spirituality	SDG7	Ensure access to affordable, reliable, sustainable and modern energy for all
SC	Systems Seeing	T	Trust	SDG8	Promote sustained, inclusive and sustainable economic growth, full and productive

					employment and decent work for all
B	Bioregion/Bioregionalism	TEKW	Traditional Ecological Knowledge and Wisdom (Chief's wisdom for transcripts)	SDG9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
<3	Love/Compassion & Gratitude	Trans	Transformation/ Transformaitve change	SDG10	Reduce inequality within and among countries
Art	Artistic Gifts	Ts	Synthesis, Translation	SDG11	Make cities and human settlements inclusive, safe, resilient and sustainable
Bal	Balance/Inner peace/Mindfulness	UR	Urgency, slowing down	SDG12	Ensure sustainable consumption and production patterns
BU	Bravery, leap into unknown/Uncomfortable vs comfort, trust	PL	Participatory	SDG13	Take urgent action to combat climate change and its impacts*
Div	Diversity	AL	Action-learning	SDG14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Educ	Education	DD	Didactic Learning	SDG15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Food	Food	POLL	Survey	SDG16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Hum	Sense of Humor, Laughter, Jokes, positive attitude	SSS	Systems	SDG17	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development
Imm	Immersion	FFF	Framings		

Two of the co-authors coded all long- and short-answer survey responses and the frequency of their codes were synthesized and averaged, so the mean and standard deviation of their counts were used to analyze survey responses. We then compared the frequency of each code in the Pre- and Post-T-Lab survey using Google Sheets. One researcher audio-recorded the entire T-Lab and coded transcripts from the more discussion-based portions of the event, about five hundred and twenty-five minutes of the T-Lab. We then synthesized the frequency of each code in our transcript documents and summarized the frequency of each code throughout the entire event to confirm that discussions of the aforementioned meta-frameworks and theoretical and methodological anchors actually occurred during the T-Lab itself. Coding results are available upon request.

Results

Pre-Survey Results

Prior to the event, 96.92% (n=59) of participants responded to a series of identifying questions to allow us to gauge the diversity of the T-Lab. Participants traveled from fourteen states and seven countries to attend the event, and while we were all English speakers, we had a diverse array of native languages (10 non-English languages) (Fig. 1). Participants also came from various sectors, reporting a balanced group of people with different affiliations (Fig. 2). We also noted a very well-balanced range of issues of expertise among all participants with Sustainability (9.1%), Climate Change (7.8%), and Stakeholder/ Community Engagement (6.4%) being most common (Fig. 3).

Participants' Native Languages

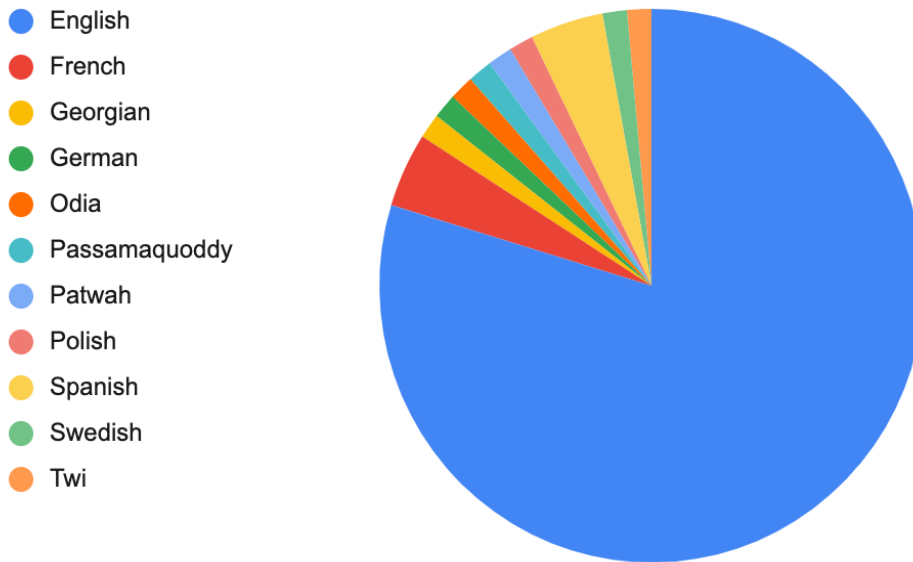


Figure 1. Pie Chart of Participants' Reported Native Languages

Participants' Organization/ Affiliation

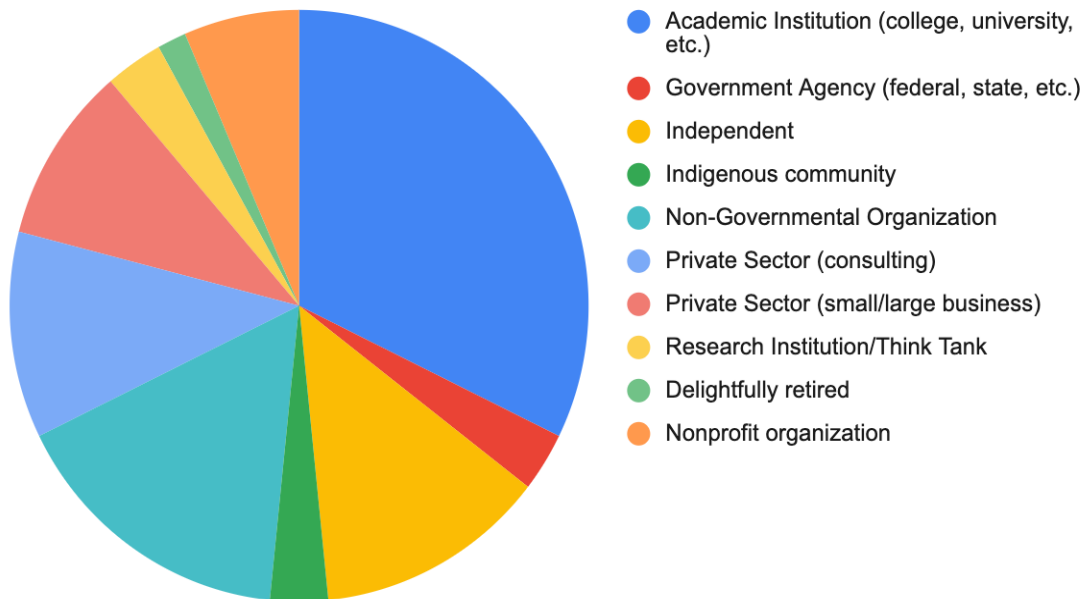


Figure 2. Pie Chart of Participants' Reported Organization/ Affiliation

Participants' Issues of Expertise

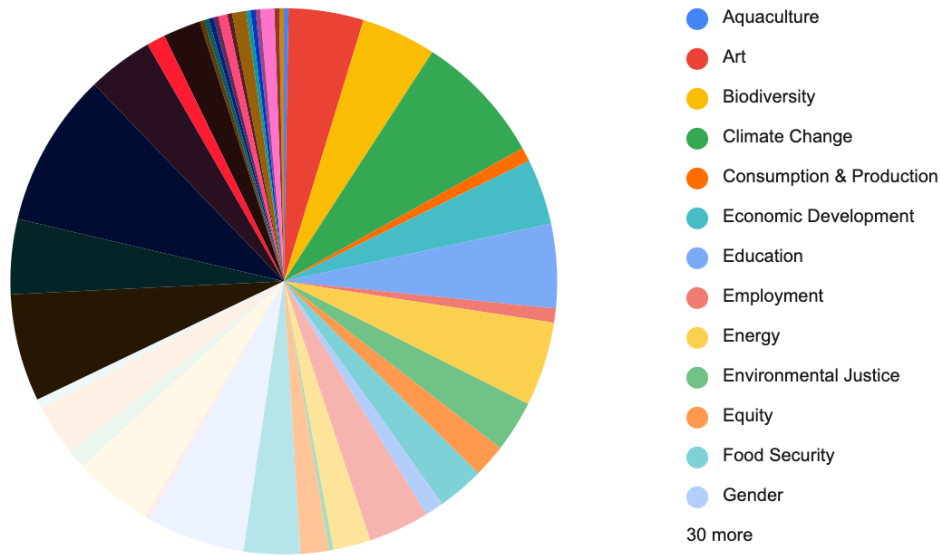


Figure 3. Pie Chart of Participants' Issues of Expertise

Post-Survey Results

The diversity of participants seemed to enhance the experience of the T-Lab; some of the participants (8 out of 56 respondents) expressed a deep appreciation for the diverse perspectives of participants. Participants were able to gain “a deeper appreciation for the variety of perspectives and interests that could inform and inspire discussions about the place” because of this “opportunity to meet people that come from a multitude of different locations, experiences, and perspectives.” As a result, they “think differently about [their] engagement” and feel equipped to “integrate [different perspectives] as [they] further [their] educational and professional journey[s].” Also, despite having such a diverse group of participants, they were able to find a connection through a common goal; as one participant stated,

“I connected with a diverse, engaged, and motivated group of students, artists, and industry practitioners. It became apparent that even though we had different personal and professional backgrounds, we were all united by the desire to better connect with our respective bioregions to help us cultivate the skills to spread coordinated environmental action on both local and global scales.”

After the event, participants were asked to rank their perceived quality of collaboration during the event and sense of internal development as a result of the T-Lab, inform us of notable new connections, and provide further context.

Participants Reported Quality of Collaboration

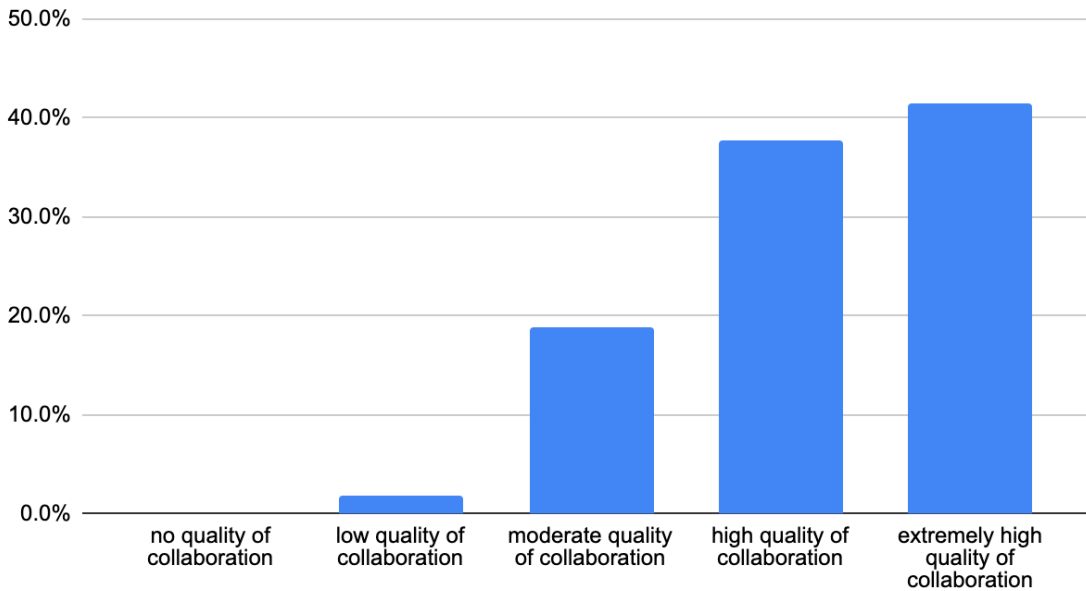


Figure 4. Bar Graph of Participants’ Reported Quality of Collaboration

79.2% of participants reported experiencing a high, or extremely high, quality of collaboration (Fig. 4). One participant stated that they “had no idea that the experience and connections to others would be so profound and exigent,” and this sentiment seemed to resonate throughout the participants. They reported that “the simple opportunity to engage in meaningful conversations and foster connections with people who have deep understanding about different systems” allowed them to “better understand and desire to learn more about these systems.” Through the series of large and small-group exercises, participants felt that “though [they] had different personal and professional backgrounds, [they] were all united by the desire to better connect with our respective bioregions to help us cultivate the skills to spread coordinated environmental action on both local and global scales” and through this, they learned “how collaboration can continue to be harnessed when dealing with complex problems especially those bothering on the environment and climate.”

We also found that participants left the T-Lab feeling empowered, like “the rush of energy from becoming, both in mind and body, a member of a thriving, fecund ecosystem searching for ways that, together, we can live in right harmony with this place.” Through conversations with other participants, one participant realized that they “had been under-utilizing [their] expertise as a tool to create the needed change [they] desire in relation to [their] Bioregion,” realizing that they have the power to change their Bioregion. This sense of empowerment appeared to be common among our younger participants; one of them stated that they “realized that [their] age has nothing to do with what [they are] able to offer to [their] bioregion. Just because [they are] younger, doesn't mean [they] have any

less power to make change,” while another participant was given “a better glimpse at how influential [they] can be” and “realized other parts of [themselves] that [they] wish to offer to [their] bioregion.”

While possibly an outlier, a generational gap was noted that may have affected the sense of collaborative and individual empowerment observed by a small number of participants. For example, one older participant mentioned that they “felt the young people in the room were strangely quiet” and “found their POV disturbing in so far as they seemed quite cynical and angry. They had no faith in grassroots efforts and felt things could only happen on a large system-wide basis where things were ‘scaled up.’” A younger participant stated that “at some points, it was frustrating to be referred to as ‘the youths.’ While [the participant and their] colleagues were younger than many of the other participants, the term was used in ways that were frustrating.” This indicates that a generational divide may have generated a barrier to deeper collaboration and connection. Another potential outlier worth noting was from a participant who stated they felt the T-lab consisted of “mostly presentation of solutions, vs development or merging of them.”

The vast majority of responses indicated a high overall quality of connection and collaboration that “further solidified for [participants] that all change work is deeply relational and grounded in the specific past, present, and future of the place itself.” From this, many participants defined how and why they are eager to continue to collaborate after the T-Lab.

Estimated the number of people Participants plan to reach out to and develop a long term connection.

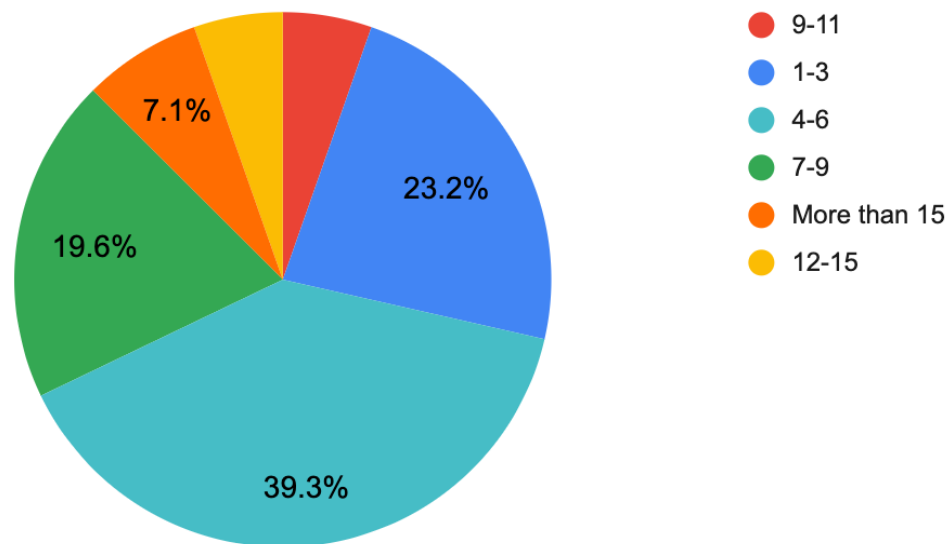


Figure 5. Pie Chart of the Estimated Amount of People Participants Plan to Keep in Contact with

Participants were also asked to estimate the number of participants they realistically anticipate to remain in contact with and provide an example if applicable. 39.3% of responding participants reported that they plan to stay connected with 4-6 new people (Fig. 5). Most responding participants provided us with an example, and many even stated that they plan to collaborate on a project or are already planning to do so as a result of the T-Lab. For example, one participant is currently “trying to put together a fiber/foodshed project in the region. Pretty specifically because of the workshop.” One other participant has worked to help a participant “put together a portfolio/resume of work [they’ve] done and look into some nonprofits working on ocean sustainability in Costa Rica!”

Participant Reported Level of System Storytelling Development

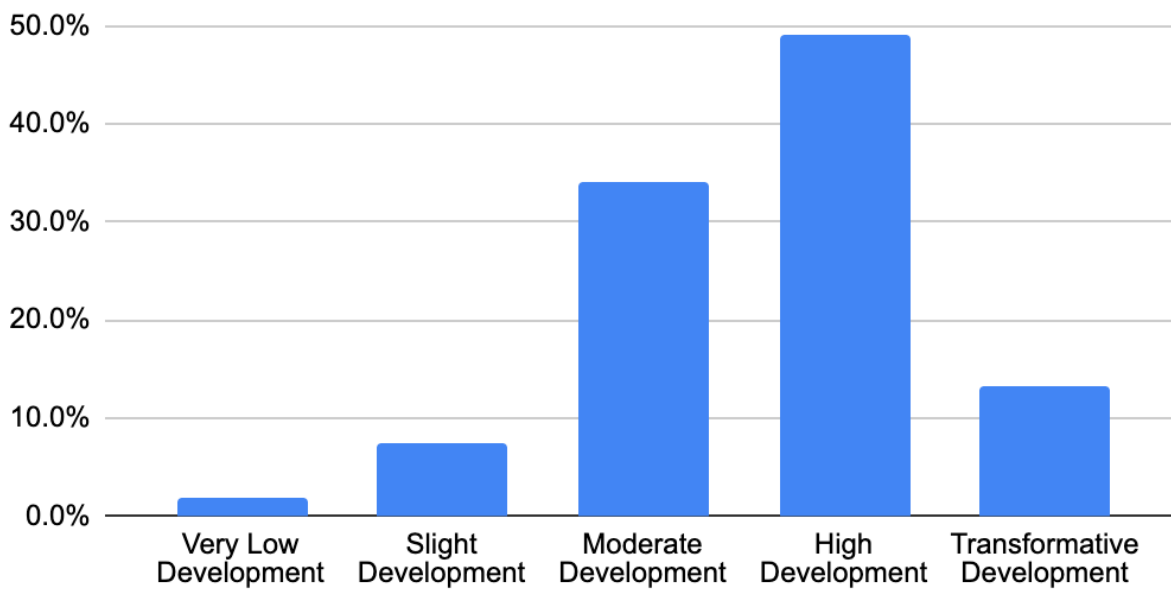


Figure 6. Bar Graph of Participants’ Reported Level of System Storytelling Development

Participants were then asked about their experience developing system storytelling skills. 96.3% of them reported feeling some level of System Storytelling development, though 13.2% reported having a transformative development of system storytelling skills prior to the T-Lab, nearly half (49.1%) of responding participants greatly developed these skills (Fig. 6). Half of the participants that experienced low, or slight development had experience in systems storytelling, and identified it as an issue of expertise in the pre-survey. The other experts in systems storytelling, even the two Systems Storytelling facilitators, reported experiencing a high level of system storytelling development themselves. These results reflect how systems storytelling was not only taught and

practiced by our facilitators but also shown in practice by participants throughout the duration of the event. As a result of the systems storytelling exercises held during the T-Lab, one participant stated they “left with a better grasp of utilizing stories and timelines as mechanisms for capturing different perspectives and enabling them to derive the positive change needed in tackling climate and environment issues.”

Similar to our collaboration efforts, the incorporation of Systems Storytelling throughout the T-Lab left participants feeling inspired and empowered. One participant mentioned feeling “very inspired by stories of resilience and transformational change in regions stemming from groups coming together around a common love of place, even if their politics, outlooks, worldviews, etc. were fundamentally different,” while another felt “empowered to apply systems storytelling into both my academic and professional work.” Participants stated feeling a better sense of systems seeing and felt “it was compelling and rewarding to gain knowledge about how they interconnect in my own bioregion” as a result of our systems storytelling exercises.

The four System Storytelling modules presented used participatory and action-learning methods to interweave our meta-frameworks of focus (Regenesis Framework, Phases of Transformations, Sense of Place, etc.) and proved to be effective in teaching them as well. Many participants mentioned being better able to see whole systems, and feeling more confidence in navigating through them, but also feeling a good sense of disruption to their ways of thinking. As one participant noted, through the interweaving of the regenesis framework in systems storytelling, the T-Lab has “thoroughly upset [their] existing epistemology of problem-solving,” and the “reflections on emergent potentials continue to go in [their] head.” Indicating that the integration of multiple learning pedagogies was successful in encouraging individuals to reframe their ways of thinking.

Participant Reported Change in Sense of Place

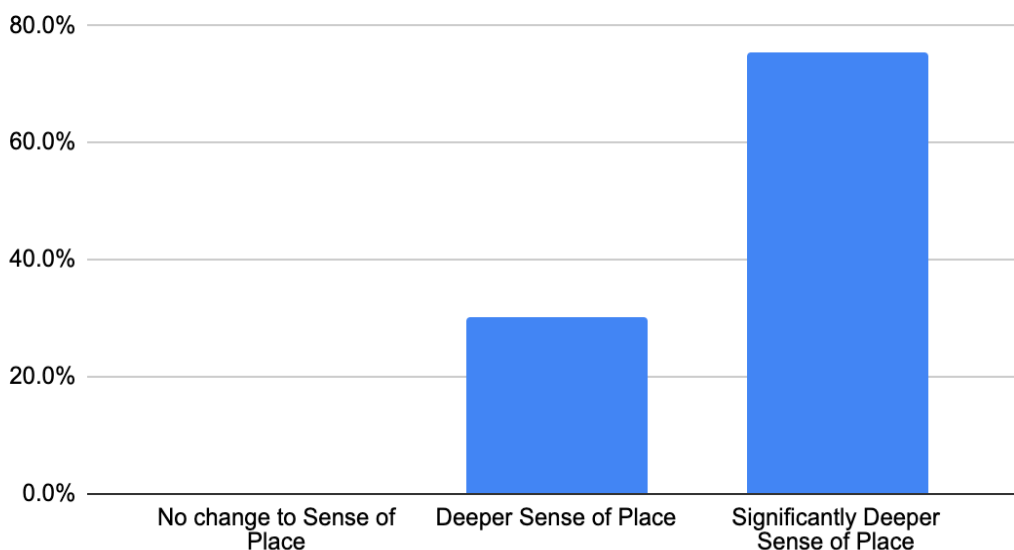


Figure 7. Bar Graph of Participants’ Reported Change in Sense of Place

Finally, all responding participants were asked to report whether they experienced developing a deeper sense of place as a result of the T-Lab. While all participants reported feeling a deeper sense of place, 75.5% of them felt a significantly deeper sense of place (Fig. 7). This indicates that our incorporation of nature as a vessel for, and participant of, the workshop and interweaving mindfulness practices may have been successful in deepening individuals' sense of place. As one participant stated,

“I also think it was very beneficial to see a lot of the systems in the places where we held the workshop, specifically at Wolfe’s Neck campground. An example of this would be from the food that we ate while we were there, being aware that they were from local sources and processes required to bring them to the plate.”

We had intentionally sourced food entirely from the bioregion, and while participants learned about the food system, they were able to explore the land and farms on-site and interact with the chef who took on this T-Lab as an opportunity to create a nourishing and artistic avenue for participants to develop a deeper connection to the bioregion. Moreover, through this and the system storytelling modules mentioned above, participants now feel more deeply connected to nature and the history of this place, as they “feel connected to the life forces: the slippery eel grass, the sandpiper, the spirit of the Abenaki who lived here for 10,000 years before [them].”

Through this deepened sense of place, we also observed motivation to incorporate Bioregionalism into participants’ stewardship action. Participants reported that “as a result of this workshop, [they] found a new motivation to learn more about every moving element that operates at the heart of this bioregion” and are “taking steps to incorporate Bioregional thinking and planning in the conception of [new initiatives they are] working on.” One participant beautifully encompasses this sentiment in their testimonial:

“The Deeper Sense of Place workshop spoke true to its name: it allowed me to have a deeper connection to the place I now call home, foster deeper connections with those who share similar passions to mine, and deepen my knowledge of the systems interconnected in our bioregion such that I can share with those around me.”

Other Results

There was a wide range of effects, prototypes, and impacts anticipated from the Deeper Sense of Place T-Lab, some of which include the commitment to further develop a Bioregional Digital Twin, commitment to seagrass conservation, commitment to exploring ways to integrate place names, etc., and others that are more emergent. While United Nations Sustainable Development Goals (SDGs) were not overtly part of the T-Lab, thirty (54%) participants alluded to creating more pathways with the potential to reach 12 of the 17 SDGs.

The response to the 500 Million Year timeline, as presented in three perspectives, was rated as extremely important by a wide number of respondents. From reading the timeline, participants were “inspired to do that research in my bioregion.” Moreover, from the integrative experience of displaying this timeline through a Western, Indigenous, and Natural lens (from the perspective of Mother Earth/ Gaia), we were able to have a “visceral impact” on our participants. “Through the impromptu storytelling that took place and the dance that they did together,” one participant stated that despite having prior knowledge of Casco Bay’s history, this performance “went beyond the cognitive to a heart level for” them and will stick with them as they proceed to do their own work in their bioregion.

In addition to the indigenous voice presented during that exercise by the Chief of the Peskotomuhkati Nation in Skutik, indigenous language, learning, and culture were intertwined throughout the T-Lab (Hay, 2023). The Passamaquoddy Language Keeper led an opening and a closing ceremony for the event, and both tribal leaders played active roles in our exercises and group discussions. This proved to be “essential to guide [some participants] toward knowing and embodying a harmonic existence with all beings and elements,” meaning this played a major role in deepening an individual's sense of place. The ceremonies especially helped participants “really create[] a connection to the Bioregion” by bringing their “rhythms together and opened [their] hearts to each other so participants from all kinds of backgrounds could share deeply, learn from each other and bond across all the usual 'silo' barriers that so often separate people.” One participant described the closing eel dance ceremony as “such a beautiful flow of energy and love for the place and for one another.” Additionally, participants seemed to have “resonated with the discussions of [their] sense of place, language, and two-eyed seeing” with these tribal leaders. Ultimately, centering Indigenous voices in the T-Lab enhanced the effectiveness and influence of the presented meta-frameworks by deepening our sense of connection to place and connection to each other and introducing us to indigenous frameworks that have been suppressed from popular academic knowledge for centuries.

Finally, seeing as though this T-Lab integrated multimedia expressions of different systems and held a showcase of participants' art and innovations on the final night, participants left the T-Lab ready to work on their own projects. One of the artists who created a piece specifically for the final showcase stated that “in the end [they] felt as though it led [them] to think even deeper about what sort of piece could represent an issue and make a change, and in what ways [they] could best present it to make an impact.” Some other artists shared this sentiment of wanting “to understand the ways in which [their] art and creativity can form and shape a brighter tomorrow and reach the widest audience possible” and pull inspiration from artists at the event who have already started to do so and “work with art in relation with regenerative projects” and incorporate whole systems seeing. From this event, participants have built their photographic portfolios, reported their experience, and taken concepts from the event to include in radio shows and newsletters that highlight transformative stories, inspired a documentary of the T-Lab’s purpose and focus, and a potential Peskotomuhkati seasonal calendar. As one artist stated

as a result of this T-Lab, “[they] want to understand the ways in which [their] art and creativity can form and shape a brighter tomorrow and reach the widest audience possible.” Additionally, participants from different fields are now orienting toward incorporating art into their practices, such as one of our participants in fisheries management who stated that they “would like to get involved with the Bioregional Digital Twin project development” with COBALT.

Discussion

As part of the Transformations 2023 Conference, this T-lab created a new opportunity to further develop a response to ecosystem change in the Gulf of Maine (Suarez 2018, Fazey et al. 2018; Page et al. 2021). The Deeper Sense of Place T-Lab offers abundant evidence that a highly participatory process that integrates multiple frameworks and perspectives can create pathways that build agency for stewardship action. The T-Lab accomplished this by providing transformative spaces to reflect and discuss change as we convened changemakers from across the globe to Casco Bay, a bioregion experiencing a myriad of natural and social shifts, to learn about new meta-frameworks, collaborate, and apply them to future innovations.

The COBALT team designed this Bioregional-focused T-Lab to influence agency and inspire stewardship action in relation to three capacities. In the first capacity, we observed that participants are better able to see complex system dynamics that were previously undetected to them, which, in turn, allows participants to see opportunities for stewardship in their own bioregion.

As displayed in the results, participants described the development of a higher level of system storytelling skills and a greater understanding of the meta-frameworks that were presented. Several respondents noted that to tell a story; we must learn to describe and understand systems, typically through various stakeholder and initiative identification and mapping processes, outlining who is doing what, where, and how, and sensemaking through visioning how the system might be and emerging shared aspirations, visions, values, and narratives (Waddock 2022, 81). In other words, the T-Lab created a foundation in system seeing. While some participants had a background in this area, most participants further developed their system-seeing skills and learned to apply them to different frameworks.

Moreover, through the system storytelling exercises and collaborating directly with the facilitators, participants gained an understanding of reflexivity and transformational change. Reflexivity can be described as “an individual's General awareness of the constraints and opportunities created by the norms, values, beliefs, and expectations of the social structures that surround them” (Suddaby et al., 2016). Additionally, as a result of this T-Lab, participants expressed empowerment and motivation to apply systems seeing and storytelling to narratives surrounding system reflexivity, displayed participant reflexivity in themselves as they gained awareness of the assets and limitations of their systems and the ability to interconnect between systems to cultivate solutions.

Additionally, by immersing themselves in nature, attempting to embody nature, centering an indigenous perspective, and encouraging participants to collaborate using this lens, they were able to deepen their understanding of resilience by cultivating a deeper sense of place and a more complex understanding of systems (Shafiei et al. 2021; McIntyre 2023). To cultivate a deeper sense of place is to connect oneself and the characteristics of their community to a shared geographic area. By understanding this connection, we can adapt our minds to see systems through a perspective that characterizes resilience thinking and studies of social-ecological systems (Masterson et al. 2017). Seeing as we refer to bioregions as both a geographic terrain and terrain of consciousness that is bounded by the ideas that have developed about how to live in a place, participants' cultivated sense of place led to a greater understanding of bioregionalism and motivated them to incorporate this framework into their work as well (Bergman and Dasmann, 1977; Thayer 2003; Page et al. 2022).

As a result of this increased capacity to see new complex system dynamics, participants now see opportunities for stewardship in their own bioregion. While some participants have identified “awareness and education [to] be [their] first step in connecting with problems in [their] bioregion,” most other participants (31) feel more equipped in their “ability to define and work toward implementing clearly articulated and substantive changes in [their] bioregion and beyond.” As a result of the T-Lab, participants plan to be “more involved in the current movements and efforts in [their] bioregion” by seeking “out groups working towards studying and protecting the eelgrass meadows in [their] bioregion,” “paying attention to opportunities to challenge the status quo with agents of change in kindergarten,” and even “expand[ing their] efforts to work in the area of shellfish aquaculture as one way to reduce water quality degradation as well as create environmentally sustainable food.” One participant even mentioned that their eyes were opened to “seeing and transformation from the artist's perspective” and that they will be seeking out more artists to collaborate with as a result.

In the second capacity, we observed that participants were also better able to identify different kinds of stewardship opportunities and that they were directly inspired to take more direct, transformative action, drawing on content presented during the T-Lab. As one participant stated, “There are quite a few specific programs and projects that I learned about at the workshop that I'm sure I'll continue to pay attention to.” This sentiment seemed to ring true for others as well; participants also stated being “even more interested[]in paying attention to the efforts of the indigenous people of the bioregion to play an active role in shaping its future and telling the story of its past,” and identifying initiatives in their prospective bioregions that they would like to engage in, such as the “bioregional digital twin development project” COBALT is working on and “the Delaware Riverfront restoration project efforts and the diverse stakeholders that are part of the process.”

Moreover, following the event, participants are already starting new projects and adapting existing ones to incorporate some of the lenses addressed in the T-Lab. Many participants reported that they built connections with others and are already starting to collaborate

based on “common interests in the region for aquaculture and language teaching,” “shared interest in manufacturing housing materials and buoys using hemp,” and “to begin [their] conversations around ways of healing that are simple, soul-connected and effective.” Drawing on concepts from the T-Lab, participants also mentioned more concrete initiatives that they are planning to implement, such as “trying to put together a fiber/foodshed project in the region,” “advocat[ing] for a solar farm atop the landfill, charging stations, carless village, more ebike transportation vehicles, and conversion of energy sources for [their] own home,” and even creating new companies with the T-Labs proposed meta-frameworks in mind:

“I’m forming a company that will create durable harvested wood products as part of a recently promulgated carbon maximizing silviculture protocol. These products will be sold/deployed within the bioregion.”

These projects are the result of new, interdisciplinary connections made during the event. Moreover, some of the initiatives and new areas of focus for participants, as a direct result of the T-Lab, allude to pathways for achieving most of the United Nations SDGs. Despite deliberately not addressing these goals during the workshop, we induced participants to address some of the most ambitious, comprehensive, and internationally recognized goals that require systemic changes that go beyond incremental shifts in policy, behavior, or use of technology; truly transformative changes. Cumulatively, this data proves that the T-Lab was successful in changing how participants think through concepts of system reflexivity and storytelling at a bioregional scale. Additionally, the T-Lab prepared participants to better identify different stewardship opportunities and describe the generative potential that can lie within social-ecological systems at a bioregional scale.

Continued Learning

While the evidence suggests that we were successful in inciting transformative stewardship action by reframing and encouraging participants to join and create new pathways, there are always areas of improvement as we attempt new forms of T-Labs. For example, one participant noted we could have had “some more clashing voices from the Casco Bay bioregion, such as representatives from one of the big shipping or oiling companies.”

Collaboration is a widely utilized strategy for addressing complex social issues and for facilitating organizational innovation and performance. Accordingly, it was intentionally integrated into the structure of learning throughout the T-Lab (Woodland and Hutton 2012). Cross-generational networking was missing from the design as an unanticipated need, but given the wide age difference, this could have been useful. Half of the younger participants who reported feeling more empowered by the event attended an impromptu, casual networking event where they mingled with a diverse group of participants (Gen Z to Baby Boomers). Future T-Labs that focus on age diversity should integrate more room to intentionally intermingle across generations, which may increase the quality of collaboration. As the post-survey reveals, participants experienced a deep level of

collaboration, facilitating new connections across systems, expanding participants' worldviews, and leaving them with a sense of empowerment and inspiring stewardship action.

Conclusion

This T-Lab proved to be successful because we observed that as a direct result of the three-day workshop, participants were better able to see complex system dynamics that were previously invisible to them, which, in turn, allowed participants to see opportunities for stewardship action in their own bioregion and in Casco Bay as a newfound agency to participate in and lead transformative change. Since engaging with diversity is essential in social innovation and transformative change processes, the workshop has changed how participants understand, which has been operationalized through the concepts of system reflexivity and systems storytelling at a bioregional scale as they consider commitment to transformative action following the event. Participants are better able to identify different kinds of stewardship opportunities (such as the conservation of seagrass ecosystems in Casco Bay) and better describe the generative potential that can lie within social-ecological systems at a bioregional scale. As shown here, a thoughtfully designed three-day T-Lab can directly result in stewardship action that requires drawing on content presented during the workshop, including how to navigate across scales within a bioregion and inspire stewardship action and long-term commitment to social innovation for transformative change.

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