

Empowering Indigenous¹ Communities with Permaculture Design and Participatory Democracy:

A Strategy for Resilient Local Systems

Introduction and Public Health Significance	2
Objective & Specific Aims	3
Theoretical Frameworks	4
Proposed Timeline and Methodologies	5
Budget/Resources and Next Steps	8

¹ Does not have to be an indigenous community, but necessarily a geographically local one.

Introduction and Public Health Significance:

This proposal aims to provide practical solutions to the urgent challenges of our time, collectively referred to as the [metacrisis](#). Declining oil reserves, a depleting materials economy, fragile food supply chains, the warming of the planet, soil degradation, and biodiversity loss are just a sample of the issues afflicting the industrialized world today. Individuals, households, and cultures all find recourse in a variety of solutions/perspectives: taking up activism, adopting a technological optimist stance or a nihilistic one. Since the 1970s, permaculture design has been employed by an ever-growing, decentralized network of global citizens concerned about such problems. Permaculture is a [pattern-language](#) that integrates agriculture, architecture, and ecology to build harmonious, sustainable, and resilient relationships between humans and nature; here, a pattern-language is a shared vocabulary of design elements/principles that can be combined to create uniquely tailored, yet universally effective, ecological systems. Permaculture offers a toolkit of ecological principles and techniques adaptable to various contexts/scales. Further, this proposal addresses a public health imperative by adopting a strategy rooted in the [precautionary principle](#): the re-localization of essential goods and services as a safeguard against (fat-tailed) events that trigger [societal collapse](#) (chiefly wars/pandemics) – to which permaculture design is well-suited to address.

Power, for the purposes of this research endeavor, is both an expected outcome, though more importantly, a process. In the community context, power is the collective capacity to coordinate behaviors, mobilize resources, and make timely decisions to confront and solve (sufficiently) agreed-upon problems. It is often the case in the modern world that the set of decisions a given body of people can execute on is bounded by their financial resources. This proposal aims to investigate community power in two interrelated dimensions²: (i) the collective capacity to make/execute on informed decisions via democratic processes; (ii) financial capital.

The hypothesis underpinning this research posits that the synergistic implementation of (1) [permaculture design principles](#) and (2) [participatory democracy](#) tools, will not only enhance the economic autonomy of indigenous communities, but contribute to the preservation and enrichment of their culture³. Inspired by the [vTaiwan](#) model, this research will employ a participatory democracy approach; it integrates virtual/online and in-person/offline methods to engage community members, public servants, and stakeholders in planned-behavior making. It operates alongside traditional governmental institutions but goes beyond mere consultation to foster whole-system collaboration. Methods will employ a variety of tools and platforms to facilitate collaborative thinking, transparency, and public engagement; the most primary of these tools is Polis.

Lastly, the following characteristics will be considered during community selection. The community should have a historical narrative⁴ that demonstrates a pressing need for socio-economic stability. This is either manifested as a history of marginalization, resource depletion, and/or environmental injustices; during the formative research phase, informed consent will be collected both from individual community members and from the community at large. Moreover, the CBPR approach, as well the participatory tools of vTaiwan, will ensure community ownership of this community-based initiative. It is important to note that this intervention is adaptable and can apply to other locally defined populations, which include student populations, [network states](#), eco-villages, as well as rural/suburban populations. Examples of communities that could benefit from this research include the economically challenged suburbs of Argentina, the agrarian societies of Lesotho, and the neighborhoods of Elotepec, which have already experienced the positive impacts of [permaculture interventions by Las Cañadas](#).

² (i) akin to social capital, not ignoring the wealth of human resources; (ii) will likely share language/methods of entrepreneurship.

³ It amplifies their collective capacity to wield 'useful energy' in the matrices of modern socio-economic constructs.

⁴ A history with a pronounced momentum; this is not entirely as subjective as it appears, notably at a given jump in history.

Objective & Specific Aims:

To determine how permaculture design and participatory democracy can be used to increase an indigenous community's power in the modern world, with a dual focus on achieving greater economic independence and enhancing community mobilization, all while preserving and enriching their cultural heritage. In turn, the logical conclusion of this research endeavor would be the creation of a set of valuable insights and heuristics for enhancing community power across different contexts. The focus is on equipping communities with the tools and knowledge needed to assert their power in the modern world, while fostering sustainability, resilience, and cultural affirmation.

Specific Aim 1: To take an anthropological account of a community's culture/values, and to maintain it throughout/beyond the transition endeavor.

Specific Aim 1.1: To investigate the experiences of individuals undergoing permaculture projects and community action.

Specific Aim 1.2: To elucidate the narratives stakeholders find themselves in and discover where self-prescribed meaning is found within these narratives.

Specific Aim 2: To quantify the initial investment per household required for initiating permaculture design projects and calculate the expected/realized returns on investment.

Specific Aim 2.1: To establish a governance framework that gives community members full authority over pooled capital.

Specific Aim 2.2: To evaluate the long-term effectiveness and sustainability of key ecological interventions, compost toilets, and the development of a community town square.

Specific Aim 3: To explore how the vTaiwan-inspired processes can ensure interventions foster sustainable community coordination and are created/implemented in accordance with a community's culture.

Specific Aim 3.1: To facilitate the adoption of Polis; specifically, its utility/purpose, prompt design and seed statements, human facilitation, and interpretation/dissemination of results.

Specific Aim 3.2: To assess the specific circumstances under which individuals within the community recruit and rely on stakeholder/expert opinion.

Specific Aim 3.3: To discover emergent behaviors that reduce friction for communities taking collective action.

Theoretical Frameworks:

This research proposal will leverage insights from four theoretical frames/perspectives:

- (i) [complex systems theory](#),
- (ii) [the Doughnut Economic framework](#),
- (iii) [community based participatory action research \(CBPAR\)](#) and,
- (iv) [technology as responsibility-inducing](#).

The intention for incorporating complex systems theory in the architecture of the coming interventions is to make things simpler⁵. The aim is monitoring how individual components (be it resource stock/flows, endemic species, water features, consumption behaviors) within the community system engage with one another to manifest collective behaviors and emergent properties. In the realm of permaculture and community building, this theory is pivotal for dissecting how disparate elements, ranging from the local ecology to stakeholder behaviors, interact in complex ways to either reinforce or weaken community power. It provides the theoretical grounding to explore emergent behaviors that can make communities more effective in collective action.

The [Doughnut Economic Framework](#) serves as our economic model. It aims for a balance between community resilience and ecological sustainability. It lays out a "safe and just space" in which economies should strive to operate; this framework is intrinsically aligned with the project's objective of fostering sustainability while enhancing community power. This endeavor will use permaculture design to determine the ecological ceiling of the localized doughnut-model for the community. Lastly, no less important, this framework respects that the economy is embedded in dynamic social relationships, and the varying roles an individual plays in each of its four sectors: members of a family/household, ecological stewards, producers/consumers, and democratic citizens.

CBPAR puts forward a collaborative, participatory ethos that meaningfully involves all stakeholders, community members and researchers alike, in the research process. This inclusive methodology is tailored for generating actionable insights and practical solutions for community-specific challenges. CBPAR underpins the objective of empowering indigenous communities through the co-creation of knowledge and the framework is intimately related with the focus on capturing and respecting community culture, values, and lived experiences.

Lastly, this proposal sympathizes with the notion that a significant majority of humanity's modern problems arise from an irresponsible relationship with technology. Technologies serve as tools which enhance our capacity to act in the world; however, with these increased capacities comes the emergence of new responsibilities. The epitome of this phenomenon is the carbon pulse: the rapid increase in carbon extraction and consumption resulting from human activities, which is primarily driven by both the extraction, and burning of fossil fuels (coal, oil, and natural gas). Much of humanity's built infrastructure depends on a consistent supply of fossil fuels, including (but certainly not limited to) transportation technologies, electricity generation, industrialized agriculture, and all plastics. Moreover, this built infrastructure has given rise to an incredibly consumptive culture. It has been well documented in the literature that consumption has become akin to an addiction, no doubt for a world with an energy surplus. The carbon pulse underscores the need for societies to transition towards more sustainable energy sources and reduce their dependencies on fossil fuel powered technologies.

⁵ A simplicity which emerges beyond embracing the complexity, and not the simplicity antecedent to the complexity.

Proposed Timeline and Methodologies:

The project would span a total of five years, divided into three phases: an initial year dedicated to observation and community integration, followed by a three-year period for implementing co-created permaculture interventions, and concluding with a final year of monitoring and evaluation. Much of the ethnographic work will be conducted within the first year; this includes participatory observations and the beginning of longitudinal in-depth interviews and focus groups with sub-populations of the community. Other qualitative methods, such as World Cafés, oral histories, and open spaces will be employed (throughout the project), though with the use of participatory technologies from the vTaiwan process.

This proposal is further organized into three distinct intervention arms, each designed to address a specific socio-ecological level: the individual, the household, and the community. The intervention arms are designed to work in a synergistic manner, creating a multi-layered approach to empower indigenous communities through permaculture design. The first arm, centered on the individual, focuses on awareness of this endeavor's public health significance and permaculture-design education; this seeks to lay the epistemic and motivational framing for informed participation in the coming permaculture projects. The second intervention arm focuses on guiding households in transforming both their private property and communal spaces into productive and culturally expressive environments. The third arm aims to cultivate a culture of participatory democracy within the broader community, encouraging collective action and building on social capital. By operating at these three interconnected levels, this endeavor aims to create a holistic, community-driven model for sustainable development and resilience.

The work of [Transition Town Totnes](#), and the Transition Town movement more generally, will serve as implementation models. It is important to note that community members may collaboratively develop their own methods as part of this research. Thus, it is safe to say that the implementation models are expected to be different via the leveraged processes from the participatory democracy model, vTaiwan. An integral technology, embedded in in-person processes, is Polis. Adopting a CBPAR approach ensures that community members are not just subjects but active contributors in shaping the research process.

The individual, the citizen: Thinking with Permaculture Design

The primary objective of this arm is to impart the permaculture design lens and ecological literacy more generally. The pedagogical goal is to cultivate a sense of curiosity in individuals about the innovative ideas that arise from embracing a permaculture design approach. This will be done through interactive workshops supplemented by seminars/lectures; moreover, the ethnographic work would offer insights about the pedagogical tools/methods to be used. Baseline surveys to assess knowledge gain and attitude changes towards permaculture design will be administered, as well as facilitated focus group discussions. The proposed analysis involves statistical tests to measure the effectiveness of the individual-focused interventions, and a narrative/thematic analysis for the qualitative data collected. This leads to the introduction of the participatory processes and technologies being introduced into this research endeavor, starting with the vTaiwan participatory model.

vTaiwan was borne from the civic-tech community in Taiwan; they built a strong, participative civic culture, setting the stage for the government-endorsed vTaiwan initiative. It rests on the self-organizing principle where participants with energy to engage are given the agency to collaboratively shape decision-making processes; furthermore, credibility/reputation are gained from continued participation. This promotes a culture of active civic participation and shared responsibility for the well-being of the community. [SlideShare](#), [Polis](#), [Slido](#), as well as townhalls and citizen assemblies are some of the platforms employed. This proposal believes that the principles and mechanisms underlying vTaiwan can offer valuable insights into co-creating a similarly inclusive and dynamic participatory model for our project.

This model assumes a significant level of good faith civic involvement from both government and community stakeholders, along with the availability of a solid technological framework. It hinges on the readiness of both governmental and community stakeholders to participate sincerely; this, notably, includes facilitators capable of steering meaningful dialogue. Moreover, for any given issue, it is assumed that the self-selecting individuals will be adequately informed to engage. Importantly, the approach is rooted in the idea that a stakeholder-centric methodology is more effective for tackling intricate challenges than traditional hierarchical systems. It also operates on the premise that achieving consensus is both attainable and beneficial, even for initially contentious issues. [Tom Atlee](#), founder of the [Co-Intelligence Institute](#), reminds us that these premises warrant scrutiny and possible adjustment when contemplating the model's implementation in varying contexts (a point this section will end on). No less, one of the more impactful processes from the vTaiwan model is the use of Polis for agenda setting.

[Polis](#) is an open source wikisurvey, a tool to leverage the collection/analysis of qualitative data. For this research, it aims to create safe spaces for public servants, emphasizing rule by “those most affected by specific group decisions.” More generally, it is an online participatory polling platform that goes beyond simple data collection via a [machine-learning algorithm](#), which sorts participants into clusters based on their shared perspectives; the output is a nuanced, real-time view of community sentiment. Polis offers rich data visualization tools, including [bee-swarm diagrams](#) and bar charts, allowing for a holistic understanding of the landscape of opinions and consensus. The platform is transparent and accountable, fostering trust among participants; moreover, a more culturally palatable UI/UX can be collectively design/created. Polis is a powerful tool for democratic engagement, forging a *holoptical*⁶ perspective: everyone can see the whole evolving ecosystem of responses, thereby fostering collective intelligence and shared understanding.

It is important to note that the vTaiwan model isn't a one-size-fits-all framework; it is a model for community engagement and problem-solving that leaves room for localization/customization. A significant portion of the processes and guidelines to be employed will be co-created by the community members themselves. This approach not only empowers individuals and the community but also ensures that the model is tailored to meet specific local needs and nuances. It is essential for both individuals and the broader community to possess a robust understanding, an epistemic foundation, of the vTaiwan methodology, the digital platforms utilized, and the intended outcomes. This level of understanding will foster a conducive environment for effective dialogue, informed decision-making, and successful implementation.

For this co-creative process, a multifaceted team of stakeholders will be involved. This team will comprise representatives from vTaiwan who bring firsthand knowledge and experience with the model, skilled facilitators trained in guiding civic dialogue and participatory decision-making, as well as experts in participatory democracy who can provide theoretical and strategic insights. To complement these human resources, open-source information will be employed, ensuring that the process remains transparent, inclusive, and verifiable. This multi-tiered approach aims to harmonize various perspectives and skill sets, thereby elevating the quality of the co-creation process and, by extension, the solutions generated.

Households: Hubs of Production

Each household comes with its own set of needs, local ecologies, and assets (including available time and human resources); these will be personalized via a permaculture site-analysis led by households themselves and/or fellow community members (under the permaculture-design instructor). For households, the research employs a mixed-methods approach that includes a cost-benefit analysis for evaluating the economic viability of ecological production designs, as well as a focus group of the heads of households. Additional quantitative metrics include soil quality (and topsoil growth), and the return of value from

⁶ The ability for individuals to see the entire evolving landscape of community opinions/momentum.

compost toilets. Qualitative data will further be collected through diaries or journals maintained by willing families.

Community: Building the Public Square

There is both a virtual and an in-person component to the commons. The virtual commons are the digital spaces where capital is pooled, data is made accessible, and importantly where the participatory technologies are accessed. Alongside this, the in-person commons serve as a physical space for community engagement, designed to host townhalls, citizen assemblies, and other forms of collective deliberation. The aim is to build or retrofit an existing facility that fosters an environment conducive to open dialogue, collaboration, and active participation in community decision-making. In a synergistic manner, the topics and discussions initiated in the virtual commons can transition into more nuanced, face-to-face discussions in the in-person commons, and vice versa. This arm further involves facilitating townhalls and community discussion on issues of interest; while many of the discussion topics will be borne from the research endeavor, community members can no less opine on topics of interest. There will be an opportunity for participants to offer insights on focus groups topics through insights from prior Polis polls. The analysis will involve descriptive statistics for the survey data and thematic analysis for the qualitative data gathered in town-hall meetings and focus groups.

Budget/Resources and Next Steps:

This research proposal would ideally be done with support from local/traditional institutions, especially schools and regulatory officials. Financial considerations will include salaries for the principal investigator and a permaculture design instructor, both of whom will reside on-site for the project duration. Ideally, the principal investigator will allocate a period ranging from six months to one year prior to the project's commencement for the execution of essential formative research and the initiation of community integration efforts. Part of the budget will involve outreach to identify and engage communities interested in participating, which may necessitate initial travel and site assessments. Ideally, the virtual commons will leverage the open-source community, where software development will be crowd-sourced through bounties. The in-person commons will demand resources for either retrofitting existing spaces or constructing new ones for town-hall meetings and workshops/lectures. Material costs will cover tools and supplies for permaculture projects at both the household and community levels. Budget allocations will also be made for refreshments during community meetings, as well as contingency funds for unforeseen expenses.

The final budget in U.S. dollars will vary significantly depending on the country in which the community is located, as this will influence the cost of local resources. As a point of reference, a community-based permaculture project led by Las Cañadas involved the construction of 30 composting toilets that served 150 people over a nine-month period. This project included educational initiatives on water conservation, hands-on training six albañiles⁷ in constructing the composting toilets, and instruction for 30 families on proper usage and maintenance, as well as how to utilize urine and compost as organic fertilizers. The total cost for this project was approximately \$50,000⁸. Extrapolating from this, a larger-scale project aiming to serve a community of 100-200 families (or 500-1000 individuals) with three distinct permaculture interventions over a five-year span could potentially require a budget ranging from \$650,000 to \$850,000.

The next steps will focus on identifying interested communities, securing funding through grants or partnerships, and finalizing the project team to move into the planning and implementation phases. Additional costs, such as transportation to remote locations, formative research, initial and ongoing training for community leaders, and educational outreach materials, will also be accounted for to ensure a comprehensive and robust proposal.

⁷ A skilled bricklayer/craftsman.

⁸ 75% for construction materials, 18% percent for human resources, 7% administrative costs/training/field expenses/divulgateion.