

A Relational Framing for Ecologically Supportive Communities:
A Decolonial Alternative to "Sustainability" in the Built Environments

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Abstract

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A relational framing that sees reality as a web of interdependent relationships has the ability to guide ecologically supportive ways of living for all species.

To better inform decision-making for (community) designers, this work unpacks relationality into key “entry points”—including kinship, situatedness, trust, and reciprocity—that can orient an ecological community towards building and maintaining quality relationships. I investigate how current environmental assessment methods and frameworks, situated within inherently unsustainable capitalist modernity, can still be useful as part of the conversation, with other ways of listening and knowing, to guide ecologically supportive communities.

Using these many ways of listening, this work investigates how the proposed entry points of my relational framing were repeatedly experienced in ecological, intentional, and anarchist/autonomous communities and collectives. I present how these experienced patterns are informed-by (and re-inform), my entry points in a way that is interactive and editable for communities in their locale. The resulting messy co-becoming that emerges from this web of relationships and experiences uplifts current community examples and demonstrates the diversity of potential futures that can embrace and thrive at the end of capitalist modernity to continually experiment into beautiful ways for all beings to live together in ecologically supportive communities for generations to come.

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Definitions

Agents: all beings. Thus, all have rights and responsibilities and inherently deserve care and are recognized for their ability (and right) to adapt, change, and give care.

Capitalism: originally an economic system of market exchange based on economic growth and hence resource and energy use. It has grown to become a “being” that constitutes and fuels modernity. It promotes consumerism and market enclosure, ownership and the wage-labor system. It is inherently unsustainable. Especially in colloquial language in the USA it is used interchangeably with modernity.

Co-becoming: recognizing that ecological communities are continually (and rapidly) evolving and creating the emergent ecosystem. It highlights the role and ability for all beings to affect and be affected by change.

Coloniality: a “being” that perpetuates Euro-Western power structures and mindset of human domination. It is based in extraction, violence, and universalizing and normalizing itself.

Community: used to refer to both human and ecological groups of varying scales that are interdependent and interact to support and care for one another.

Ecological: all beings that interact together to form a multispecies community.

Ecological Support: I use this as a more concrete term than “sustainability” to identify living that supports all members of an ecological community. This is an ongoing process, not a definable state.

Entry Points: concepts and values that create avenues that open up and expand understandings and perspectives to facilitate seeing in relational ways.

Gesture: examples of situations and components I saw repeatedly in my travels that seemed critical to organizing socially around wellness and the values of these relational entry points.

Modernity: the “being” dominant “Western” society lives with(in) today. It is focused on progress toward an ideal end state; based in abstracted objects (nouns), reductionist science, and human/nature separation. It makes itself and its constitutive violence unquestionable/unseen.¹

More-than-human: all entities that compose our world recognizing their inherent value, rights, and agency. This includes biotic and abiotic beings such as animals, plants, microbiota, water, air, earth, etc. In this work “others”, “entities” and “beings” are used interchangeably to refer to the animate more-than-human assemblages².

Procedural: ongoing process; a dialogue; a back-and-forth that continually adjusts and iterates.

Reciprocity: the perspective and acknowledgment that all species receive from the ecology community and give back to it in return. This give-and-take may be inherent but maintaining quality relations through this exchange is a life-giving endeavor.

Relationality: a way of knowing, a world view, that organizes the world and reality as a product of interdependent connections and exchanges among beings.

Relational framing: my proposition of a collection of entry points (concepts/values) that can facilitate people seeing in relational ways to experience support relations among all beings in ecological communities.

*Note: “sustainability” and “nature” are words I attempt to avoid in this work. At times this makes the language more tedious but I feel this can be a good outcome if it increases thought around these terms. We often use them flippantly without considering the common objectified views their use often reaffirms. I hope the other terms I use can help question the ramifications of this objectified use to rebuild respect, love and kin for others and the ongoing process of living into beautiful ways of being together.

¹ Machado de Oliveira, *Hospicing Modernity*. (23)

² See Karen Barad’s work on assemblages. For a brief introduction see the interview: Juelskjær and Schwennesen, “Intra-Active Entanglements – An Interview with Karen Barad.”

Introduction

Architecture is not *about* buildings.

Architecture is about supporting ways of living that uplift well-being among humans and more-than-human relationships.

The current object-oriented, building focus of architecture is grounded in capitalist modernity/coloniality. Capitalism is inherently focused on creating profit to power the economic growth it requires.³ As part of a growth-based, extractionary, economic system, this form of architecture is inherently unsustainable. To reduce the damage of capitalism's impending collapse and support the lives of all, architects and planners must design for and facilitate the transition to alternate ways of living. This paper seeks to explore these steps towards transition in a non-exhaustive, non-deterministic, way, pursuing not an end state but a process, a dialogue, within ecological communities. I investigate how shifts in mentalities, values, and ways of relating and knowing can facilitate transitioning towards communities organized around creating and maintaining healthy ecological relationships, not profit.

This is a fundamentally different starting point for architecture and it calls into question many of the assumptions currently accepted in dominant modernity-focused "Western" cultures. This work proposes a relational framing that offers an alternate way of seeing the world that can orient and guide ecologically supportive communities. It unpacks this framing through key mental paradigm shifts ("entry points") including expanded multispecies **kinship**, being **situated** in place, **trust** to accept each body's contributions and continually receiving and giving in a cycle of **reciprocity**. Practical applications are then explored in the form of patterns, (repeated situations that I call "gestures") that I experienced while traveling and learning about anti-capitalist and/or ecologically-oriented, organizations and communities.

³ See section below, [An Unsustainable Paradigm](#) for more. Hickel and Kallis, "Is Green Growth Possible?"

Orientation

This section provides a brief orientation and overview of this work and its structure.

Feedback is essential to understand a relationship and the impact of one being or group on another and is the topic of chapter 1. The goal of ecologically supportive living is not new and there are many methods for listening to hear this feedback. In Chapter 1, this work looks at current methods used for determining environmental impact in the built environment and two frameworks that use those to provide design guidance for architects. I discuss indicators in ecology and their use in life cycle assessment (LCA) and planetary boundaries. Then, I analyze the application of these methods in two frameworks: The Doughnut for Sustainable Development and the Living Futures Challenge. Comparing and combining many of the positive elements of these frameworks and methods, I identify some limitations and discuss how a relational framing provides a different mental paradigm that can add insight and center the wellness of all beings.

Chapter 2 elaborates on the proposed relational framing to support human communities as they take steps to transition toward a post-growth future. Using a relational framing seeks to highlight ways that human communities can go beyond reducing harm and negative impact, to open the possibility for positive human and more-than-human relations. I offer 8 key entry points that provide concepts and values that facilitate seeing in relational, mutually-supportive ways. These are arranged around a compass-web in which the center is outward unconditional love, the four primary directions are Kinship, Situated, Trust and Reciprocity, and the interwoven resultant directions are Co-becoming, Feedback, Participation, and Abundance. Each entry point is elaborated with sub-concepts that inform it and, where applicable, brief examples or literary excerpts.

The development of practical outcomes from applying these entry points is explored in Chapter 3. Taking inspiration from Christopher Alexander et al.'s (1977) *A Pattern Language*,⁴ I present “gestures” that elaborate on examples of components and situations I experienced repeatedly that seemed critical to organizing socially around wellness and the values of my proposed relational entry points. These gestures are just a sampling of such patterns, and I present them with the hope that they demonstrate a process and form that can be expanded on and implemented by others. These gestures are messy and multi-scalar; they overlap and intertwine but, for simplicity, I present them in three categories: *networks*—elements that link spaces together; the *collective* hub—the area of a cooperative community that makes decisions and works together; and the *home*—the more intimate and personal spaces and the sub-assemblies and flows that compose them and make them function.

Chapter 4 concludes by answering or noting questions raised in presenting this work to others and reflecting on the journey on which this work has taken me, and where it may take me in the future.

My Biography

Particularly when writing about relationality and emphasizing how reality is defined by the interdependent connections between beings, reflexively sharing some of my biography is critical. Born and raised in Bozeman, Montana, USA, I am a white, cisgendered male and a descendent of settlers. I spent countless hours exploring the mountains and snows of my Montana home on foot and skis. These experiences led to a cross-country ski racing career that culminated in seven years of racing at the professional level after college. I also spent my childhood summers in the Marshall Islands where my father, an anthropologist, studies social-cultural change in response to WWII, nuclear testing, and climate change. The average

⁴ Alexander, *A Pattern Language*.

elevation of these atolls is 2 meters. Thus, my time, intimately engaged with increasingly ephemeral snows and living with communities on the frontlines of cultural destruction from capitalist imperialism, has made combating climate change in equitable ways a life focus for me. It has informed my undergraduate studies and work experiences in mechanical engineering and renewable energy technologies, and led to my interest in architecture to combine social and technical approaches on the scale of relationships to guide communities in living in ecologically supportive ways.

Combined with this history my experiences over the past two years have spanned a broad spectrum to physically experience and explore other ways of habitation and building. These experiences have ranged from corporate approaches in NBBJ's global sustainability office (in Seattle), to participating on the research team for Home.Earth in Copenhagen (lauded internationally as one of the most "sustainable" developer/architecture firms with the mission of creating planet positive homes through circular building systems within planetary limits), and from grass-roots community approaches through time spent in autonomous, anarchist and/or ecological communities and collectives in France, and through living in multiple housing cooperatives in the US.

A more recent shaping force in the journey of this work is the environment it was completed in. During the final month of this work, the University of Washington student researchers and teaching assistants culminated months of unsuccessful negotiations with the administration with a strike for better wages, continuation of affordable healthcare, and rights for families and international students. There was also a multi-week engagement by the United Front for Palestinian Liberation encampment in the campus' central quad. These movements, protests, and speeches informed my time and thus this work. It reinforces my feelings that we are living in a time of change when the forces of late capitalism, and its imperialism, are increasingly challenged by grassroots movements for justice—for people and the earth—that can support the well-being of all, now and into the future.

This background shares a sampling of the beings I relate with that form my biography and how I see the world. This is different from your biography. Your reading of this work will thus impart unique meanings to you, but, if you choose to read it, I hope parts of it speak to you and contribute to your journey.

An Unsustainable Paradigm: Capitalist Modernity/Coloniality

This work is founded on the reality that there are no “sustainable” buildings or societies within Capitalist Modernity/Coloniality. Identifying these “beings” as the root causes of the unsustainability of normative “Western” ways of living, can be a challenging place from which to begin this work. As Machado de Oliveira’s (2021) powerful work, *Hospicing Modernity*, explains, there are many definitions of modernity, contested historical starting points (ranging from Plato, to the transatlantic slave trade to the Renaissance or European Enlightenment), and “intentions and legitimacy” are widely contested (16).⁵ I follow her lead as she continues—considering modernity is an entity that interacts in other beings’ lives. It cannot be comprehensively defined (see point (b) below) and, for those of us raised in it, cannot be fully escaped or transcended.

Modernity is also grounded in Coloniality. Machado de Oliveira’s uses the word *Modernity/Coloniality*⁶ as a term that:

“...functions as a reminder that the benefits we associate with modernity are created and maintained by historical, systemic, and ongoing processes that are inherently violent and unsustainable. In other words this word underscores the fact that modernity cannot exist without expropriation, extraction, exploitation, militarization, dispossession, destitution, genocides and ecocides” (18).⁷

⁵ This is mirrored in the critiques of the anthropocene by Jason W. Moore naming it the “Capitalocene,” and Haraway and others’ development of the term “Plantationocene”. Haraway, “Anthropocene, Capitalocene, Plantationocene, Chthulucene.” (159)

⁶ As she notes Aníbal Quijano (2007) “Coloniality and Modernity/Rationality” is a good entry to Coloniality and I would add Liboiron’s (2021) *Pollution is Colonialism*.

⁷ Machado de Oliveira, *Hospicing Modernity*. (18)

Modernity is based on human/nature separation and the ensuing violence.⁸ It makes itself seem unquestionable and unseen/innocent through four “constitutive denials”: i) denying its “ongoing violence and complicity in harm,” ii) denying our planet’s limits and its own inherent unsustainability, iii) revoking the entanglement of all beings, and iv) denying the complexity and scale of challenges we face and our need to face them collectively at their roots (23).⁹

I find this analysis comprehensive and powerful. For simplicity, in this work I will focus most of my critique on the tendencies of modernity to a) promote a development mindset focused on progress towards an ideal end state, b) be based in abstracting beings out of their context to become definable objects, and, extending that idea, c) underlie reductionist science that assumes systems can be understood by examining the “individual entities” independently and, thus, that we face “complicated solvable problems” instead of “complex predicaments” (30-31).¹⁰

While it is possible to view capitalism as a sub-part of modernity (as Moore says “modernity is a capitalist world-ecology”), I feel it is valuable to discuss it in greater depth on its own.¹¹ Capitalism has become far more than an economic system of market exchange: it is its own being with which most humans interact daily. As a debt-based system it is reliant on unending growth, and with no evidence of the possibility to decouple it from resource and energy use, it is hence fundamentally unsustainable.¹² Based in market enclosure it did not develop naturally with the move from agriculture to industrialization; quite the contrary it was a violent, extended process occurring across the 14th-19th centuries.¹³ This process used the

⁸ Moore, *Capitalism in the Web of Life*. (4)

⁹ Machado de Oliveira, *Hospicing Modernity*. (23)

¹⁰ Machado de Oliveira. (30-31) Complicated problems have a limited set of definable causes and/or effects, while complex predicaments are ongoing webs of interactions where such definable, limited sets of causes and effects cannot be defined and are always in flux.

¹¹ Moore, *Capitalism in the Web of Life*. (4)

¹² Graeber, *Debt: The First 5,000 Years*; Hickel, *Less Is More* (21); Hickel and Kallis, “Is Green Growth Possible?”

¹³ Hickel, *Less Is More*. (48)

enclosure of common lands into the market through private ownership (violently enforced by the wealthy elite).¹⁴ Enclosure was used systematically to dispossess commoners from the land and the ability to provide for their basic needs thus forcing them to rely on money and the wage-labor system and serving to meet the requisite labor needs to power capitalism in the city-factory (owned and monopolized by the wealthy).¹⁵

Thus, the industrial, growth-based city is built as a capitalist engine to accumulate profit at the expense of “nature” somewhere else, purposely made “cheap.”¹⁶ It has literally fueled modernity and the current metabolic rift.¹⁷ Capitalist modernity is fundamentally unsustainable and is coming to an end. The narrative it creates, that it (and its growth-based cities or commodity markets) are “natural” and other alternatives are unimaginable is part of its systemically necessary narrative that justifies continued extraction and human domination over nature. As Moore notes, “the view of Nature as external [to humans] is a fundamental condition of capital accumulation” (2).¹⁸ It is imperative to fight against this capitalist tendency for commodification and accumulation. The time when it was believable that cities or markets inevitably grow and will continue to do so is over.

I feel it is essential to present this narrative and the complex dynamics that have created and continue to support capitalist modernity/coloniality. Capitalism and modernity/coloniality are multifaceted beings that we interact with daily. I do not claim to understand all of their complex histories but feel engaging with them is paramount to living into other diverse narratives. I feel that the definitions I present here (simplified even more in the [Definitions](#) section) are sufficient to enable such an investigation. This does not use a modernist, universalizing view that “we” just need to reach a “post”-something future where we transcend beyond these negative

¹⁴ For more on this history and process see Silvia Federici’s (2004) *Caliban and the Witch*.

¹⁵ Marx calls this the “subsumption” of capital.

¹⁶ Patel and Moore, *History of the World*.

¹⁷ For more on “metabolic rift” see Saito, Kohei. (2021) *Marx in the Anthropocene* and {Citation}

¹⁸ Moore, *Capitalism in the Web of Life*. (2)

concepts. The beings of capitalist modernity interact with our bodies. They inform how we see and interpret the world. Learning through our bodies' experiences and emotions with, through and alongside them can create diverse, adaptable, beautiful ways of living in the ecological communities in the "patches" and niches of tomorrow.¹⁹

Relationality

"Horses and humans remain separate organisms, as do plants and mycorrhizal fungi, but both are echoes of an ancient tendency for organisms to associate. The anthropologists Natasha Myers and Carla Hustak argue that the word *evolution*, which literally means "rolling outward," doesn't capture the readiness of organisms to involve themselves in one another's lives. Myers and Hustak suggest that the word *involution* - from the word *involve* - better describes this tendency: a "rolling, curling, turning inward." In their view, the concept of involution better captures the entangled pushing and pulling of "organisms constantly inventing new ways of living with and alongside one another." It was their tendency to involve themselves in the lives of others that enabled plants to borrow a root system for fifty million years while they evolved their own. Today, even with their own root systems, almost all plants still depend on mycorrhizal fungi to manage their underground lives. Their involutory tendencies enabled fungi to borrow a photosynthesizing alga to handle their atmospheric affairs. They still do. Mycorrhizal fungi are not built into plant seeds. Plants and fungi must constantly form and re-inform their relationships. Involution is ongoing and extravagant: by associating with one another, all participants wander outside of and beyond their prior limits." – Merlin Sheldrake (142)²⁰

Relationality is my response for an alternate mental paradigm that can inform and guide other ways of being to enable truly ecologically supportive communities. Relationality sees the world and reality itself as a web of interdependent interactions between beings including the air, water, fungi, soil, plants, animals, bacteria, sun and others.

Relationality inherently uses a frame of planetary health and justice for all. It dissolves the distinction between humans and others and between the "self" and the beings that compose and interact to create that "individual" constellation. While Sennet, for instance, claims that an answer to anti-capitalist futures is socialism—a political not design response—this is overly

¹⁹ Tsing, Mathews, and Bubandt, "Patchy Anthropocene."

²⁰ Sheldrake, *Entangled Life: How Fungi Make Our Worlds, Change Our Minds & Shape Our Futures*. (142)

simplistic.²¹ “Architecture is political” (38).²² Design and planning that promotes capitalist modernity is participating in and continuing violence on the planetary (and thus personal) level. Agyeman and other’s concept of Just Sustainabilities explicitly centers social justice. They highlight that the standard conception of environmental “sustainability” does not inherently create social and environmental justice, and often serves to perpetuate the current system and power structures.²³ I agree with Agyeman as he states that true “sustainability” cannot be achieved without planetary justice.²⁴

I propose that it is essential to deploy a holistic, trans-disciplinary approach that creates many stories of possible forms of social organization that center justice and wellbeing for all beings: humans and more-than-human. This “social” includes all interacting members within the ecological community and does not just speak to human-human exchanges.

Escobar (2022) sets out guidance for ways to design “pluriversally” for spaces that support all beings. Escobar uses the word pluriversal to highlight the multiple universes inhabited by the varied species, individuals, and mindsets of the world. He calls for elements such as re-localization; feminist politics of care; “non-representational, non-object centered,” relational design; “creating spaces of healing, re-communalization,” and more (7-8).²⁵ My thesis further investigates what these practices look like. What are the ramifications on the field of design of pursuing planetary wellness and justice through the paradigm shift of relationality? My explorations have uncovered that relationality stresses that design is not about creating objects but on enabling relationships. It focuses on making spaces that build connection. Relational

²¹ *Building and Dwelling: Complexity vs Clarity* section: 22:10. Note: Sennett’s following emphasis on the need for humility among designers as to what they can and should do is important (social engineering or authoritarian design is harmful). But this does not preclude design from being an critical space to navigate (and not perpetuate) capitalism.

²² Awan, Schneider, and Till, *Spatial Agency: Other Ways Of Doing Architecture*. (38)

²³ As perhaps should be evident from the term’s history as a shortened form of “sustainable development” an inherently colonial term of maintaining current ways of Western living and expanding that to others (so long as it does not threaten the extractive supply chains that way of living relies on).

²⁴ Engle, Agyeman, and Chung-Tiam-Fook, *Sacred Civics*.

²⁵ Escobar, “Where Is Here?” Escobar (2022) “On the metrofitting of cities”

design is inherently participatory: it sees all community members as designers.²⁶ This expands architecture to become “spatial agency”: a community member with spatial skills and understandings that can facilitate and contribute to the community’s visions.²⁷

It’s not the what, it is the whos.

Such spatial agents could bring to life a makerspace that host pop-up concerts and community dinners at night; an artist residency that grows its own food and provides free housing to voyagers; or a community that faces the housing affordability crisis and the loneliness epidemic not with commodities but with Community Land Trusts and intergenerational cooperative living.

This work is a call, an ode for life, an inquiry into beautiful ways of living in a world at the end of capitalist modernity. I hope it nourishes curiosity to ask “why?”, and “who is involved?”; I hope it starts dialogues: co-becoming through shared feelings, and perspectives and conversations together through many tongues, beaks, stomata, vibrations and more. And critically, may it assist in seeing the alternatives and uplifting and braiding together the abundance of stories existing around us so they become visible examples of not only how this is possible but how it is already happening.²⁸

²⁶ Van der Ryn and Cowen, *Ecological Design: Tenth Anniversary Edition*. The Fourth Principle: “Everyone is a designer” (168).

²⁷ Awan, Schneider, and Till, *Spatial Agency: Other Ways Of Doing Architecture*. (29)

²⁸ Jimmy and Andreotti, *Towards Braiding*.

Chapter 1. Feedback

Methods and frameworks for assessing the environmental impact of buildings:

There are many methods that help humans listen to the beings in the ecology that they live with. These methods allow people to attempt to better understand the impacts of human activities on these ecologies. To allow comparison across space and time, these methods often use qualitative and quantitative measurement, tracking and forecasting. These methods inform how people view and understand the world around them. However, dominant “Western” methods tend to view the ecological web of interactions as objects that can be separated and studied in isolation and then recombined to understand the performance of the system. While useful in certain circumstances, this objectified, reductionist approach is, of course, incomplete. This section looks at the components of this view that can inform a more holistic lens and concludes by presenting the ability of relationality to embrace additional ways of listening and knowing.

This chapter first identifies three different approaches to ecological measurement: physical/chemical, biological, and functional/behavioral. I then review three prominent environmental assessment methods that build off of these approaches, namely, Index for Biological Integrity, Life-Cycle Assessment (LCA) and Planetary Boundaries. I then introduce The Doughnut for Urban Development framework, and the Living Future Challenge certification as two of the foremost design guides that implement these indicators to inform making buildings and spaces that support the ecologies they are in.

This chapter concludes by introducing an integrated, relational framing for viewing and embracing ecological quality and wellbeing. Such an approach begins the work of finding ways to use both the reductionist, human-nature dualist view central to much of Western science, alongside a relational view shared by many indigenous and traditional “sciences” and ways of

knowing.²⁹ I intentionally do not “combine” or “synthesize” these different views into one, because I wish to acknowledge that they belong to distinct worldviews. They can inform one another, but in many ways (but not all) will exist in parallel rather than coalescing into a single universal view.³⁰ Recognizing these differently-situated ways of knowing, this section will attempt to highlight the nuance between context specificity and co-becoming or co-emergence that a relational view provides³¹; this extends the inherent value of a specific ecosystem, and the beings that comprise it, to also recognize and respect the inherent rights of its members. In this way, each being is seen as an agent that is equally deserving of care and able to give care, together co-creating the web of relationships that support the other beings of the community and the self.

Review of Indicators in Ecology

This section draws heavily from ecological and biological sciences in its attempt to find ways to evaluate the health of ecosystems and the ecological relations that comprise them for a community’s specific location of interest. In approach, it is similar to LCA methods that define mid-point indicators as environmental impacts caused by extraction and emissions from a given part of a system. Here, however, I hope to begin to pry the lid off of the black box approach of some methods in ecology to recognize the many challenges to (and fundamentally the limitations of) a reductionist view of comprehensively understanding the complexity of the relationships of the beings that compose the ecology in an area; relationships which, of course,

²⁹ Cajete, *Native Science: Natural Laws of Interdependence*. “Native science is a metaphor for a wide range of tribal processes of perceiving, thinking, acting and ‘coming to know’...Native science is based on the perception gained from using the entire body of our senses in direct participation with the natural world” (2).

³⁰ Jimmy and Andreotti, *Towards Braiding*. (21)

³¹ Eyster, Satterfield, and Chan, “Empirical Examples Demonstrate How Relational Thinking Might Enrich Science and Practice.” (461)

any investigator is reflexively participating in—communicating with, impacting and being impacted by.

A fundamental challenge to evaluating ecology is the lack of a definite or static baseline to compare to. Ecological health does not exist in a vacuum. It is always contingent on where and on whose health is being evaluated. Thus, not only is the goal uncertain, but the methods for measuring it inherently build into the evaluation bias for certain beings over others.

There are different approaches to addressing the challenge of evaluating the complexity of ecology. Evaluation often focuses on tracking changes over time of an ecosystem's "integrity", a term from Aldo Leopold in 1949.³² Ecological integrity can be defined as the "complex systems that evolved at a place, with proven capacity to persist in the associated physical, chemical, and biological environment" (392).³³ While this definition recognizes the inherent value of more-than-human beings and the importance of their continuation over the long term, it is often still framed from an anthropocentric view. It prioritizes long-term ecosystem maintenance with the goal of providing for humans without negatively degrading non-human oriented areas.³⁴ This goal could be expanded to support other beings even better if, as noted above, all beings had not just value but inherent rights and agency to create change. This static, pre-defined state and ability is clearly seen in the idea of ecosystem services and how this is an extension of Malthus' (1798) idea of the "carrying capacity" of a region (defined as when a (human) population exceeds the provisional ability of a region's ecosystem). Works like the UN's Millennium Ecosystem Assessment (MEA), categorized multiple types of so-called "ecosystem services" including supporting, regulating, provisioning, and various forms of cultural 'informing' that ecosystems provide to humans.³⁵ This assessment was created in part to respond to an attempt in ecological economics to monetarily quantify the importance of the

³² Leopold, *A Sand County Almanac: And Sketches Here and There*.

³³ Angermeier and Karr, "Ecological Health Indicators." (392)

³⁴ Angermeier and Karr. (392)

³⁵ Millennium Ecosystem Assessment (Program), *Ecosystems and Human Well-Being*. (v)

social and environmental costs that traditionally are not considered (externalized) in economic markets though they are societal (and planetary) costs. A perspective that includes eco-evolutionary dynamics³⁶ recognizes the inherent agency of all beings into ecological models, and, thus, significantly challenges processes like the ability (and utility) to define a (static) baseline condition to measure against or lead restoration efforts towards. Even more significantly, it upholds the view of human separation and domination over “nature” that makes it impossible for humans lives to be fully integrated, coexistent and supportive of (“natural”) healthy ecosystems.

Acknowledging these fundamental challenges, most measurements of ecological health measure the current health of one element or being and then use that measurement as an indicator to approximate the health of a larger category/grouping.³⁷ This measurement often is an ecosystem feature that can be categorized as either a physical/chemical (e.g., pollution, nutrients), biological (e.g., species abundance, diversity, size) or structural (diversity of habitat, connectedness) component of the ecosystem. Often, multiple indicators are used or they are combined into an index that allows for a more multifaceted and generalizable value. Karr’s 1991 Index for Biological Integrity (IBI) is one such example. IBI was developed, initially, to improve the measurement of stream health, since actions responding to the previously tracked physio-chemical pollutant-based measurements were ineffective at improving stream health. IBI developed a framework that took into account many features of the biological conditions of streams grouped into five categories: water quality, food/energy source, habitat structure, flow characteristics, and biotic interactions.³⁸ Karr measured these factors on qualitative ranges that correlated to minimal, moderate, or significant variation from the expected baseline. Additionally,

³⁶ Defined as the ability for species to rapidly co-evolve (on human timescales) in coupled human/more-than-human communities. Alberti, “Eco-Evolutionary Dynamics in an Urbanizing Planet.” (114)

³⁷ These indicators can range from pollution metrics such as PFAS levels, to health of keystone species Paine, “Food Web Complexity and Species Diversity.”

³⁸ Karr, “Biological Integrity.” (73)

with IBI Karr established the method of measuring the baseline by measuring the indicators in a similar regional context, but with minimal human disturbance (“natural”), instead of using historical data or other means. This is a useful approach for establishing a comparative baseline between healthier or more degraded sites (“urban” or more “rural”)³⁹ that can better take into account the unique eco-evolutionary pressures and changes of urban species.

The necessary simplifications of ecological complexity to create measurable indicators is also a practical concern as, without an ability to collect and monitor data, they are clearly not usable. This dimension is one that is evolving rapidly with the increase in measurement efforts including citizen science efforts, and the use of remote sensing with multiple types of sensors (e.g., satellite imagery, LIDAR, infra-red images). As these data collections are compiled, the use of big-data tools, including artificial intelligence and machine learning, are enabling more granular and real-time analysis of the indicators and indices. An example of this is the use of infra-red imagery to see temperature variation across urban regions, measuring heat island effects.⁴⁰ Further innovation and creativity in measurement sensors can facilitate this data collection and its implementation and use.

While these and other methods rely on inherent simplifications, and thus, have their limitations, they are useful, and especially so when they can be developed in a locale by concerned and directly impacted citizens and scientists. For example, the Green Seattle Partnership combines Department of Ecology professionals with local citizen scientists to carry out a massive city-wide forest restoration program in public parks. While they did not restore the entire 2500 acres of parkland called for by the 20 year plan, the involvement of the community has made tree protection a central issue in the city that is informing the new (2024)

³⁹ I use these terms for readability despite the discomfort I feel in doing so given the inherent assumptions the false dichotomy these categorizations create.

⁴⁰ Lo, Quattrochi, and Luvall, “Application of High-Resolution Thermal Infrared Remote Sensing and GIS to Assess the Urban Heat Island Effect.”

comprehensive plan.⁴¹ Karr (1991), stresses the importance of biologist specialists to develop specific modifications to IBI, but the citizens must determine how insights from these indicators are enacted in life and policy.⁴² Similar social and equity indices, however, are being developed and combined with these ecological indicators into composite displays that clarify and communicate the current state of health. Harwell et al., (1999), created the Ecosystem Integrity Report Card that combines top-down societal ecological goals with bottom-up ecosystem indicator and index measurements (including versions of the IBI, for benthic or other segments of the ecology).⁴³ Furthermore, this framework can allow the level of detail to be simplified or complexified based on the needs, available data, etc., while retaining the connection and translation between top-down and bottom-up elements. Such composite scorecards must work to carefully balance simplicity with transparency to provide clear communication while not combining indicators in a way that obscures the underlying relationships between them.⁴⁴

Life Cycle Assessment

A dominant and comprehensive measurement method to determine the environmental impact of human projects is Life Cycle Assessment. LCA measures the resource inputs and emission outputs over the whole life cycle of the project, including extraction, transport, manufacturing, construction, use, deconstruction and disposal (Fig. 1). The basis of LCA in Life Cycle Thinking (LCT) considers the entire life cycle, and is an essential perspective. This view of the impacts as extending beyond the use phase of materials and components is especially important due to the current disconnection between the different phases and components due to

⁴¹ Bohen et al., "20 Year Strategic Plan."

⁴² Karr, "Seven Foundations of Biological Monitoring and Assessment." (13)

⁴³ Harwell et al., "A Framework for an Ecosystem Integrity Report Card."

⁴⁴ Another example are the Puget Sound Vital Signs used to create the yearly State of the Sound report on ecological health in the Puget Sound area around Seattle, WA. It is a similar report-card type collection of indicators with the 5 major categories of Healthy Human Population, Vibrant Quality of Life, Thriving Species and Food Web, Functioning Habitat and Healthy Water Quality. Puget Sound Partnership, "Vital Signs."

the globalized supply chains and complex manufacturing and infrastructure systems that underlie so many of these processes.

Figure 1: Life-Cycle Stages tracking the use from and emissions to the planet across the supply chain. ⁴⁵



Clearly the accounting of impacts through this process includes a lot of data that must be collected (or, unfortunately, quite often estimated), maintained, and (theoretically) verified. And, for this data to be useful in comparative decision making between different options (e.g., different producers, manufacturing methods, materials), products must be grouped into categories, defined by Product Category Rules (PCRs), that represent the same function or process and are thus comparable. In this data categorization, collection and validation is communicated through Environmental Product Declarations (EPDs) for sub-components and products. The method used for LCA consists of four primary steps that constitute an iterative process:

⁴⁵ Reproduced from Simonen, *Life Cycle Assessment*. (3)

1. Goal and Scope: defines the goal of the study, the functional unit that will be measured, and the scope of what stages will be analyzed and what elements will be included in the analysis shown in a system boundary diagram.

2. Life-Cycle Inventory Analysis: acquires and compiles the resource use and emission data for all sub-components.

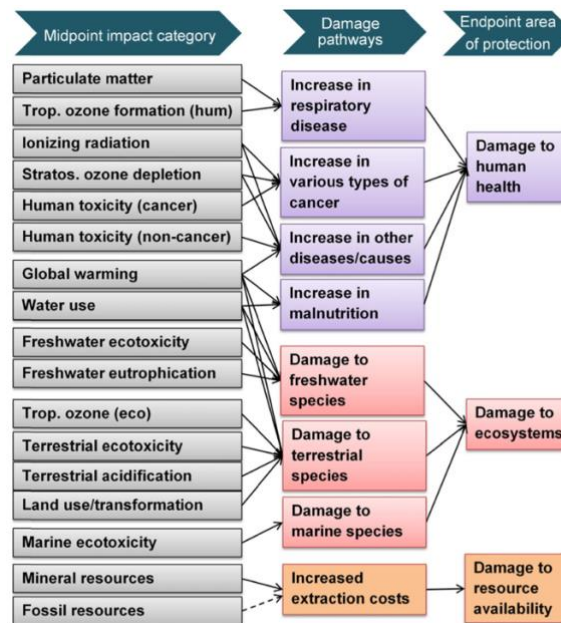
3. Impact Assessment: collects data on the emission indicators of interest for the study. It can involve the compilation of mid-point indicators (e.g., global warming potential, freshwater ecotoxicity, smog formation potential), or end-point indicators (impact on human health, environmental health, resource scarcity).⁴⁶

4. Interpretation: breaks down the results to understand what they mean, what limitations existed in the study, and how that iteratively informs a subsequent study and its definition of goal and scope (as needed).

Following this process, analysts can sum the emissions from each sub-component to determine the total impact or perform other measurements like a hot-spot analysis that determines what stage of the life-cycle contributes the most to a certain impact category (e.g., global warming potential, smog formation potential, or end-point indicator like human health). Common impact categories at both mid-point and end-point are shown in figure 2.

⁴⁶ Huijbregts et al., "ReCiPe2016." (140)

Figure 2: An example of the impact categories at mid-point and end-point that are tracked by the ReCiPe 2016 LCA methodology. A reproduction from Huijbregts et al. (2017).⁴⁷



As noted, LCT can enhance relationships by including and making more visible the impacts from all life cycle stages. However, this also presents a bit of a paradox. Knowledge of resource use and emissions across the life-cycle stages is essential but, in our complex industrialized system, the categorization into comparable units makes the system less responsive to local variation and changes. For instance, the measures of water consumption do not take into account what the water availability in that region is, or, more specifically, the availability in that region at the time the product was made, nor do they adequately evaluate the impact on water quality or hydrological disturbances. The significant amount of water required to mine and process lithium is especially significant when it is coming from the Atacama Desert in Chile, for example, but this geographic relevance and the countless species and livelihoods (including human ones) destroyed in the process is not acknowledged. An LCA for a car or even a battery would sum the lithium water impacts (likely measured in liters) with the water used for other parts of the process even if those other steps occurred in water abundant places.

⁴⁷ Huijbregts et al. (140)

However, currently, there is not a way to account for or display these differences. Thus, the use of the LCA process that is intended to connect individuals to the full environmental impacts of a product actually conceals valuable information leading to a new, more insidious form of disconnection, obscurity and sometimes complacency, between people and other beings across space and time.

Additionally, the LCA method fundamentally uses a reductionist, input-output framing that assumes the whole is exactly equal to the sum of the parts. This linear approach is handy for facilitating comparison, and (given current knowledge) appears to be fairly accurate for more simplistic, interchangeable factors like carbon dioxide emissions that seem to have a similar impact regardless of location. As noted in the discussion of indicators, this over-simplification is the basis of Karr's critique of the ineffectiveness of using chemical pollution measures alone to drive stream restoration efforts.⁴⁸ A reduction in pollution, toxicity, carbon emissions or other indicators is less bad, but it is not equal to the full impact on a given species/community's health or adaptive capacity. Accordingly, the simple, linear summation approach of LCA is insufficient, especially for end-point measures of ecosystem health. The discrepancy in importance given to human lives compared to other beings is especially notable in the units used for the end-point indicators for human health (in years of life lost (DALY)) versus ecosystem health (species extinction per year (PDF)).⁴⁹ Furthermore, summing total species lost clearly does not account for the differential role specific species play in an ecosystem and, hence, their functional importance today or their importance over time for their ecology and its resilience.

⁴⁸ Karr, "Seven Foundations of Biological Monitoring and Assessment." (10-12)

⁴⁹ Huijbregts et al., "ReCiPe2016." (139)

Situated Approaches and Measurements

Bioregional Context Approach

These critiques bring to light the need for situating LCA resource extraction and emission outputs to the ecological impacts in the specific contexts where supply chain actions occur. The LCA method used by ReCiPe 2016 for instance, improved the previous method by introducing characterization factors applicable globally (not just Europe), and many categories are modifiable by region or nation.⁵⁰ This step forward is still not specific enough. As noted in the hypothetical Atacama Desert Lithium mining example, water availability in the specific region for each stage of the product's life cycle changes the effect on other beings in that region.

Ecological Footprint (EF) is a different method of calculating the ecological impact of more human-concentrated ("urban") areas. This method attempts to address the regional context by calculating impacts compared to the regional productive capacity. EF converts from global averages to regional values called global hectare equivalent using economic value of (agricultural) production in the region of interest.⁵¹ However, this method is not combined with a life-cycle approach to include the regionally-scaled impacts for all stages of the supply chain, though it does account for some supply chain effects and the conversion from actual hectares to global hectares creates logical inconsistencies.⁵² Additionally, EF is based on the economic valuation of current agricultural production in the region which, due to industrial farming practices that attempt to normalize and mechanically control all elements of food production, does not accurately correspond to the ecological characteristics of the area. Using a normalization technique that scales global or national LCA characterization factors to

⁵⁰ Huijbregts et al. (139)

⁵¹ Wackernagel and Rees, *Our Ecological Footprint: Reducing Human Impact on the Earth*.

⁵² Wiedmann and Lenzen, "On the Conversion between Local and Global Hectares in Ecological Footprint Analysis." (675-76)

bioregionally-derived values, could mimic the benefits of the EF method. However, it is challenging to avoid the mentality of human superiority that is embedded in this method's attempts to compare to a local region's "productive capacity." (Fundamentally, EF attempts to measure how much each hectare of "the" environment can produce for humans—including the use of unsustainable and ecologically destructive additions of fossil-fuel based fertilizers in those productive capacity metrics.) Furthermore, the term "ecological footprint" has become fairly mainstream to denote the full area that is impacted to support a city. However, this term has a more benign connotation than subsequent terms such as "ghost acreage" that more clearly connect to the planetary violence these cities are reliant on.⁵³ As for LCA these measurements do not account for an evolving ecological community (comparing imposed fixed states) nor does it respect the rights and agency of all beings.

Another significant challenge for LCA methods is making dynamic characterization factors that account for temporal variation, whether daily, seasonal, or yearly. Considering the time of production should change the impact of some extraction and production actions. Currently, this may not seem overly important as the capitalist mode of production assumes optimal (economic) efficiency is achieved through producing at large scales continuously. Assuming this constant production rate over the year (and years), thus, the current impact measurements (across all life-cycles) could use the worst-case impacts that occur during the year (e.g., the freshwater toxicity emissions that occur during salmon spawning season when biological impacts are highest or when stream flow is lowest and thus pollution is least diluted). However, a society organized around ecological support and not the growth of economic profit, would likely modify production throughout the year based on, perhaps, species migration patterns or availability of energy, water, and materials (all fellow beings/community members)

⁵³ Gandy, *Natura Urbana: Ecological Constellations in Urban Space*. (16) and his comments on the work of Andrew Ross' (2015) "Bird on Fire: lessons from the world's least sustainable city" about Phoenix, AZ.

along the supply chain. Methods of evaluating ecological impacts should be able to account for this reflexive variation and connection to the ecological conditions at that time, in that place.

This leads to the idea of situated LCA characterization factors that could be measured in ways that reflect the current (and evolving) ecological state—ideally in near real-time. This could take the form of high-tech solutions that use many sensors and sensing techniques to collect large datasets about the current (or recent) state of various ecosystem features. Using AI and other data science techniques can take this data and attempt to learn the relationships between different measurements and the impact on ecological functioning and health. However, the use of such systems can promote disconnection via technological complexity/obscurity and reliance on technical systems that makes it harder for people to be relationally tied to other entities in their locale. As identified by Julia Watson, Lo-TEK strategies that arose out of ecologically supportive traditional cultures can facilitate building these relationships and bodily/felt connections.⁵⁴ Traditional ceremonies and knowledge that determine the time to plant, harvest, or produce a good based on the occurrence of a local event (e.g., a certain tree’s leaves have started to change, or the salmon have finished spawning) can build emplaced, adaptable ways of knowing. Many forms of feedback are useful and a diverse combination is likely to be most supportive of ecological communities.

Planetary Boundaries

A top-down approach to address working toward systemic solutions that acknowledge the functioning of the whole as distinct from functioning of components is the use of planetary boundaries. Planetary Boundaries are geophysical limits that, if exceeded, risk triggering irreversible tipping points that will destabilize the earth system from its state in the benign Holocene.⁵⁵ This leads to the idea of LCA methods that apply these geophysical limits on

⁵⁴ Watson, *Lo-TEK: Design by Radical Indigenism*.

⁵⁵ Rockström et al., “A Safe Operating Space for Humanity”; Steffen et al., “Planetary Boundaries.”

emissions and health impacts in order to acknowledge that emissions are not linear processes that impact ecosystems equally for each unit emitted⁵⁶. Planetary Boundary-LCA (PB-LCA) is a method that integrates planetary boundaries into the LCA characterization process. By creating new characterization factors that align mid- or end-point indicators with global (and sometimes bioregional) geophysical limits, products can be evaluated on their ability to avoid destabilizing the earth system. PB-LCA makes planetary limits visible by extending the LCA analysis of a building to not just identify, for example, the Global Warming Potential in total kilograms of CO₂-equivalent emissions, but to extend that to say how that contributes to the allowable levels of emissions without leading to irreversible climate change and destabilization of the earth system.

The process of allocation is a key step in the PB-LCA process that is necessary, but subjective, and it dramatically impacts the results. Also known as downscaling or sharing principles, this step takes the global and bioregional limits and divides them up to make a budget or share that is allocated to the specific product and users. There are different theories of distributive justice that inform the ways in which these global limits are divided among different populations (users) and products (uses). Most of these perspectives fall into the broad categories of egalitarian, inegalitarian (a.k.a. historical or grandfathered), prioritarian, sufficientarian and various forms of utilitarian.⁵⁷ Additionally, there are usually two allocation steps, first dividing per user (which could be a nation) and then for the product's portions of an individual's budget. As an example of the second step, an individual's budget for their housing can be defined using Final Consumption Expenditures (FCE) by dividing the average dollars spent on housing per year by total average yearly expenditures.

The implementation of the allocation principle is used to distribute carrying capacities among people, or another unit used (e.g., per household), in a study. These allocation or

⁵⁶ Though these factors are often considered as linear processes until a threshold is reached.

⁵⁷ Bjørn et al., "Review of Life-Cycle Based Methods for Absolute Environmental Sustainability Assessment and Their Applications"; Ryberg et al., "Downscaling the Planetary Boundaries in Absolute Environmental Sustainability Assessments – A Review."

sharing principles are founded on varied ethical perspectives. The choice of sharing principle has a large effect on the results of an absolute sustainability analysis, especially since a single study often uses a combination of multiple sharing principles to reach the desired study unit. For this reason, it is recommended to calculate and display the results using multiple sharing principles so that the impact of these choices on the results is evident.⁵⁸

While certain planetary boundaries are well accepted and used in some policy development plans, such as the Paris Climate Accord's limiting global warming to 1.5°C goal, there are several critiques of planetary boundary theory. In particular, one problem is that, like conventional LCA, they tend to be static measures that are not connected to the dynamic conditions of specific regions and times (although they are being improved by attempting to measure this better for some boundaries such as freshwater use).⁵⁹ Similarly, the interaction between categories of planetary boundaries has not been well defined, although the Steffen et al.'s (2015) update did identify Climate Change and Biosphere Integrity as two boundaries that, if transgressed, could by themselves destabilize the earth system from its Holocene state. Additionally, planetary boundaries are somewhat strange measurements, only some of which are frequently used in other fields to measure ecological health locally and, thus, they do not map precisely onto LCA's impact categories. Finally, some of the boundaries are still being developed without set limits and some of the limits are stated as being only applicable on global levels and may not be downscaled to predict the passing of tipping points that destabilize a bioregion's state.

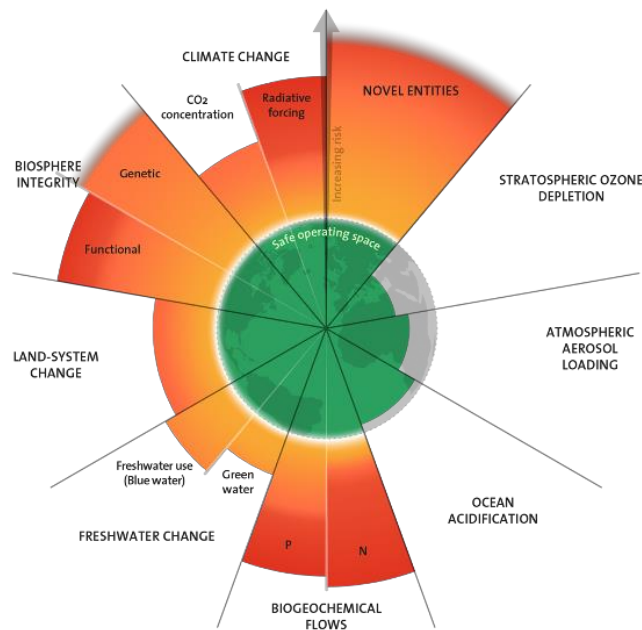
More fundamental than these critiques, the use of planetary boundaries in LCA embraces a philosophy that says the goal is to design below an allowable level of harm. Not only is this a negative framing that is not in pursuit of ecologically supportive ways of living but,

⁵⁸ Bjørn et al., "Review of Life-Cycle Based Methods for Absolute Environmental Sustainability Assessment and Their Applications."

⁵⁹ Steffen et al., "Planetary Boundaries"; Wang-Erlandsson et al., "A Planetary Boundary for Green Water."

the categories used are not derived for the purpose of measuring that ecological support. Saying that the earth system will destabilize if, for example, global warming goes above 1.5C is fine, but using it as design guidance often leads to meeting and trying not to exceed that limit, but not finding ways of existing well below it in a regime that could have a positive impact on humans and other species. Planetary Boundaries can be used as one type of limit that defines what is unacceptable (and current levels are exceeded their limits in 6 of 9 categories, see figure 3) but approaches towards a livable future must have better goals.⁶⁰

Figure 3: 2023 state of the earth showing overshoot for 6 of 9 boundaries.⁶¹



Doughnut for Urban Development

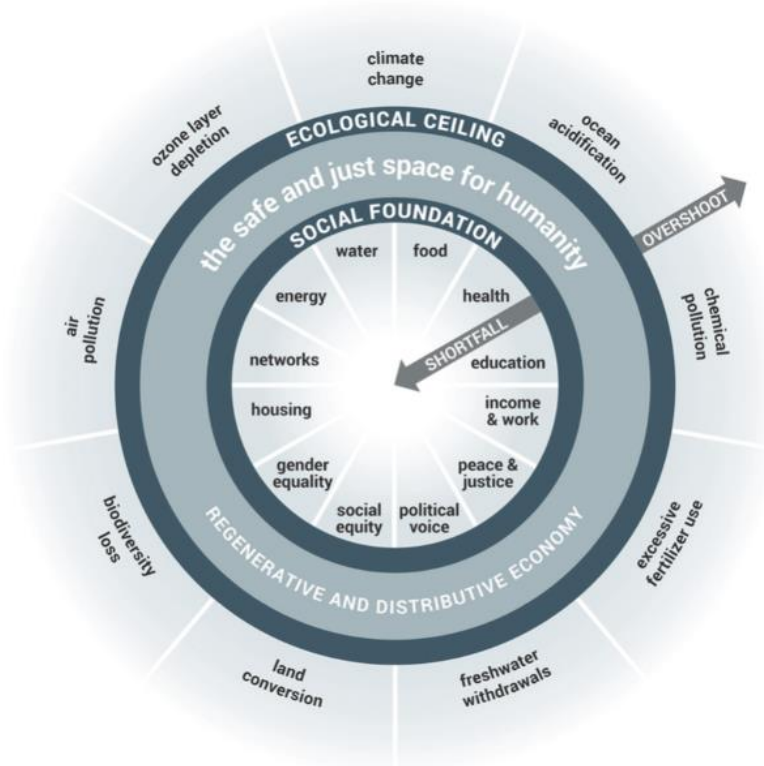
The Doughnut for Urban Development (DUD) is a recently developed framework that seeks to implement and extend this situated PB-LCA method into the process of developing communities and their buildings. It was developed in Denmark, through a collaboration between ten companies, research organizations and universities. It combines PB-LCA with Kate

⁶⁰ Richardson et al., "Earth beyond Six of Nine Planetary Boundaries."

⁶¹ Azote, "Planetary Boundaries: Based on Richardson et al. 2023."

Raworth's (2017) Doughnut Economics⁶² framework to create an 'ecologically safe and socially just' doughnut, or sweet spot, for living (figure 4). By implementing the Doughnut specifically within the construction of buildings and residential areas, the DUD redefines and grounds sustainable development practices to align with social and ecological communities locally and globally.

Figure 4: The Doughnut defining the ecologically safe and socially just operating space for humanity.⁶³



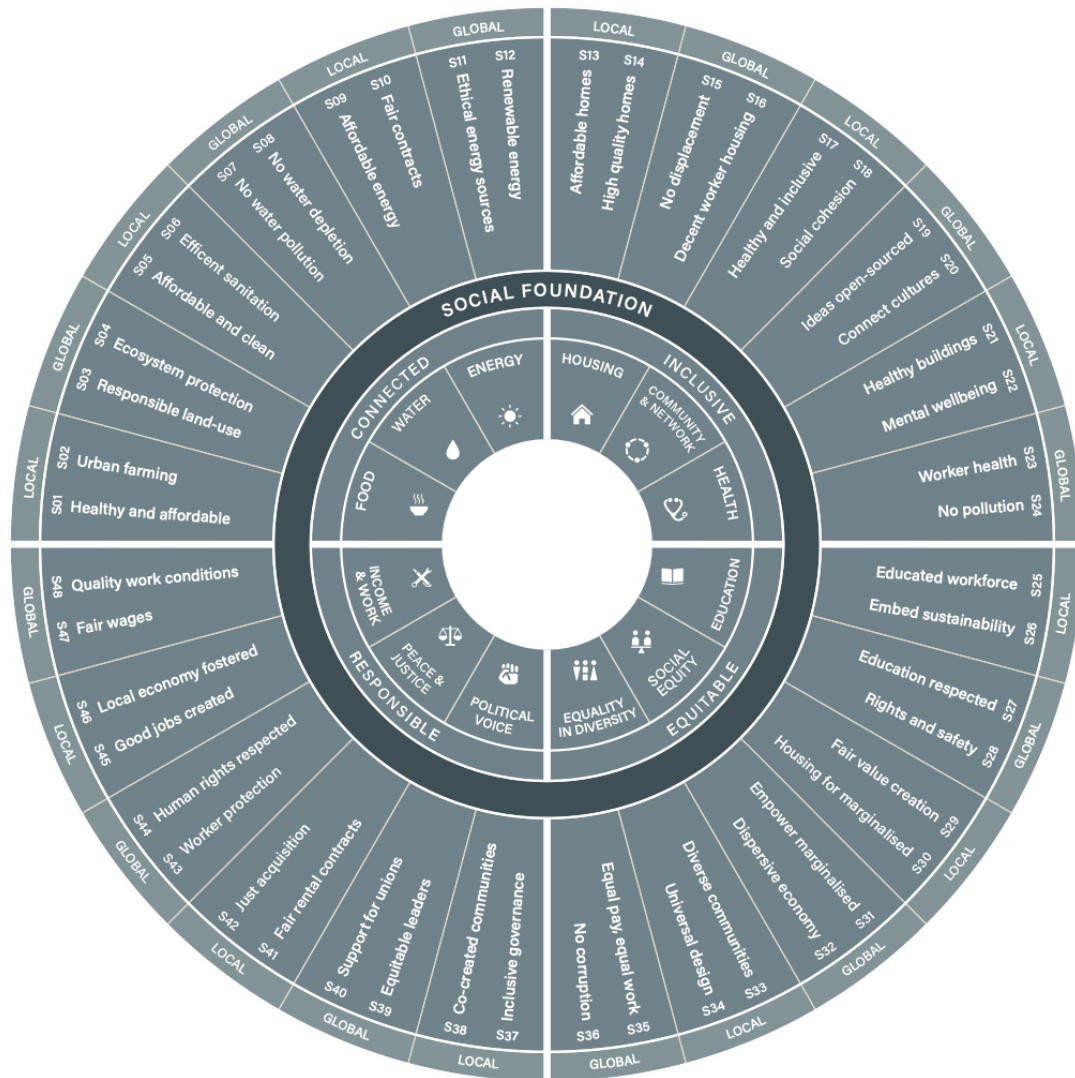
The DUD approach achieves these impacts through targeting ways of living and habitation that exist above the level of base social needs without overshooting planetary limits. These areas are broken into subsections of the social foundation (with categories for Connected, Inclusive, Responsible and Equitable and 48 associated design strategies—see figure 5) and the Ecological Ceiling (based on planetary boundary categories that support Climate Stability and Healthy Ecosystems with its own set of 48 associated design strategies—

⁶² Raworth, *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*.

⁶³ Birgisdóttir et al., *Doughnut for Urban Development: A Manual*. (24)

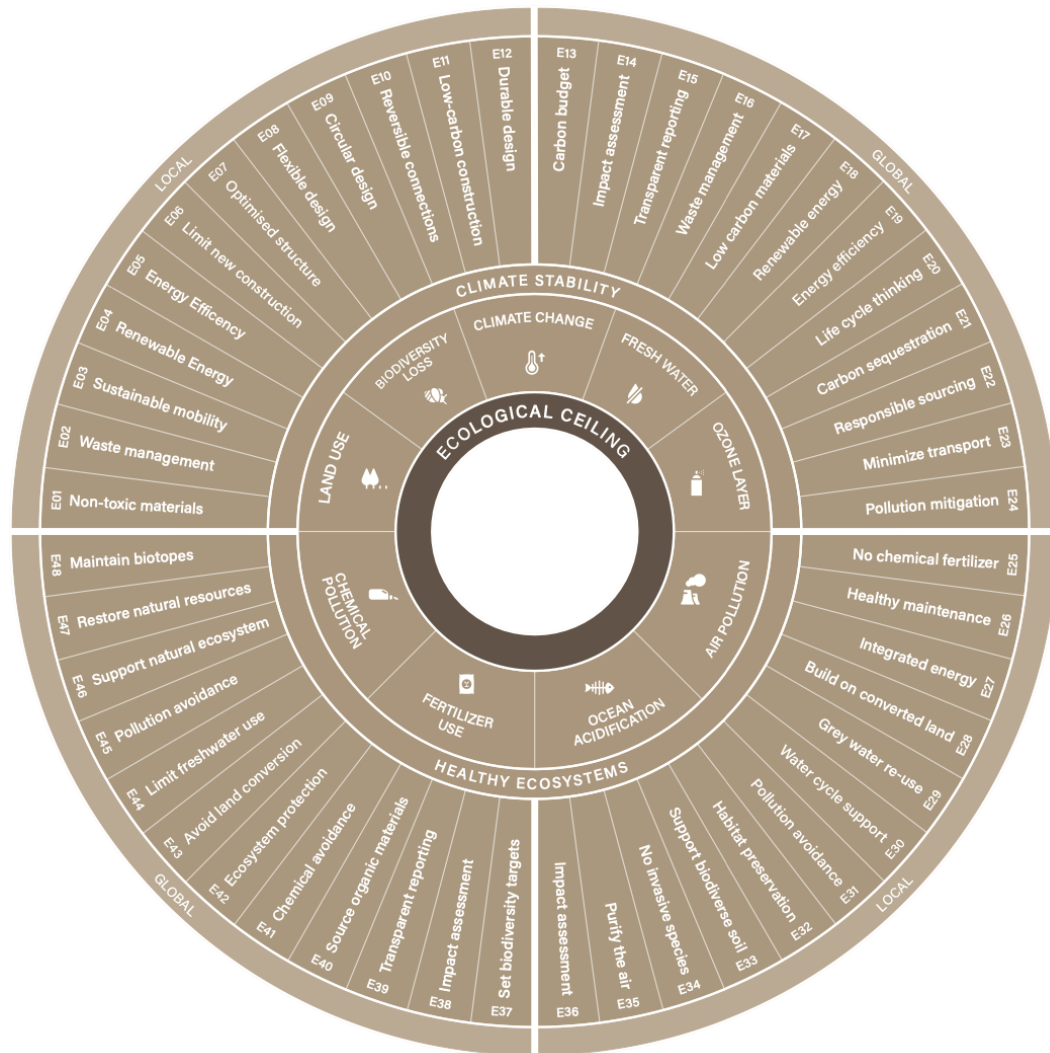
figure 6). The DUD importantly integrates these elements with building methods that use resources more effectively and cleanly.

Figure 5: The 48 design strategies of the Social Foundation half of the Doughnut for Urban Development Framework.⁶⁴



⁶⁴ Birgisdóttir et al.(59)

Figure 6: The 48 design strategies of the Ecological Ceiling half of the Doughnut for Urban Development Framework.⁶⁵



The method also emphasizes the importance of the lifecycle of materials and products by using ideas from the circular economy to reduce environmental extraction and impact. The circular economy (CE) is based on moving our production systems from linear or throughput models (ending the extraction-to-use-to-waste pipeline) to circular models that see ‘waste’ as a resource to be cycled back through the systems of production.⁶⁶ The CE often splits materials into two categories, biological materials (those coming from renewable, regenerative, or organic

⁶⁵ Birgisdóttir et al.(93)

⁶⁶ To explore this subject more see: Ellen MacArthur Foundation, “Towards the Circular Economy”; McDonough and Braungart, *Cradle to Cradle*.

sources) and technical materials (non-organic, non-renewable elements or resources from finite stores). To create a regenerative future, the CE seeks to align the use of biological materials to the growth rate of those materials, and reduce (and theoretically eventually eliminate), the use of virgin, primary material extraction for technical materials.⁶⁷ While the premise of the CE's ability to support a capitalist, growth-requiring system is inherently flawed (GDP cannot be decoupled from energy use even if the CE could help decouple it from resource use), reduced waste, more material reuse/remanufacturing and more effective, non-toxic recycling systems can all support reducing the environmental impact of products and constructions.⁶⁸

The Doughnut for Urban Development is able to extend ideas from the CE to support construction using circular building methods that can potentially end reliance on primary resource extraction and greatly reduce pollution. These methods emphasize separable building layers so each layer can be replaced on its own lifespan instead of all being replaced when the shortest-life layer fails.⁶⁹ This affects how layers are connected (needing reversible connectors), what materials are used (e.g., reducing composite materials),⁷⁰ and changes to the supply chain (e.g., storing materials for reuse, remanufacturing or eventually recycling instead of extracting new). Also emphasized are business structures (e.g., extended producer responsibilities, products-as-a-service or other take-back programs) and legal practices (e.g., material registries that track and certify the quality/strength of materials for a specific reuse application and lifespan).⁷¹ A key element to operating within the CE principles is to ensure that the impacts of the processes for material remanufacture, or recycling, are accounted for. Specifically, the

⁶⁷ See for example the Netherland's created CB'23 platform to define standards and tracking methods for CE material pathway compliance with stated goals. "About Platform CB'23."

⁶⁸ Hickel and Kallis, "Is Green Growth Possible?"; Hickel, *Less Is More*.

⁶⁹ Brand, *How Buildings Learn*. "Ch2: Shearing Layers"

⁷⁰ Crowther, "RAIA/BDP Environment Design Guide: Design for Disassembly - Themes and Principles"; Addis and Schouten, *CIRIA – Design for Deconstruction*.

⁷¹ Johar and Stancic, "Designing Our Futures"; Thung et al., "Towards a Circular Economy in the Built Environment: Overcoming Market, Finance and Ownership Challenges."

energy, water, and toxicity impacts of these processes must be evaluated and included in the full life-cycle analysis.

Also critical to the Doughnut for Urban Development is the use of multiple allocation principles to reflect multiple options for addressing environmental justice in the design of communities. (The DUD presents three options: per “capita”, “capacity”, and “historical responsibility” similar to the methods noted above in the discussion of allocation principles).⁷² For example, in the DUD while they present the budget outcome numbers from multiple options, they view the allocation principles most aligned with Doughnut Economics and justice to be: a) downscaling global CO₂ emission budget to national levels using *historical responsibility* (based on historical past emissions) and b) allocating the national amount to a sector budget using a *sufficiency* principle (meeting base requirements for decent living) that is then displayed as both budgets per built area and per capita.⁷³ For Denmark, these budgets respectively are -1.06 (kgCO₂-eq/m²/yr) and -53.95 (kgCO₂-eq/person/yr).⁷⁴ While using the *equal per capita* or *capacity* principles for the global downscaling step results in positive or near-zero budgets respectively, the negative values of the historical responsibility approach show that Denmark has already used more than its carbon budget. Thus, in Denmark one should only “build” in ways that sequester more carbon than they use (across the all material/energy life-cycles stages). This is not possible today for new buildings but renovating existing structures to live more communally in smaller areas, using low carbon materials and energy and with more ecological restoration locally and globally are ways to get closer to these budgets.

⁷² Per capita divides equally between all people using population. Capacity- takes into account an individual’s income and capacity to pay more and thus have more options to meet their needs. Historical Responsibility: allocation based on their populations total emissions over history and thus they amount they have left to use (usually a negative number for high income countries (e.g., for carbon they can produce no more emissions and must actively sequester that amount of carbon each year)). Birgisdóttir et al., *Doughnut for Urban Development: A Manual*. (112-113)

⁷³ Birgisdóttir et al. (113-118)

⁷⁴ Birgisdóttir et al. (114)

Especially in bioregions that historically are responsible for higher levels of carbon emissions, resource extraction, biodiversity loss, and labor appropriation, embedding reparations for lower-income and higher-impacted areas into strategies and performance certifications/benchmarks is critical and must be done transparently.

Living Futures Challenge

Another form of situated method is based on views of the function of ecosystems and their parts to determine capacities for self-continuation (“sustainability”).⁷⁵ The Living Future Challenge framework, and its manifestation for buildings in the Living Building Challenge (LBC), proposes a holistic certification system for buildings that seeks to create spaces for humans that learn from and mimic nature to create positive spaces. One primary contribution is a focus on understanding and replicating the specific ecological functions of a site’s unique pre-development habitat. This is most clearly applied to water and energy/carbon which must be met through collection on site.⁷⁶

For example, the Bullitt Center in Seattle, WA, when completed in 2012 was considered by many to be the “greenest” office building in the world (Fig. 7). It is designed to have its water cycle replicate the pre-development hydrology of the area—identified to be an old-growth Douglas Fir forest in which 61% of the precipitation that falls on site is used by the forest through infiltration or evapotranspiration.⁷⁷ Thus, the Bullitt Center restores at least 61% of precipitation to the area through catchment and slow release, and meets all building needs through collected rainwater.⁷⁸ It purifies rainwater to drinking quality standards and, as initially

⁷⁵ Whyte, “Food Sovereignty, Justice and Indigenous Peoples.”

⁷⁶ Both energy and water sources can be met off-site using the “scale-jumping” feature if a) they cannot be met on-site and b) are installed locally to contribute to the area and its human communities. “Living Building Challenge 4.0: A Visionary Path to a Regenerative Future.”

⁷⁷ See below for an analysis of the usefulness of this statically and historically defined approach.

⁷⁸ “Building Features: Rainwater Harvesting.”

designed, greywater from sinks and showers were filtered in a rooftop constructed-wetland before being returned to the ground hydrology through a planter and gravel bed.

Figure 7: The Bullitt Center in Seattle, WA.



Courtesy of: Nic Lehoux







The Living Future Challenges focus on three scales (products, buildings and communities). Some features addressed include materials (controlling for “Red List” toxic substances, embodied carbon, ethical and regional sourcing), local human communities (walkability, human-scaled structures, urban agriculture, local investments, community maintenance manuals), and environments (biophilia, local habitat-based energy and water use, no greenfield development⁷⁹ and habitat offset protections).

⁷⁹ Allowed for some areas in low-income countries if it includes area habitat protections “Living Building Challenge 4.0: A Visionary Path to a Regenerative Future.” (30)

Figure 8: The Living Building Challenge categories and overview.⁸⁰

The Living Building Challenge is composed of 20 Imperatives grouped into seven petals. Some Imperatives are not required for all Typologies.

| PETAL | IMPERATIVE | TYPOLOGY | | | |
|--------------------|---------------------------------|--------------|-------------------|--------------|----------------------------|
| | | New Building | Existing Building | Interior | Landscape + Infrastructure |
| PLACE | 01 Ecology of Place | Required | Required | Not Required | Required |
| | 02 Urban Agriculture | Required | Required | Not Required | Not Required |
| | 03 Habitat Exchange | Required | Required | Required | Required |
| | 04 Human Scaled Living | Required | Required | Required | Not Required |
| WATER | 05 Responsible Water Use | Required | Required | Required | Required |
| | 06 Net Positive Water | Required | Required | Not Required | Required |
| ENERGY | 07 Energy + Carbon Reduction | Required | Required | Required | Required |
| | 08 Net Positive Carbon | Required | Required | Required | Required |
| HEALTH + HAPPINESS | 09 Healthy Interior Environment | Required | Required | Required | Not Required |
| | 10 Healthy Interior Performance | Required | Required | Required | Not Required |
| | 11 Access to Nature | Required | Required | Required | Not Required |
| MATERIALS | 12 Responsible Materials | Required | Required | Required | Required |
| | 13 Red List | Required | Required | Required | Required |
| | 14 Responsible Sourcing | Required | Required | Required | Required |
| | 15 Living Economy Sourcing | Required | Required | Required | Required |
| | 16 Net Positive Waste | Required | Required | Required | Required |
| EQUITY | 17 Universal Access | Required | Required | Required | Required |
| | 18 Inclusion | Required | Required | Required | Required |
| BEAUTY | 19 Beauty + Biophilia | Required | Required | Required | Required |
| | 20 Education + Inspiration | Required | Required | Required | Required |

-  CORE IMPERATIVE
-  SCALE JUMPING ALLOWED
-  HANDPRINTING IMPERATIVE
-  IMPERATIVE REQUIRED FOR TYPOLOGY
-  REQUIREMENT DEPENDENT ON SCOPE
-  NOT REQUIRED FOR TYPOLOGY

This work investigates how the LBC could be extended one step farther to not only be situated but relational: to embrace the co-emergent relationships that create true ecological health.

It is both a strength and limitation that the Living Building Challenge is a certification system. It makes buildings comparable, allowing many different types of buildings whether new, renovated, residential or commercial, to be certified across a consistent set of requirements. But, in the most basic sense this tends to reify the building as an object when the building is certified as successful. Many of these requirements do have relational components and approaches including being validated based on post-occupancy performance metrics. However,

⁸⁰ “Living Building Challenge 4.0: A Visionary Path to a Regenerative Future.” (19)

if those performance metrics do not meet the relational needs of that community, they are not truly supporting that ecological community holistically.

Many elements of the LBC can be seen in relational ways (as indeed everything can) but here I investigate three elements more deeply:

a) Mimicking the predevelopment hydrological flows does connect the building to its historical ecosystem. However, it asks what was *the* predevelopment state? What is the significance and benefit of recreating that when the site is now in the middle of a concrete jungle?

b) Several elements of the LBC allow “scale jumping” where, if the requirement cannot be met onsite, it can be fulfilled within the community. This can be beneficial such as when the net-zero solar requirement is met by placing solar on an affordable housing community that may struggle to otherwise pay for solar power. On one hand this could build relationships: between the office building and that community by reducing their energy costs, or between those community members, the sun, and their electricity loads and use behaviors. On the other hand, it builds disconnection into the system where the community members are no longer able to personally offset their electricity because those panels are serving a remote business.

c) One-time carbon offsets are also allowed to account for the building’s embodied carbon emissions across the entire lifecycles of all of its materials. While the LBC does require these offsets to be third-party validated and to provide “additionality,” they do not have to be situated solutions; this assumes that a carbon reduction somewhere in the world is equal to a reduction along the supply chain where that emission occurred. While this is truer for carbon than most other LCA emissions it still applies an abstracted summable quality to ecological processes.⁸¹ Secondly, the project must be at least 20% better than a comparable baseline.

⁸¹ “Living Building Challenge 4.0: Handbook.” (207)

Currently, given the still nascent emphasis on embodied carbon reductions in the industry, baseline buildings are far worse than current good or best-practice examples. Thus, this low required reduction is grossly insufficient and it seems irresponsible to ignore this due to the carbon offset policy.⁸² Such use of embodied carbon is not only inefficient, it also does not alleviate material-stream disconnection within the community: the carbon offsets do not create reciprocal material flows based on relationships with beings (“materials”) that are valued members of the ecological community.⁸³

The metrics currently do not see more-than-human community members as agents and stakeholders in the design and subsequent performance of the space. In an urban setting, mimicking the amount of water an old-growth Douglas Fir forest “catches” and similarly releasing that water slowly into the area, is effective at reducing sewer loads from stormwater run-off. This slow release improves water quality by reducing transport of pollutants from impermeable surfaces and reducing combined-sewer overflows. However, it does not make the area around the building operate more like an old-growth forest. It does not recreate the soil health, carbon sequestration, mycorrhizal networks, habitat for myriad species, open access for community, or adaptability and capacity for self-regeneration of such a forest ecosystem. Of course, the building is not a forest so this is not surprising. But this example does ask which relationships are prioritized when considering the space/construction as an animate participant in its ecological community. The answer to that question will change over time and thus, a predefined certification system is inherently limited.

What would a relational, evolving certification system look like? Perhaps one where the entire community is fulfilled and supported openly and adaptably. It seems unlikely that a private office building can meet this requirement. The misalignment is in the title: office building. A

⁸² Note that in practice (such as for the Bullitt Center) more than a 20% reduction is likely but the certification requirements allow for such a minimal reduction to achieve certification when paired with the use of carbon offsets.

⁸³ See section: [Reciprocal Flows](#) and [Reciprocal Being-Materials](#).

building designed to prove the capitalist “market viability” of constructing an ecologically supportive building can never be truly supportive of the ecology near or far; the goal of the building is to be able to be sold at a profit and support office workers contributing to the city’s GDP. Both of these productions of profit come at the expense of an ecological community somewhere (including humans).⁸⁴ Furthermore, the single-use designation of ‘office’ makes this structure private and inaccessible to the majority of the community and does not give the community the ability to make decisions about its use, material and maintenance sourcing, or its placement and construction in the first place (nor the accordant replacement/displacement of the pre-existing beloved community space).

Comparison and Takeaways from Methods

There are many beneficial elements contained in these methods and frameworks and many operate in both reductionist and relational ways. Particularly the analysis of the Living Futures Challenge requires a careful and nuanced critique as it is a promising attempt and, in the future, when it is fully realized/developed, it may be able to produce ecologically supportive, beneficial spaces for more than just human communities.⁸⁵ I have summarized a few of the differences between these methods and some key takeaways that inform my development of a relational framing to guide communities holistically (Fig. 9).

⁸⁴ Moore, *Capitalism in the Web of Life*. Chapter 1.

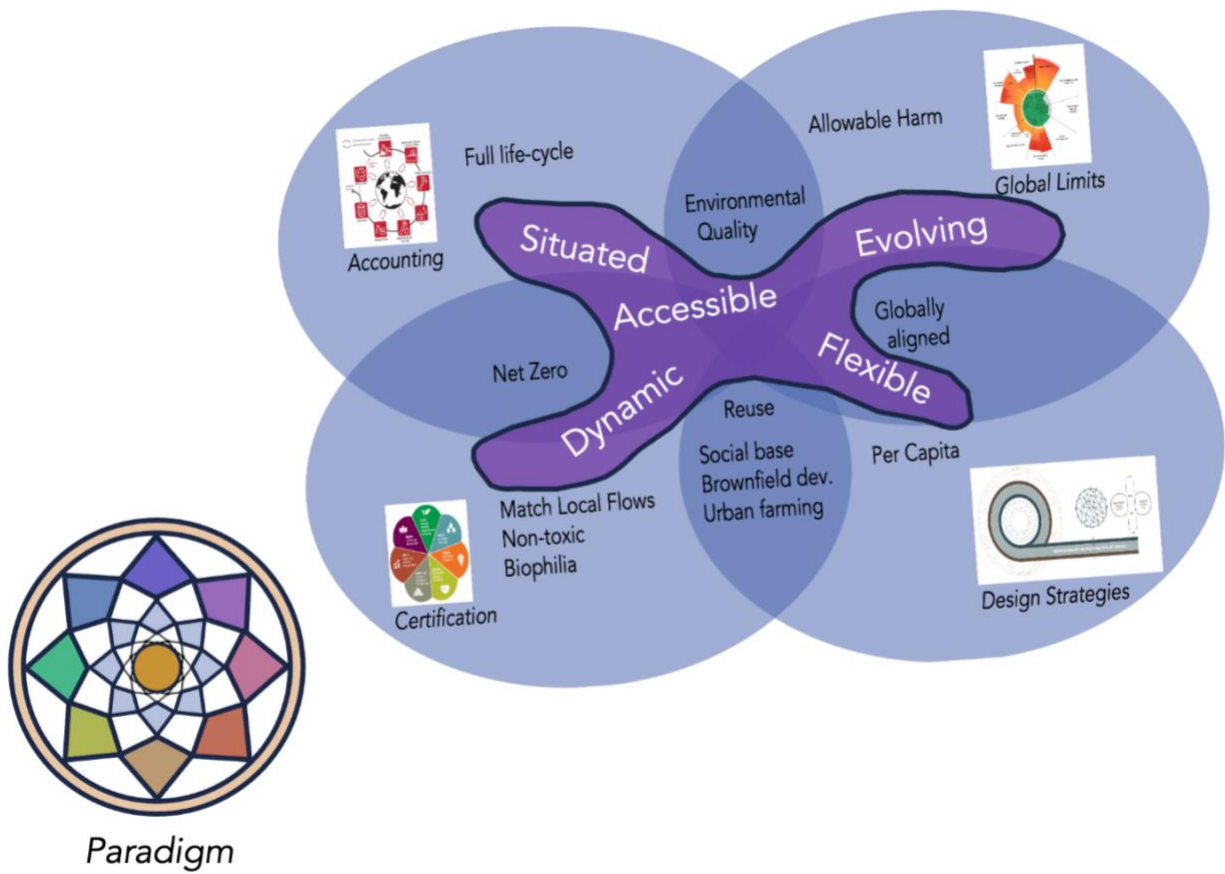
⁸⁵ If it *will* do so, however, will likely be determined by other factors, including economic and social/use.

Figure 9: A comparison of four environmental assessment method and my relational framing.

| Method | Basic Approach | Strengths | Limitations | Key Takeaways |
|--------------------------------|---------------------------------|---|---|---|
| LCA | Abstract Accounting | Take into account the whole life-cycle | Uses static (or linear) impacts that are summed: not evolutionary or situated analyses | Full life-cycle accounting and thinking approach |
| PB-LCA | Global Accounting Limits | Ground LCA in impact on planetary tipping-points | Allocation is not standardized. Meets allowable level of harm. | Recognize planetary limits as a minimum baseline |
| Doughnut for Urban Development | Framework and Design Strategies | Aligned to global and local needs for social and environmental functions; per capita accounting | Equates positive impact to designing within allowable harm. Attempts but struggles with budgeting biodiversity. | Potential contribution from circular building strategies; limit growth. |
| Living Futures Challenge | Holistic Certification | Learns from and mimics region's habitat | Loosely/indirectly tied to global limits; regional basis (not per capita/use) | Locale's habitat aligned flows (energy, water); limit growth; human connection focus |
| Relational Framing | Paradigm or worldview | Based on relationships not object. Can account for dynamic, procedural and evolutionary changes | Not externally definable or static so hard to make abstracted comparisons | Integrate humans into ecology: no ownership/profit, no extraction, adapt for ecological wellbeing |

As seen below (Fig. 10) comparing the relational elements of these different methods show many positive features and approaches. However, when the relational framing I propose is overlaid, it shines onto these other systems and adds other potentialities such as the purple blob of concepts. My relational framing (see [Chapter 2. Entry Points](#)) is shown from a different height/plane to recognize that it is from a different worldview. Thus, this blob can grow into the limitations and support the efforts of these four methods.

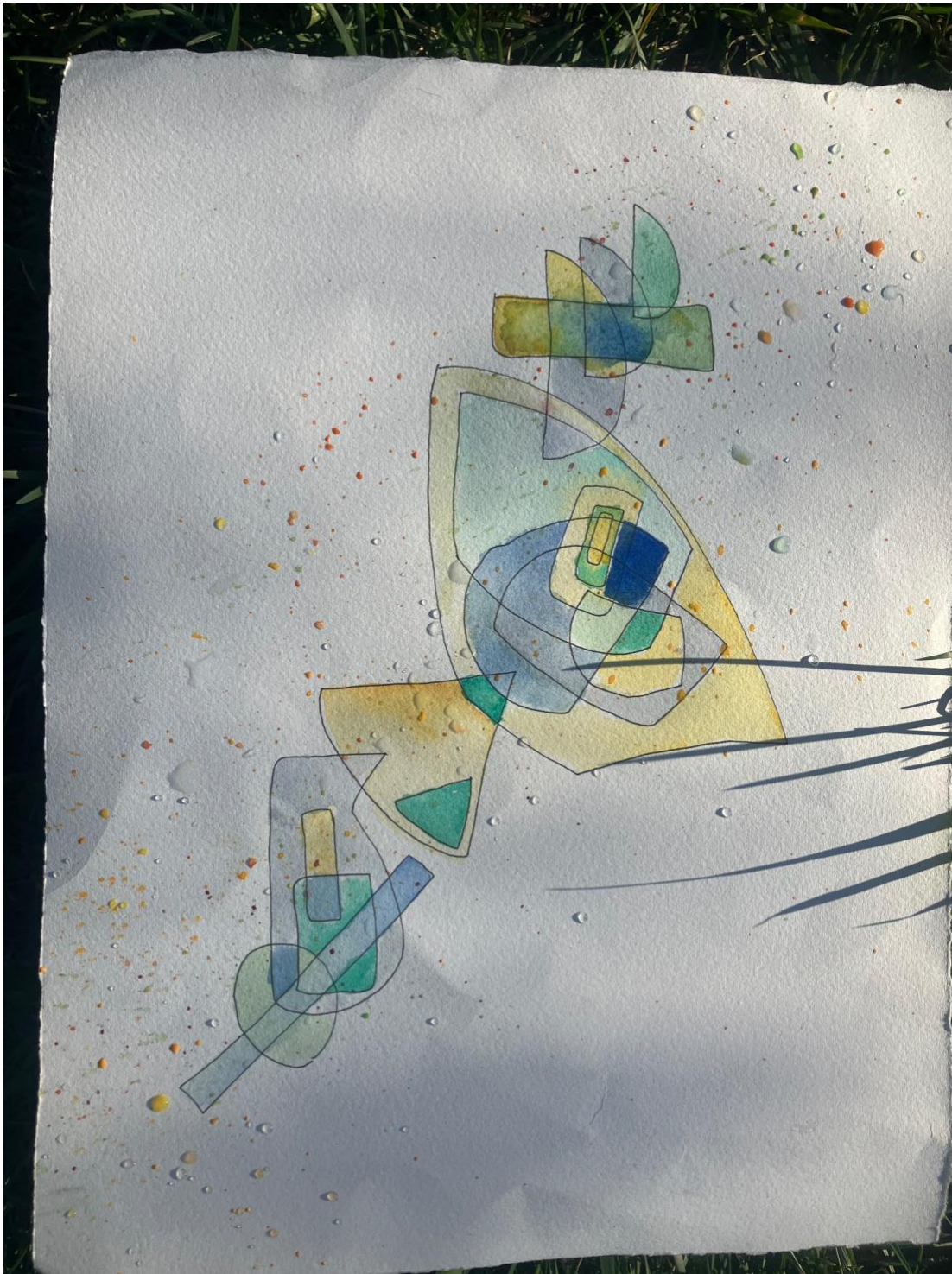
Figure 10: A comparison of relational elements of (clockwise from top left): LCA, Planetary Boundaries, Doughnut for Urban Development and the Living Building Challenge. Bottom left is my relational framing overlaid adding the purple amoeba and additional relational considerations.



Clearly things are starting to get a bit messy and complex.⁸⁶ These overlapping interwoven systems, and other ways of seeing/knowing, relate in constantly changing and flowing interactions. Perhaps figure 11 is a better way to represent this on a 2-dimensional page.

⁸⁶ Messy in the best sense (contingent, situated): Till, *Architecture Depends*. (xii, 61)

Figure 11: Perhaps a more accurate depiction of the way these systems dynamically interweave and flow into each other.⁸⁷



⁸⁷ Original Artwork: Tess Hamilton 2024

Steps Toward a Relational Approach

Seeing the world through a web of supporting relationships—and the resultant complexity of the dynamic, evolving relationships that recognizes all species as active, caring agents (not isolatable, replaceable individuals)—is a depth of being/knowing that is not included in environmental impact measurements such as LCA. For example, increased soil acidification impacts tree root development which can lead to species loss and more soil degradation (e.g., erosion, decreased organic carbon). On the other hand, it also may lead to a modified mycorrhizal relationship that supports a tree that was formerly struggling to thrive. The beings have changed; the soil-tree-fungus-bacteria relationship is always new and evolving. This is not a critique saying that LCA should be able to predict evolutionary change and internalize it in its metrics (even if dynamic, updatable characterization factors would be of benefit). On the contrary, I seek to emphasize that LCA and the environmental indicators it is based on are only one way of listening to others and receiving feedback about parts of the ecological communities humans comprise.

This leads to my proposal of a relational framing. A paradigm shift that embraces a different way of seeing and understanding the world. An earlier attempt to create a holistic decision-making tool to be used by design professionals and anarchist communities created the framework below (Fig. 12). However, the “Westernized” categories of the triple-bottom-line (economic, environmental and social) continued to constrain my thinking in ways that felt unauthentic. This first attempt tried to re-conceive these three categories as two primary drivers, social and ecological, that inform and give rise to the third: the mediator, the built forms of habitation.

Figure 12: My initial attempt to create an outline for a framework that mediates social and ecological factors through forms of habitation and infrastructure that could support both.

| Social Communities & People | Locale & Ecologies | Habitation & Infrastructure |
|--|---|--|
| <p>“interacts with the social components of human/more-than-human relations including cultural mentalities, constructs and values.”</p> | <p>“considers the presence and quality of the physical features and flows in the region of interest.”</p> | <p>“concerns the human-focused/built forms and the way the elements that compose them relate to and interact with the broader ecologies they are within.”</p> |
| <ul style="list-style-type: none"> ● Kinship: Inter + Intra-Species <ul style="list-style-type: none"> ○ Collective Decision-Making ○ Stewardship (<50% human-focused land use) ● Culture of Connection <ul style="list-style-type: none"> ○ Felt Ecological Impact ○ Food + Materials: Source + Production ● Reciprocity <ul style="list-style-type: none"> ○ Sharing and Use ○ Individuals and Ownership ● Relational Economics + Abundance Mentality <ul style="list-style-type: none"> ○ Responsive to Limits (bioregional and global) ○ Shadow Costs Included (based on LCA impacts) | <ul style="list-style-type: none"> ● Environmental Quality (Pollution) <ul style="list-style-type: none"> ○ Water Quality ○ Air Quality ○ Soil Health ● Ecosystem Functioning (Balance) <ul style="list-style-type: none"> ○ Species Diversity + Abundance ○ Functional Composition of Species/Habitat ● Land Disruption (Scars) <ul style="list-style-type: none"> ○ Amount + Change in Disrupted area ○ Regenerative + Time-scale ● Rates of Change + Stability <ul style="list-style-type: none"> ○ Responsive to Slow-Variables ○ Cross-Scale Interactions | <ul style="list-style-type: none"> ● Regenerative Earth Cycles <ul style="list-style-type: none"> ○ Energy ○ Water ○ Food and Nutrients ● Non-Extractive Material Cycles <ul style="list-style-type: none"> ○ Second-life Materials ○ Regenerative Renewables ○ Cleanly Recyclable Non-renewables ● Ecological Multi-Functionality <ul style="list-style-type: none"> ○ Canopy Cover + Diversity ○ Light + Noise Pollution ○ ‘Green’ Connectivity ○ (Im)pervious Surfaces ● Transport + Boundaries <ul style="list-style-type: none"> ○ Type of Transport + Infrastructure ○ Trade + Movement of Goods ○ Movement of People |

The more I worked with this framework, and tried to utilize environmental assessment methods, technologies and strategies for making more supportive human living spaces, the more I felt its misalignment. While there may be potential in continuing to pursue such an approach, this path did not feel right to me, at least at this time. It took months of wrestling with this to accept that feeling given my mental desire to make these elements fit together in a way that could more easily be integrated into (and thus more immediately impact) architectural practice.

Experiential lessons from my readings and travels, combined with continued readings of Indigenous philosophers, writers, and scientists, led me to take a step back and embrace the transformation in how I am beginning to learn to see the world through relationships. This led to a new approach to how I have attempted to make my personal lessons/experiences informative and useful for communities (and “designers”) in making decisions to support quality

relationships among all members of integrated human and more-than-human ecological communities.

Chapter 2. Entry Points to A Relational Framing

Introduction

I propose a relational framing that presents eight entry points that can provide alternate ways of seeing to orient the self in building and maintaining healthy relationships with other beings to experiment towards ecologically supportive communities and ways of living. This is my attempt to create a theoretical framing that can guide my work—as well as the members, including “design professionals,” of these communities—to be able to make decisions and **evaluate** them, in ways that are mutually supportive.

The representation of the entry points I present are influenced and inspired by the work of Gregory Cajete, a Tewa elder from Santa Clara Pueblo and a professor at the University of New Mexico’s College of Education. My representation (and thinking) draws from a diagram in his work *Native Science* (2000) about the process of learning in Native Science (Fig. 13). In this diagram Cajete poses a circle with outer concepts that point in each cardinal direction, and then an innermost ring that is the inner (personal) focus between those external values; the larger intermediating ring shows a key inward quality needed to achieve that personal focus.⁸⁸ This simple diagram and its explanation is powerful and insightful. The framing and graphic representation I use operates differently and uses different concepts but is clearly influenced and inspired by Cajete’s work.

⁸⁸ Cajete, *Native Science: Natural Laws of Interdependence*. (273-6)

Figure 13: A reproduction of Cajete's diagram of key external and internal foci, and the second/outer ring of personal traits that connect them, and taken together support learning in Native Science.⁸⁹ (274)



For the compass-web I present (figure 14), I elaborate on Cajete's work to attempt to present a graphical representation that can add clarity to the relations between, and usefulness of, the key entry points I investigate.⁹⁰ The entry points of my relational framing are presented in a "compass-web": strings from a central circle weave outward to create eight points along an outer circle. Each edge node is associated with a concept that adds depth, insight and important community values to relationality. However, I envision this compass-web as a device that is stretchy and malleable, not static or reified as it may appear here on the page. The colors used create a circular palette, to emphasize that they bleed into each other and interweave to create these concepts. Thus, each entry point is connected to the others and the explanations and expansions of each concept presented in this chapter are not exhaustive. They can be added to, modified and rearranged by a specific user in a certain community context.

⁸⁹ Cajete. (274)

⁹⁰ This is somewhat like a mandala as well but it is envisioned as a physical object one can look through (like a faerie stone) to see into other worlds. It, thus, does not pull you in to focus on the/your center, but you (and your love) looks through, extending out, like tentacles, to let you reach and feel others.

That said, they are not random or arbitrary. For me, these are concepts that have continually emerged through my journey, both through academic research and physical explorations. In this way, they have been informed by both deductive and inductive approaches, and I believe this is an essential component of attempting to see in a relational way. Specifically, by viewing the world as a constellation of interweaving and interdependent relationships, it makes it impossible to comprehensively define a static environment or state in which we exist (socially, ecologically, or in some other artificially delineated category). Relationality requires having bodily, experiential insight but also synthesizing knowing from certain relationships to facilitate establishing quality relationships with others.

Thus, while I present these entry points at this point in the work—and use Chapter 3 to explain how they can be applied to practice and made actionable through “gestures”⁹¹ and longer examples/experiences—these two chapters have been written concurrently as I synthesized and composed my thoughts and experiences. The sections have informed each other and form separate chapters more for clarity of presentation than separation of content; they are not separate but are like looking through a window from two different sides, synthesis on one side and experiences on the other: looking at and learning from each other—seeing into the other and at the same time seeing their reflection but to variable degrees based on their changing surroundings.

Entry Points

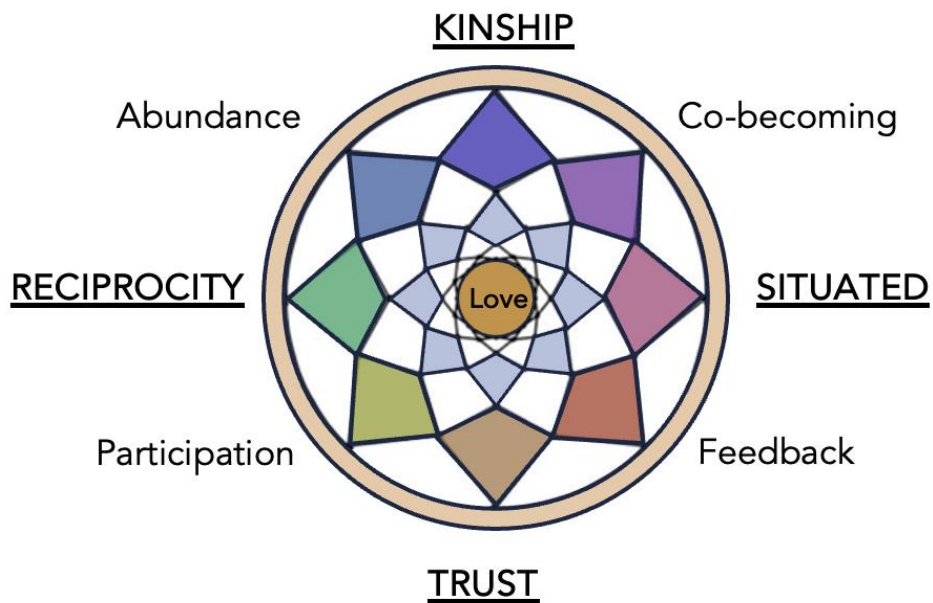
I arrange these entry points in a specific way. The top can be seen as related to the four primary directions north, east, south and west as the essential four concepts. The secondary directionals provide key concepts that emerge from the interweaving of the primary directions they are positioned between. This organization seeks to assist the user in orienting themselves

⁹¹ The use of this term will be explained at the beginning of Chapter 3.

to this device but it does not establish a hierarchy among concepts. As on a compass, north is not any better or worse than south-east or west, it just happens to be a direction that is easy to find in the northern hemisphere when navigating by the stars.

Each entry point is presented through other sub-perspectives/values that inform it. All entry points and sub-perspectives are presented with a brief summary or orientation to how I use it (shown in bold) that is then expanded on in a longer explanation.

Figure 14: A diagram of my compass-web device to present eight entry points toward a relational framing.



Love

an outward expression from the self of unconditional care towards and respect of all beings.

In the center of my proposed compass-web is “love” or “love-self.” It is the expression of the being who holds or uses the compass as they interact with others in the world. Love: an outward expression of care, respect and compassion without any expectation of return, unconditional. This is a central value to many religious and cultural traditions. For me, this

definition and understanding of love comes, in part, from my experiences with Buddhist thought and practice from a course in college, some time meditating with residents of a Danish Buddhist collective, and through Vipassana meditation in the U.S.⁹² This center of the compass-web is an earthy color to relate to the soil that gives love to all.

N. Entry Point: KINSHIP

extended care and recognition of family among human and more-than-human beings.

Kinship sits as the north star in my compass-web as it is an essential first step to re-integrating humans into their broader ecological communities. Networks of expanded kinship include both inter- and intra-species relatives and are central to relationality and organizing socially to uplift one another. As Haraway (2016)⁹³ proposes, it expands far beyond the nuclear family, to see “families” as being composed of any beings one interacts closely with and holds responsibilities to. All are valued beings with the right to receive and the capacity to give care. The entry point of expanded kinship is informed by the perspectives of **integration and boundaries**, (multi-)generational timescales and **stewardship**.

Integration and Boundaries:

expanding kinship to include other species fundamentally undermines the idea of human separation from and supremacy over the more-than-human world.

Such misconceptions permit the abstraction of humans, and other beings from their surroundings to create definable “objects.” It underlies the dualist division of mind and matter,

⁹² This center is part of a global organization teaching this form of Buddhist meditation practice informed by the work of S.N. Goenka and his teachers. See Goenka *The Discourse Summaries* (1987), *The Art of Living* (1987) and many other works.

⁹³ Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*.

and has been extended to create the conceptions of private property rights and ownership over other beings (e.g., land). In contrast to such dualisms, humans are integrated members of the ecologies that we live within. We impact others with our actions and their actions and exchanges impact us. This mutual exchange creates the food (and the symbiotic microbes to digest that food), the water, energy, oxygen, materials, but also joy and connection necessary for all beings.⁹⁴

Boundaries equally are seen as human constructions and simplifications, whether boundaries of the interior vs. exterior of a building, the boundary between the self and an other, or other convenient simplifications. Lefebvre (1970) speaks to this in his comments about the importance of distinction versus separation: distinction highlights the differences between beings but in a way that is celebratory and can create connection. Separation on the other hand divides and segregates in a manner that defines what it means to be in the group and excludes those that do not fit.⁹⁵ Starting with the mental paradigm shift of broad kinship helps reintegrate humans into their ecological communities.

Generational Time:

intersects scales of varying being's lifespans, overlapping to extend into the future and past, maintaining relationships beyond one being's (an individual's) time.

Expanding kinship to the more-than-human world has important implications for the conceptions of relevant timescales and continual care. When kin extends beyond humans, it requires thinking across multiple time-horizons. Each being has its own lifespan, so giving care across generations means being supportive in both the short and long-term. The capitalist economic system has a short-term vision and response mediated through discount rates. It is

⁹⁴ See Methorst et al., "The Importance of Species Diversity for Human Well-Being in Europe." on the happiness benefits of people that live near diverse bird species (equivalent to a 10% income increase)

⁹⁵ Lefebvre, *The Urban Revolution*. (133).

rare for discount rates to operate meaningfully beyond 20-30 years into the future. While proposals such as a zero-consumption discount rate can better promote the rights of future generations (and thus could be a useful policy in the short term) they still cannot operate on the thousand-year timescale of old growth forests or the infinite lives of beings like water. Gift and library economies can operate in alternate ways (see [Sharing and Use](#)). Kinship networks that extend across many generations, such as the common Indigenous practice of seven generations thinking, can allow for community continuation and uplifting the inherent worth of communities now and into the future.⁹⁶

Stewardship:

applies a generational time horizon and expanded kinship perspective to the practice of maintaining and caring for a specific community and place in mutually respectful ways. All beings are seen as valuable contributing members of the community.⁹⁷

Stewardship sees the land and other beings (“resources”) where a human community resides as shared and valued entities who are equally a part of that community. Thus, as extensively demonstrated by Ostrom, Harvey (2012), and others, Hardin’s (1968) “Tragedy of the Commons” is actually the tragedy of the commons under capitalism. When the commons are seen as external to humans and priced accordingly, the networks of mutual responsibility,

⁹⁶ Whyte, “Food Sovereignty, Justice and Indigenous Peoples.”

⁹⁷ *Note: I have some reservations of using the word stewardship. I use it because of its broad intelligibility and because it used by both many Western and Indigenous groups to refer to holistic land management relationships. However, here, I wish to also note its Christian and colonial heritage that still presents humans as superior and distinct from nature but acknowledges the responsibility this confers on them to act as stewards. I do not approve of or wish to promote this heritage of stewardship despite my use of the term.

cooperation, and care are destroyed enabling the extraction that is a product of the individualized, commodity market.⁹⁸

Within a relational way of being, founded in stewardship practices of ongoing mutual care and gratitude, the Tragedy of the Commons does not exist and does not even make sense (expanded in the [W. Reciprocity](#) section). When the exchanges between myself (or the human part of my community) and the finned-being Salmon is a valued sacred relationship, supporting those beings is inseparable from supporting one's self. Degradation of others is degradation of the self and is nonsensical for a being focused on self and mutual wellness.

Many anarchist proposals see stewardship and re-establishment of the commons as essential to unchain land from monetary objectification and commodification.⁹⁹ It erodes the power of the wealthy and allows the beings who care for the land to inhabit it, always valuing it as a common being that belongs to and sustains all. Thus, it cannot be hoarded or accumulated since the scale on which one can know, maintain, and remain interrelated with that body of land is naturally limiting. Equally, it is not assumed that a body of land (a "piece" or "parcel") passes on to the next generation (especially within a narrowly defined kinship lineage) unless it is continuing to be inhabited and stewarded by those descendants.¹⁰⁰

Applying stewardship to the land, waters and all beings that comprise a community create a network of mutual care. Here, gifts from each being and sub-community can be exchanged, celebrated and cycled, creating cultures of connection, care, support and ongoing situated knowledge and community rememberings.

⁹⁸ Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*; Hardin, "The Tragedy of the Commons"; Harvey, *Rebel Cities: From the Right to the City to the Urban Revolution*. (75)
*Note: Harvey's definition of the commons places it as inherently socially defined and as both "collective and non-commodified— off-limits to the logic of market exchange and market valuations." (73)

⁹⁹ A nice place to start is Kropotkin (1926) *Conquest of Bread*.

¹⁰⁰ See Bookchin, *The Ecology of Freedom: The Emergence and Dissolution of Hierarchy* (42) on this idea of usufruct to free individuals from the notions of property (as he sees even communal 'property' as the first step to private property and the end of freedom).

Current measures of ecological health and the emerging field of planetary health and agroecology are ways to evaluate and maintain the health of the commons. Ways of listening through Western science can include measurements of biodiversity or environmental quality, but agroecology also applies cultural community-based ways of listening that range from qualitative measures like community surveys and observational experiences (multispecies ethnographies) to Participatory Action Research, emplaced meditation and community rituals and celebrations.

NE. Entry Point: Co-Becoming

how relations between beings create unique, emergent relations and mutual co-creation.

“Co-becoming is our conceptualization of a Bawaka Yolŋu ontology within which everything exists in a state of emergence and relationality. Not only are all beings – human, animal, plant, process, thing or affect – vital and sapient with their own knowledge and law, but their very being is constituted through relationships that are constantly re-generated” (456).¹⁰¹ - Bawaka Country

The intersection between Kinship and Situated to me communicates the importance of co-becoming, emergence, and mutual evolution. I use the word co-becoming from its use in Haraway (2016) where she provides it as a more accessible alternative to the term she likes, "sympoiesis", meaning "making-with."¹⁰² Co-becoming emphasizes the way all beings are constantly, mutually creating one another and even physically constituting one another (such as the bacteria and microbes in large mammal's digestive system) Diverse species and the humans (and other animals) they co-inhabit the world with produce the elements needed for each other's survival, whether oxygen levels, food or habitat ("shelter"). Expanding kin to the beings one interacts with regularly and intimately in their situated locale creates always varying, interdependent connections that evolve with the forces of those relationships, thereby

¹⁰¹ Country et al., "Co-Becoming Bawaka." (456)

¹⁰² Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*.

constituting the emerging future-now of each moment of reality. Co-becoming can be informed by concepts of **enlivening**, **impermanence** and **variability**, and **cross-scale interactions**.

Enlivening:

the process of animating, extending personhood, and liveliness to all entities in interwoven ecological communities: from nouns to verbs;¹⁰³ from objectification to enlivening.

Animating all other beings is a first step in seeing them as co-creative members of one's community and, thus, co-becoming together. In the case of water, da Cunha (2019) eloquently critiques the Western conception of the river as a static form: one definable by a drawn line that separates it from the land.¹⁰⁴ This builds out of the more fundamental view of water as only considered in its liquid flowing state rather than a pervasive "gradient of wetness" that expands, contracts, evaporates and re-precipitates. Da Cunha also highlights the importance of the linguistic differences between western translations and the more nuanced Hindi meanings. For instance, he notes the difference between Ganges and Ganga. The British word, Ganges, is a noun that translates to "a river" but the Hindi term, Ganga, meaning the flowing state of rain, possesses deeper meanings that include action and acknowledgement of changeable states (40).¹⁰⁵ In Anishinaabe and other indigenous American languages, about 70% of words are verbs compared to 30% in English (Kimmerer, 2013). Instead of saying 'there is the bay' (or worse a bay named after a Western conqueror), Anishinaabe says 'there is water being a bay'; as Kimmerer (2013) notes "a bay is a noun only if water is dead" (55).¹⁰⁶

¹⁰³ Till, *Architecture Depends*. (116)

¹⁰⁴ Da Cunha, *The Invention of Rivers: Alexander's Eye and Ganga's Descent*.

¹⁰⁵ Da Cunha. (40)

¹⁰⁶ Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. (53)

Nature is not a thing. It is certainly not a static thing. And it is not outside of or different than humans. Seeing the glass of the skyscraper's shell as blowing-sand-fired-into-a-glittering-sheet raises questions about its origins and future. Such a re-envisioning can dramatically shift Western ideas concerning 'resources' and 'static', (a)biotic beings.

This simple grammatical rearrangement questions much of Western ethics and practices. For instance, it can lead to questioning the entire idea of "waste" to see instead how "waste" is not an inherent condition but a result of poor, short-sighted design that sees value ending after its intended primary use.¹⁰⁷

Impermanence and Variability:

the ground on which we stand is not solid, not static, it is always co-becoming.

"Nature" or "*The environment*" is a human construct and simplification for those with a desire to comprehensively define their place/community. Each being is impermanent. Even the mountains and breezes are always changing and evolving, being composed and decomposed. Accordingly death is not inherently destructive, and use does not necessarily have to be extractive: the how, who, and why matters.¹⁰⁸ The field of eco-evolutionary dynamics has made recent contributions to these understandings with its examples of rapid evolutionary changes (phenotypic, and behavioral) in response to climate change, urbanization and other pressures.¹⁰⁹ Accordingly, ecological resilience theory posits that maintaining evolutionary potential, through diversity, autonomy, and redundancy is more important for continued ecological health and functioning than just focusing on biodiversity, environmental quality, or other measures that seek to maintain the current ecological state.¹¹⁰

¹⁰⁷ Liboiron, *Pollution Is Colonialism*.

¹⁰⁸ See entry point [E. Entry Point: SITUATED](#).

¹⁰⁹ Alberti, "Eco-Evolutionary Dynamics in an Urbanizing Planet."

¹¹⁰ Alberti, "Cities of the Anthropocene." (11)

Similarly, variability and dynamic change is the basis of our world. Anthropogenic climate change and other environmental disruptions are increasing the unpredictability of ecosystem functions including weather and extreme events (e.g., pollinators, precipitation, temperature, pests and diseases, desertification, etc.). The industrialized world is built on abstracting beings from their environment to create tradable commodities,¹¹¹ and then establishing supply chains that can reliably feed this system. Variability and unpredictability is antithetical to the control and stability needed for such industrialized mechanization. It also questions the idea of attempting to measure, quantify and control the future through the use of forecasting, or planning that permeates so many Western disciplines today. Such practices often lead to Malthusian tendencies of calculating carrying capacities and allocating resources deemed to be scarce among always growing human populations.

Alternatively, an acceptance of variability through increased diversity and flexibility can reconnect to relationships and the dynamic change that constitutes them. Examples of this can be seen in infrastructural approaches moving from “gray” engineering infrastructure to Blue-Green Infrastructure or Nature-Based Solutions.

Cross-Scale Interactions:

beings of different scales interact and impact one another in complex, dynamic ways that can be unpredictable, non-linear and are constantly engaged in co-becoming.

As noted by Levin (1992) “the problem of pattern and scale is the central problem in ecology”.¹¹² Cross-scale interactions impact temporal and spatial factors within ecological relationships.¹¹³ Within ecological resilience theory, cross-scale interactions highlight the ability

¹¹¹ As Harvey notes the market navigates a fine balance between making capital unique (monopoly) and tradeable (universal). Harvey, *Rebel Cities: From the Right to the City to the Urban Revolution*. (92)

¹¹² Levin, “The Problem of Pattern and Scale in Ecology.” (page 1943)

¹¹³ Gunderson and Holling, *Panarchy: Understanding Transformations in Human and Natural Systems*. Chapter 1.

of overlapping redundancy on different scales to create a robust community. Ecological resilience can increase when multiple species, operating on different scales, perform similar functions. Such functional redundancy could allow for smaller organisms to survive large disturbances and larger organisms to survive small-scale disruptions maintaining ecological functioning in either case.¹¹⁴

For example, loss of pollinators such as honeybees can lead to the collapse of orchards or other large-scale habitats. This is also an example of temporal cross-scale interactions as the death of the collapse of bee populations over the course of a few years could lead to a generational impact on tree propagation. Temporal cross-scale interactions could also include the impact of unseasonable temperature changes on the time scale of days, to increase deciduous tree stress and bud timing that impacts survival over the time scale of years. Notably it is clear that some of these interactions and effects are irreversible.¹¹⁵

Cross-scale interactions are also seen in social relations where social cultures and cohesion are built through individual relationships and practices and cycles of reciprocity operate on medium to long-timescales where individual moments of assistance or exchange are reciprocated sometimes years later or can be brief moments of support but enacted daily (delivering an elderly neighbor's mail to their door). Dynamic, ongoing relationships can evolve as needed to meet changing contexts and conditions that are always co-becoming.

E. Entry Point: SITUATED

relationships cannot be separated from their context.

¹¹⁴ Alberti, *Cities That Think like Planets: Complexity, Resilience and Innovation in Hybrid Ecosystems*. (89)

¹¹⁵ Although a focus on reversible/irreversible processes still upholds there being one good state/regime for an ecosystem to reside in.

“Different relations make different obligations, which engender different methods. This is not relativism, but a deep specificity based in place and in the relations to which we are accountable” - Max Liboiron (138)¹¹⁶

Relationships are emplaced: embedded in their locale and the beings that constitute it. They are situated. Such situated relationships provide insight about concepts of **material and food sovereignty** and **reciprocal flows** and land disruption. The “global” is a human conception that does not exist outside of the composite web of interdependent relationships situated in specific unique locations and beings.¹¹⁷

Material and Food Sovereignty:

the ability to know the bodies and biographies of those that feed and shelter you and be able to impact how they live and are impacted by relating with you; it is inherently situated.

Material sovereignty concerns the right and ability for the community to determine, where the “beings” (foods or materials) they use come from; how they are raised, cared for and propagated; how they are (re)moved from the place in their community (“extracted”); and, critically, how they are cared for during and at the end of their life/human partnership. (Food sovereignty is a more commonly used concept but it has a similar goal and can share this definition. Here, I speak primarily about material sovereignty but the beings discussed can as easily be food (for all species) as it can be building, cooking or clothing being-materials.)¹¹⁸ Kokai and Iles identify three key elements of material sovereignty to be: “participatory knowledge systems, which create multi-directional flows of knowledge and agency; the embedding of citizen voices into design processes; and building accountability systems” (1).¹¹⁹

¹¹⁶ Liboiron, *Pollution Is Colonialism*. (138)

¹¹⁷ Latour, *Down to Earth: Politics in the New Climatic Regime*.

¹¹⁸ Whyte, “Food Sovereignty, Justice and Indigenous Peoples.”

¹¹⁹ Kokai and Iles, “Materials Sovereignty.” (1)

This goes beyond life-cycle assessment as an accounting tool that sums negative impacts, to instill it as an ethic of connection, mutual respect and care. While community sovereignty and governance will be discussed more fully in the section, [S. Trust](#), material sovereignty is specifically placed in this section because, it is not only dependent on the community's locality, it traditionally has determined much of its character and aesthetics. Vernacular architecture celebrates local climate, materials and cultures in unique ways that are inseparable from people's relationships with one another and the rest of the community of their place.

A relational view of material sovereignty does not focus on the ability of the community to have material self-sufficiency so that it can be independent from others. This is nonsensical from a relational framing of the world as a manifestation of a web of interdependent interactions. Instead, relational material sovereignty displays the importance of communities being connected to the beings and processes that provide for their way of living; to know the biographies of each being and be able to ensure their siblings and neighbors are cared for throughout the process. Material sovereignty is thus the right to know the beings that are used to compose a structure, to store or carry water, to clothe people, or feed humans and others.

Reciprocal Flows:

flows of beings (“site resources”) are ongoing active relationships that vary spatially and temporally and are a continual, situated dialogue.

Focusing on situated relationships informs the perspective of regenerative flows in order to emphasize the need for personal connection within these cycles of rain, wind, sun or heat. While the [W. Reciprocity](#) section elaborates on the idea of *reciprocal materials*, reciprocal flows are important elements derived from the local context. The use of the word “reciprocal” materials/flows accept the ideas of regenerative materials (regrowable, compostable) and adds a dimension of relationality. It is not enough to use energy with a low carbon content or within the amount of energy that can be produced on site or within the community with solar

photovoltaic panels. This may create a relationship with the use phase of the solar panel's life but it does not connect to the full biography and the other communities impacted by that panel's removal from its home, its transport around the world, or its manufacturing or end-of-life (a story that repeats every 25 years and does not use regrowable or compostable (or even recyclable) materials). A relational framing extends beyond investigating the biography of the materials that facilitate harnessing a flow for its use in a community. It sees the flow—whether water, sun, wind—as a being itself. Thus, the focus is not on its use but on celebrating its inherent value and the way it contributes to one's life as it flows through the community. This does not hold human “needs” above the rights of those beings/flows but, with gratitude, accepts those beings' contributions and uplifts them by respecting and caring for them to continue a reciprocal relationship.¹²⁰

Situated, reciprocal flows also connect to the relevance of land disruption and how ways to evaluate it more holistically require situated perspectives. As noted in [Ch 1](#) in discussing the LCA analysis of the hypothetical water impacts of a lithium mine in the Atacama Desert, the locale and the beings there matter. Uplifting the inherent value of the web of relationships that compose each place shows that any land disruption will impact those relationships. Thus, the negative impacts of mining are not only defined by the number of species it kills or the reduction in human life-expectancy but equally on the disruption of the way species interact, reproduce, and migrate in the mine's area. This can begin to be informed by LCA and an analysis of the impacts on ecological integrity in that location. However, it also should consider seasonal needs and distant impacts such as changes to regional precipitation patterns or micro-climate and soil moisture and erosion. Additionally, it creates transparent connections where a community can evaluate unlikely but high-consequence events like the rupture of a dam that contains mining-polluted water or mud.

¹²⁰ This may be one way to approach a grass-roots approach to creating a dynamic and situated LCA procedure that can be implemented incrementally over time and continually adjusted.

SE. Entry Point: Feedback

the felt connections and impacts between beings; ways of communication about the health of relationships.

Feedback is located at the interweaving of Situated and Trust on my compass-web. Feedback is inherently based in the place and specific relationships that compose it, but feedback also mediates and provides insight about the behaviors and impacts of an individual or sub-group on the larger community. Feedback is an essential part of maintaining connections and understanding the feelings or states of the members in any relationship. Feedback seeks to create varied ways of listening and experiencing the voices and states of other beings and constellations. Many approaches within biology and ecology work to measure and track the states of individual beings, species or functional groups within an area, some of which were discussed in [Chapter 1. Feedback](#) on indicators. Feedback expands these environmental measurements adding social and cultural dimensions giving additional ways of listening/sensing. A relational framing emphasizes that important components of feedback include **connectivity** (the proximity and intimacy of connections), their ongoingness and **rates of change** and **shadow costs**.

Connectivity:

the details and arrangements of how beings physically move, interact and maintain relations.

The proximity and intimacy of connectivity points out that, in addition to who is connected, the entry point of feedback involves *how* they are connected. Intimacy deals with how often they interact and on what level of intensity: do they bump into one another often or do they interact extensively for critical periods, once-a-year or once-a-lifetime? Proximity asks where they interact and how that is spatially related to their other interactions: Do they travel

long distances to interact? How do they move and who do they need to work with along the way to do so (whether beings for nourishment, thirst, or supportive surfaces)? How do they communicate with diverse kin along the way and while at a distance? These questions can help provide feedback and understanding of the biographies of specific species and how their stories interweave to create connected ecologies.

Nature-Based Solutions that promote green connectivity is a good example, where a relational framing can add dimensions to how humans think about this form of infrastructure. Through this lens, green connectivity is more than just the amount of canopy cover, or length of a greenway; it also includes where it is located and who—the specific beings, along with their diversity and the networks of dynamic relations that constitute it. Feedback helps ensure all groups across ecological function and trophic level of the specific ecosystem are supported in having pathways for species to move between feeding, dwelling, reproductive and other sites. Asking who, inquires more than the length of connected habitat corridors to include other factors like path surfaces, barriers, and light and noise along those connectivity paths. Furthermore, the impacts of these factors usually vary over time (e.g., salamanders and newts are particularly impacted by impermeable surfaces such as pavement and concrete, in the spring when they wait for rains to move to vernal pools to reproduce).¹²¹ Making sure there are pathways or bridges for those specific sections of the ecology, across structurally diverse groups, so that each species is able to move within their community is important not just for ecological functioning and resilience but as mutual care and respect for species' right to self-determination and freedom of movement.¹²²

Considering permeable surfaces more carefully also informs connected understandings of feedback. Permeability can nourish experiential, bodily connections: your sole converses with

¹²¹ Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. "Collateral Damage"

¹²² Alberti, "Cities of the Anthropocene." (12)

the land, water, and microbes, leaving a print here, transferring mud there, indenting the moss and leaving with a wetter foot. Relational connectivity is about the creation of that dialogue, across species and language differences, communicating on the experiential level through mutual respect and care to, together, support continually emerging relations.

Permeability can also connect different beings and ecological functions. For instance, it enhances the interdependence between blue and green infrastructure strategies to not just focus on slowing, collecting, and infiltrating stormwater and runoff, but also providing structurally diverse plantings that can reduce urban heat island effects, improve soil health, and reduce urban wind tunnel effects. In this way permeable surfaces and diverse plantings can connect the water, sun, and wind with trees, humans, salamanders, and rabbits.

Rates of Change:

the interaction between changes and impacts that occur on varying timescales and speeds.

This section extends the discussion of generational thinking in the Kinship section to continue the discussion of the importance of feedback across varied rates of change and timescales.

From the perspective of ecological resilience theory, Gunderson and Holling (2002) talk about the importance of the interaction between slow and fast variables.¹²³ Slow variables are variables and changes that occur over long time-horizons and are often quite challenging for economists and ecologists to track. To me this emphasizes that feedback is not assumed to be comprehensive or a definitive knowing of other beings. Maintaining curiosity and openness to be

¹²³ Gunderson and Holling, *Panarchy: Understanding Transformations in Human and Natural Systems*.(207)

surprised by others is valuable and respects the emergent nature of relationships over time.

Working through relationships requires moving at the speed of trust.¹²⁴

Speed and planned expansion and growth are not only essential to capitalism but have become socially valued. In a “development”, profit is closely tied to timelines and rapidity of permitting, design and construction. For example, Baugruppen is a type of co-housing concept that arose in Germany. It seeks to eliminate the people who profit from the creation of housing (such as developers and builders) to instead center the community in the planning, development and construction process.¹²⁵ When the community leads the development they can design for their specific needs and visions not a predicted, future need and form. With the potential to reduce housing construction costs by 25-35%, paired with decreased costs due to the shared resources possible in collective living, this model can start to extend beyond just the provision of housing.¹²⁶ Reducing individual expenditures allows community members to question the role of a traditional 40-hour per week job, and how much they feel they need to work and earn in the monetary economy.¹²⁷ This additional self-directed time can be spent focused on promoting local food cultivation (for all species), material repair, artistic personal expression and other activities that strengthen the community. This is one way in which a community can approach degrowth by removing elements from the market to provide the needs they care about through direct connection to local materials, energies and labors.¹²⁸

¹²⁴ It is unclear where this phrase originated but it is something I heard in multiple different community-based initiatives and partnerships. Perhaps Stephen Covey’s (2006) work “The Speed of Trust” deserves credit.

¹²⁵ Figueira and Trevisan, “Baugruppen.” (1)

¹²⁶ Figueira and Trevisan. (2)

¹²⁷ There are many commentaries on work. What it is, means, does etc. Some examples include Graeber (2018) *Bullshit Jobs*, and Fleming (2016) *Lean Logic*: “Profession”.

¹²⁸ For an intro to degrowth see Hickel (2019) *Less is More*

Shadow Costs:

In addition to zero consumer discount rates, another economic strategy being utilized to add-in externalities not accounted for in the market, is the Environmental Price or shadow cost.¹²⁹ This uses a weighting process to combine all emission impacts from a LCA analysis into a single number that expresses the environmental cost monetarily per unit (often by mass) of a material. Considering the environmental impact of a product is essential for a market that attempts to represent and respect reality. But when attempted, this is a process that seems to raise more questions than it answers. First, there is LCA's challenge to address situated and dynamic relations (e.g., emissions from transport (such as CO₂ or particulate matter) have a greater impact on human health than those from factories because they are emitted lower in the atmosphere).¹³⁰ Furthermore, weighting and aggregating multiple impact categories into a single, or a few, values is chronically contentious in ecological analyses.¹³¹ Adding another layer of weighting to convert and combine LCA end-point indicators to a monetized value based on human's willingness-to-pay introduces more uncertainty, which, at times, may be able to account for regional differences in human payment preferences but makes consistent, transparent measures more challenging. As Bruyn et al. note of the Environmental Price Handbook:

“The formal treatment of uncertainty...shows variations to be very substantial — so substantial that use of environmental prices should in fact be discouraged in the first instance.... [but] it is a question of choosing the lesser evil” (13).¹³²

This leads their team to develop low, medium and high values to acknowledge the uncertainty and require users to consciously consider and address it in their situation. This user

¹²⁹ Bruyn et al., “Environmental Prices Handbook 2017: Methods and Numbers for Valuation of Environmental Impacts.”

¹³⁰ Bruyn et al. (15)

¹³¹ For instance, planetary boundaries specifically notes the inability to aggregate or tradeoff between different categories of limits as this does not reflect the interdependency of ecological relations. Rockström et al., “A Safe Operating Space for Humanity.”

¹³² Bruyn et al., “Environmental Prices Handbook 2017: Methods and Numbers for Valuation of Environmental Impacts.” (13)

consideration includes analyzing if environmental prices should be used for a given issue at all (14). While sometimes useful in today's monetized economically driven world, environmental prices are only one limited way of listening to and building in feedback regarding the impacts of a material. Alone they fall far short of creating truly relationally supportive ecologies.

S. Entry Point: TRUST

connected autonomy that supports the collective through personal expression.

How are you given agency to, simultaneously, care for others and yourself in communal spaces?

Trust is primarily concerned with the expression of an individual within its web of relations. There is no disconnected individualism. Connected personal autonomy supports the agency to act in ways that support the self, (including the other beings that compose it) and the beings on whom one's life depends. This entry point provides insight on **community sovereignty, responsibility and openness.**

Community Sovereignty:

the right and ability for all beings in the community to be heard, contribute to, and care for others and, thus, themselves.

Sovereignty denotes forms of local control over land, production, and decision-making processes by humans for the equitable benefit of all (or at least all those in a certain group). Considering ecological community sovereignty extends the right (and need) to participate to all species and members of that ecology and equally extends the benefits to be equitably shared amongst all.

This requires inclusivity that can monitor and respond to diverse voices of many different beings including future generations. This largely has to do with who's voice is at the table and

heard, and do those voices then have the ability (the power) to make changes agreed on by all. Directly-democratic, consensus-based decision making through citizen assemblies or other means is one example of such inclusive governance. This creates transparency; there are not professional representatives operating behind closed doors to make decisions for those they ostensibly represent. (European democracies were greatly informed by lessons learned from Indigenous groups and intellectuals, such as the Wendat chief Kandiaronk, but the lessons adopted tended to maintain European hierarchical governance and social and wealth inequality (including the preoccupation with and dominance of money), thus failing to implement the full impact of his and others' lessons and advocacy for consensus-based decision-making.)¹³³

Ways of listening to and communicating with other beings and species is integral not just to feedback, as discussed, but also to enable participating in communal negotiations and decisioning. This type of sovereignty creates connection and fosters well-being through meeting the distinct needs, and sharing the valuable visions, of each individual.

As examples, one of the central calls for the Extinction Rebellion movement is broad citizen assemblies to make decisions on national climate policies. A collective (though not fully consensus-based) example is seen in the Community Right to Build Order in Totnes, UK. There, over 4000 people participated (out of a town of 8000) and approved a referendum (86% approval) in the planning proposal for the redevelopment of a large brownfield site of an abandoned former creamery in town.¹³⁴ Their proposal included affordable, communally owned housing, makers-spaces, and restoration of the ecological pathways and connection to the nearby river.¹³⁵

¹³³ Graeber and Wengrow, *Dawn of Everything*. (53-56)

¹³⁴ "Community Right to Build: Totnes."

¹³⁵ "Community Right to Build: Totnes."

Responsibility:

an enactment of community welfare as an individual right and duty, providing for—and provided by—each being.

This form of collective trust opposes the capitalist scarcity mindset of allocating scarce resources by instead focusing on the abundance created by providing and caring for each other. The entry point on Abundance elaborates on this but it is mentioned here to highlight the opportunity that can arise from collective trust through celebrating mutual responsibility. Responsibility, in this light, is not the restriction of personal freedoms but the joy of contributing to the collective in personally fulfilling ways. This uplifts unique and distinctive contributions that emerge from each being's interests, skills, and positionality.

As an example, developing a sense of responsibility through Trust could reframe conceptions about noise and light pollution, particularly in urban areas. Trust enables individuals to understand their impact and provides each person with agency to take responsibility for reducing that impact on others in ways that support the self. Reconceiving urban light pollution can expand to create different ways of living. Melissa Ingaruca Moreno, a multispecies designer and researcher, explores this in her work *Endarkening*. Here she explored how a series of innovative experiments informed human's interactions with and empathy for moths, mycelium, and other beings through interactive role-playing and the use of bioluminescent mycelium lanterns to light spaces and paths at night.¹³⁶ When there is too much ambient light, the lanterns are not bright enough, but when there is less light pollution, they provide an other-worldly glow that does not negatively impact moths or bats and can guide humans, replacing artificial lights at night. Such speculative, empathic research has the ability to expand our ways of living to imagine futures where lighting by and for beings of the community can illuminate a walking path. But, its inability to replace headlights of vehicles (due to their speed) could lead humans to

¹³⁶ Moreno, "Endarken Futures I."

choose moving at slower more connected paces at night, in spaces that are made safe and inclusive for humans and others through intentional, communally-held ethics of care for all beings including those particularly sensitive to lights at night.

Openness:

putting trust in individuals and their desire to contribute to their community (and hence themselves) by giving them agency in forming and modifying their environment.

Many people have stressed the importance of openness in the ways people design and compose the city. Open designs facilitate individual agency, adaptable buildings, and gradual organismic change instead of preplanned and imposed designs of structures and areas. This can be seen in “open-building” movements in architecture where only the essential and more technical parts of the building are constructed by professionals and the rest is left for residents to complete in their own way and time. This trust through openness often interacts with other entry points such as reciprocal materials to empower local community members to be able modify these spaces with materials they know and have personal relations with. Many informative books have been written on this subject and I do not attempt to summarize or re-create their work here. However, open, dynamic forms and relations are an essential component to creating ecologically supportive communities.¹³⁷

SW. Entry Point: Participation

the act of contributing and sharing in the co-production of living (communally).

What spaces make you feel inspired to participate and contribute towards communal goals? Which beings are left out?

¹³⁷ A starting point: Sennett, *Building & Dwelling: Ethics for the City*; Awan, Schneider, and Till, *Spatial Agency: Other Ways Of Doing Architecture*; Habraken, *The Structure of Ordinary*; Kendall, “Open Building”; Brand, *How Buildings Learn*.

Participation is produced by interweaving the primary entry points of Trust and Reciprocity on my compass-web. While Trust speaks of the openness for individual's agency and expression, Participation deals with how these contributions are communally enacted through weaving, mixing, stacking, or digesting/metabolizing them in ways that create reciprocal, mutual care. **Contribution, cooperation, and sharing** are central perspectives of accessible, transparent celebratory participation.

Contribution:

the ability for individuals to contribute to creating, maintaining, and eventually remanufacturing (or composting), locally and through close relationships with other beings/communities.

The ability to participate includes the ability to repair a product when it breaks; or have agency by being involved in what something becomes, and how that newly fashioned item impacts others when its first life is over and it must be replaced or repurposed. Seeing and emphasizing this ability for individual participation impacts the materials used in designs as well as the designs themselves. It incentivizes simplicity, intuitive de-constructability (reversible not permanent connections), separable layers and components (fewer composites) and other aspects. Community repair cafes and material depots facilitate knowledge and material sharing.

Cooperation:

the way beings and communities work together or organize with other communities to achieve mutual goals in connected supportive ways.

Distinct from negotiation, cooperation speaks to collective agency: the ability of individuals and groups to come together and contribute to projects larger than themselves. This process emphasizes the need for communication of various forms and across time. This could range from immediate verbal or physical exchanges, to bulletin boards for tracking work, to

future communication through intuitive constructions or symbols that allow future beings to add-to, modify, or care for spaces.

Cooperation can also inform cross-community exchanges. As noted in the [Reciprocal Being-Materials](#) section, while being-materials that are derived from within the ecological community facilitate connected relationships and feedback over time, coordinated exchange between communities can meet needs in more diverse ways and can be mutually supportive when enacted through caring networks of shared kinship.

As examples, cosmologicalism utilizes global connections to exchange information openly in ways that allow local enactment such as democratized manufacturing through shared open-source designs (e.g., WikiHouse).¹³⁸ Bioregional economics emphasizes meeting individual needs predominately through exchange within the community's bioregion.¹³⁹ These initiatives work relational ways that support local participation and cooperation that can account for the biographies of the beings exchanged and critically evaluate which beings need to be transported (e.g., can the ideas/designs be transported but not the being-materials).

Sharing and Use:

a reciprocal and more communal way of living can create new opportunities and lifestyles that are currently not provided for in our privatized capitalist economy.

The full potential of sharing and making together is enacted through collective participation. The idea of a library economy expands this to envision a future where goods do not have to be owned individually but are shared within neighborhoods or smaller districts. This also facilitates sharing collective knowledge of maintenance and repair to extend the life of these goods.

¹³⁸ Schismenos, Niaros, and Lemos, "Cosmologicalism"; Civita and Auerbach, *Feeding Each Other*. (116)

¹³⁹ Cato, "The Bioregional Economy."

Book libraries are, clearly, already mainstream. Tool libraries, little-free-libraries, food-pantries, and even car- or bike-share systems are becoming increasingly common. Improving the repairability and local manufacturability of products and repair parts can support these initiatives. Enlarging these efforts, and changing mindsets to see them as standard, can reduce commodification and change the built fabric of our lives by reducing the size and isolation of manufacturing industries, the dominance of the department store, and even the size of homes, garages, and storage spaces.

Distribution of these various community libraries can develop in a grassroots fashion that can dynamically respond to local use and demand to increase or decrease the frequency or size of a certain type of library based on the local participants' habits. In a certain location, the community may evolve to be best supported by having a garden-tool library for every 20 people but a vehicle-library for every 100. Yet, this can vary organically for each unique place, culture, "urban" form and density. Such a library economy extends beyond the more effective use of goods. It builds relationships across generations and species as beings share, work and participate together.

W. Entry Point: RECIPROCITY

continual cycles where to give is to receive and to receive is to give. Reciprocity is based on mutual care, gratitude and respect.

What are ways to respect, show gratitude, care, and support for another being today and into the future?

How does one give back, providing thanks and care for others, in response to the care they give to you?

Reciprocity is an essential way of relating for ecologically supportive communities. Reciprocity is inherently built on non-transactional relationships. Such a view does not see

“resources” as objects to be extracted and used; they are gifts from the ecological community and thus are accepted with gratitude and a gift in return. This gift will never be the same—not an equal abstracted monetary payment—it is inherently unique, unequal and thus incomplete. This creates on-going interaction, a relationship. The gift is a product of the relationship(s) and is unique to the closeness of the parties involved, their frequency of interaction and other factors but, the quality of unequal on-going exchange is maintained.¹⁴⁰ There is an extensive body of work within anthropology discussing gift economies among historical and current groups, including its connection to debt, and social-cultural relationships for a certain group.¹⁴¹ Reciprocity passes along gifts to others, it lets them flow through the self to share them with neighbors. This perspective of reciprocity is informed by **gratitude, mutual care, and reciprocal being-materials.**

Gratitude:

the expression and act of appreciating reciprocity and the gifts of others.

Gratitude acknowledges that which is given but can never be returned, from the sky rivers’ delivery of moisture, to work of the decomposers to create soil to nourish our bodies. Practices like the Thanksgiving Address, practiced by many Indigenous communities, actively affirm gratitude for these relationships and contributors. It acknowledges that humans inherently take from others in order to nourish ourselves, and returning our bodies to the earth at the end of our life is a small gift in exchange. This form of relational reciprocity is not based on equal exchange value of the gifts but on the act of giving: to give is to receive, and to receive is to give. Stories, community celebrations and rituals can strengthen relationships in the present and across generations in ongoing reciprocity.

¹⁴⁰ Fleming, *Lean Logic*. “Reciprocity and Cooperation” (p 382-7). This connects to the [Cooperation:](#) section of participation discussed above.

¹⁴¹ For instance: Graeber, *Debt*; Sahlins, *Stone Age Economics*.

Mutual Care:

from a view of shared respect for all beings and the self—to support the lives of others and, thus, in turn care for the self.

This give and take is the logical outcome of the mutual respect of expanded kinship. Spaces that provide food or shelter for other beings (including humans) extend care freely to others and respect all beings' basic rights. Social and Solidarity Economies (SSE) use reciprocity to center social well-being and mutual care instead of profit. Corporation Jackson is one such example that is creating a solidarity economy through a network of worker-owned cooperatives, community land trusts, farms for community food sovereignty, local light-industrial production and other initiatives to create an interdependent socially and ecologically supportive community in Jackson, Mississippi.¹⁴²

Reciprocal Being-Materials:

are gifts received from the ecological community that can be graciously used for a time before being returned to the community or given to another member.

Reciprocal being-materials oppose property: they cannot be privatized or owned. They are gifts that flow from one's community. According to the principle of usufruct, reciprocal being-materials can be used for a time by an individual-group as long as it does not negatively impact others.¹⁴³ And when that purpose is fulfilled and that use is satisfied, they are returned back to the ecological community.

This differs from and builds on the concepts of both “renewable materials” and “regenerative materials”. The use of renewable materials can be beneficial to an ecology but it can also be extractive.¹⁴⁴ There is growing support and frequency of using the term

¹⁴² See <https://cooperationjackson.org> and Akuno, “Tales from the Frontlines.” (104-106)

¹⁴³ Bookchin, *The Ecology of Freedom: The Emergence and Dissolution of Hierarchy*. (42)

¹⁴⁴ Also often called “biogenic” or “biological” materials.

“regenerative” materials, emphasizing the need to align use to respect the time these beings take to grow—and the time the ecosystem takes to recover from methods of receipt (“extraction”). Clearly, this regeneration rate will fluctuate based on the methods used, timing of those methods (e.g., logging during the winter with snow cover can decrease vegetation damage), the ecology in question as well as other factors. The increased focus on aligning use rates with the process of growth that is implied with the term regenerative materials, is commendable but it does not necessarily create relational communities based in mutual reciprocal care for more than just the “product” being “used”.

Connected understandings of a specific ecological community are essential to understand how materials can be received from the locale in a reciprocal way.¹⁴⁵ Accordingly, material received from the ecological community could adapt to factors like seasonal precipitation, and surface and subsurface water flows, or species migration patterns, to adjust receipt to the time of year when impacts are acceptable or positive. This form of connection requires relationships among the users, producers and other beings to share multiple perspectives and understandings of these ecological conditions and how they can mutually support one another.

NW. Entry Point: Abundance

the prolific and self-propagating nourishment and fulfillment that comes from mutually supportive relationships, inverting a scarcity mindset.

“The true preserver of abundance is excellence.” – Wendell Berry¹⁴⁶

What spaces do you enjoy that support many different community uses and functions?

¹⁴⁵ Hence why [Reciprocal Flows](#) sits on the opposite side my compass-web under Situated.

¹⁴⁶ Berry, *The Unsettling of America: Culture & Agriculture*.

Abundance is located at the crossing of Reciprocity and Kinship in my compass-web. Abundance emerges from the exchange of gifts among multispecies kin. Abundance inverts the scarcity mindset of capitalism to instead uplift the overflowing capacity and quality that comes from celebrating **diversity** and **excellence**.¹⁴⁷

Diversity:

the abundance created from the interdependent interactions of a multitude of different beings, approaches, situations relating together.

Diversity values the unique set of relationships that constitute each being. Diversity uses distinction to create definition and meaning. This distinction brings beings together forming relationships—the opposite of separation which uses difference to create isolation and exclusion.¹⁴⁸ Promoting the excellence of each individual's unique passions and abilities can create more with less in innovative ways. It can promote reuse, create well-loved productions that reduce waste and extend lifespans, and lead to personal fulfillment that is a base for community happiness.

Having diverse communities within an ecology maintains ecological functioning and resilience in ways that create abundance. Considerations include genetic diversity (e.g., species richness and abundance), functional diversity, structural diversity and adaptive capacity. The Shannon index can measure species richness and evenness.¹⁴⁹ Functional diversity has to do with diverse species meeting different functional needs of an ecosystem, while structural diversity involves variation across the size and structure of species in a niche (e.g. diverse, intermixed canopy heights).¹⁵⁰ Evolutionary potential, or adaptive capacity, is an important

¹⁴⁷ Goodbun et al., *The Design of Scarcity*; Hickel, *Less Is More*; Moe, "Metabolic Rift, Gift, and Shift."

¹⁴⁸ Ferreira da Silva, "On Difference without Separability"; Cordova, *How It Is*.

¹⁴⁹ Konopiński, "Shannon Diversity Index."

¹⁵⁰ LaRue et al., "Structural Diversity as a Predictor of Ecosystem Function"; Laureto, Cianciaruso, and Samia, "Functional Diversity"; Boinot et al., "Hedgerows Are More Multifunctional in Preserved Bocage Landscapes."

consideration of how well species can adapt to changing environments and pressures such as urbanization.¹⁵¹ These metrics can be one way to communicate health and functioning of species groups and of the community as a whole. But they also relate to equitable distribution and, thus, can provide feedback to maintain and support abundant, varied communities that can respond dynamically to provide for one another.

An Example: In the process of dismantling the myth of the role that the rise of agriculture played on the development of hierarchical political systems and social inequality, Graeber and Wengrow (2021) discuss the diversity of different political (and corresponding social and built) arrangements of non-industrial societies. There are many examples of societies that would spend part of the year hunting and gathering (often from plants they helped cultivate and nourish to feed them when they passed through that area) and part of the year practicing agriculture in a single area. Some such groups had different political arrangements corresponding to these changes alternating between egalitarian governance and larger hierarchical structures in which positions rotated (including police so enforcers one year would be policed the next).¹⁵²

Flexibility:

abundance as a product of multipurpose spaces and varied uses, enacted in dynamic and evolving ways.

Ideas of the sharing economy, elaborated in the [SW. Participation](#) section, create abundance by extending use and appreciation collectively thus, more adroitly adapting to needs. Abundant flexibility is more than just multifunctionality. It supports spaces and constructions that not only serve multiple functions, but are reconfigurable and adaptable to continue to meet the needs of many beings in many different ways today and into the future.

¹⁵¹ Alberti, "Eco-Evolutionary Dynamics in an Urbanizing Planet."

¹⁵² Graeber and Wengrow, *Dawn of Everything*. (503)

Abundance through flexibility can also be seen through negation: the avoidance of excessive use or products through flexibility. Induced demand is a concept that has come into popular consciousness through the failure of traffic engineering and planners to account for human behavior changes. Widening a highway to alleviate traffic has shown to increase traffic by an average of 10% in the short term and 20% in the long term (and can be twice that in some cases, especially during rush hour).¹⁵³ Applied more broadly, it has the potential to explain significant portions of capitalist behavior and is a thought pathway that can lead to many questions and different ways of seeing our world and the countless commodities that fill it. Flexibility that is dynamic and can stretch or compress to meet the needs of a moment can create abundance through reduced demand. This is not a collective tightening of your belt to get by; this is collective carnival, conviviality, and prolific, mutual nourishment.¹⁵⁴

¹⁵³ Goodwin, "Empirical Evidence on Induced Traffic." (35)

¹⁵⁴ Fleming, *Lean Logic*. "Carnival" (30).

Chapter 3. Gestures Towards A Relational Practice

Figure 15: Growing towards what?



* * *

*The sidewalk at the city's suburban edge ended 40 minutes ago as the twilight faded to dark. The backpacking pack, guitar and I keep plodding North along the unyielding black ribbon of highway, dodging into the irrigation ditch each time a set of blazing headlights thunders by leaving me shaking with the leaves. The ensuing vacuum of silence and darkness is disorienting until my eyes readjust to the **moonlight** and my footsteps start beating again. A rough track opens to the left. The bushes, winning the war now forgotten by the 4-wheeled ones, signal I*

may have arrived. I enter their embrace uncertainly, my feet relaxing on the mossy pebbles. A rectangular wooden sign remnant, its shawl of vines, and its neon flecks of spray-painted residue build my confidence as I probe deeper into the heavily treed tunnel. Stepping around the remnants of a tire pyre blockade I see a tortured shack looking like pick-up sticks, a residual form that only a bulldozer can make. Knowing I have made it and am within the ZAD I put on my layers, unroll my sleep sack, and nestle into a grassy corner of an old farm field, the head-high blackberry vines marking the moon's passage as I shiver my way through the night, wishing for more than the bag of dumpster potato chips in my belly as a heat source. (Note: Sunday night in France is not an easy place to purchase nourishment.)

*Thankful for the morning light's permission to pack up and start walking again, the eeriness of the night before is now little more than a distant memory in the swirling pre-dawn finch-chatter. The lush promises of sparkling dew on untamed grass lighten my steps as I celebrate the warmth of the morning sun with the velvet-eared lapins along the hedgerows' edges. I begin to pass by small residential clusters between the quilted patchwork of the fields and forest. Old farm **homes** built of local stone, stacked and limed together decades ago, are surrounded by cottages, gardens, yurts, gardens, tree-houses, and gardens, sometimes with a few cars stationed together to one side. As the communes become more frequent, I find pavement again and trace it to the West and the center of the area. Through the trees I see the central landmark I have been searching for, le phare ("the lighthouse"). I make my way toward it, traversing the buffeted shoulder of another vehicular artery, the noise of each car a shock compared to the morning's tranquility.*

*Le phare grows in my eyes, reminiscent of the water tower near my childhood home on its spindly truss legs. It lives on the spot where the planned airport control tower was to reside. It is the physical landing place. The public face of a **collective**, it is a community meeting space, a community book library and more. With only the luck that comes from an unscheduled, trans-continental gamble, the woman who gave a presentation to a class I was in two years before is*

home and welcomes me without question. I get oriented via an ornate chalkboard map that commands one side of the meeting room. The hand drawn outlines, stars, and symbols bring to life the past and current **collectives**; the areas of struggle; important community buildings and gardens; groves of châtaigniers (“chestnut trees”); the wetlands, ponds, and stream headwaters of the three different watersheds the area feeds; and the **network** of walking paths, forest trails and roads. The tri-tone chalk markings show more than locations of objects; they tell an ongoing story of people and other beings struggling, and succeeding, to live together in beautiful and mutually supportive ways.

* * *

Methodology to Develop “Gestures”

The development of the following “gestures” are largely inspired by Christopher Alexander, et al. (1977) *A Pattern Language* as a way to demonstrate concepts from a particular way of understanding—in their case about what makes timeless/alive/egoless buildings and cities. To do so Alexander et al., identify spatial patterns that can be assembled together to create a language for design. The authors stress that these patterns (the words), and the collection of the patterns they present in the book (a vocabulary), are just one version: one language for design (xvi).¹⁵⁵

Alexander et al., emphasize three fundamental features of these patterns: a) their proposed solution “gives the essential field of relationships needed to solve the problem” so it can be executed in countless ways (xiii.), b) like other forms of language, these patterns and their use and implementation is constantly evolving, and c) the patterns are inseparably linked and interconnected: only through the use of them together to compose whole sentences can one approach timeless ways of building.¹⁵⁶

¹⁵⁵ Alexander, *A Pattern Language*. (xvi)

¹⁵⁶ Alexander. (xiii)

These tenets directly align with the efforts of this work to support ecological communities. In this second part of my work, I outline (similar to Alexander et al.'s "patterns") "gestures" towards beautiful ways of ecological living. I use the term *gesture* because it highlights that it is a reciprocal action requiring multiple parties to make and interpret it, and for its use (as in 'gesture drawing") in which it is a partial, simplified indication that shares something about the heart of the concept being conveyed. Thus, while they are not deterministic, comprehensively definable, universal or exhaustive, exploring some attributes of each gesture and the ways they might be collected together, can inform nourishing more integrated, holistic, beautiful ways of living. To unpack¹⁵⁷ each gesture, I use selected entry points from my *relational framing* of Chapter 2 to show how they can be seen in anarchist or other anti-capitalist communities today and in the past and can inform these, as well as current capitalist communities, in transitioning towards ecologically supportive, collective futures.

The gestures I identify are products of my studies of varied aspects of "sustainability" in architecture and urban design over the past two years: physical experiences while traveling, literary experiences through books and articles, and personal experiences through the technology of story and conversation with the other beings I have interacted with. Without trying to be all-encompassing or prescriptive, I have arranged these insights into some key gestures that inform specific examples I have experienced repeatedly in various spatial forms and contexts. When viewed through concepts of a relational framing, they open new insights into steps communities can take to create alternative, non-profit based forms of social organization that are more holistic and supportive of dynamic ecological communities.

¹⁵⁷ Used in the sense of Le Guin's, *The Carrier Bag Theory of Fiction* of accumulated stories we carry with us to interpret the world.

Structure

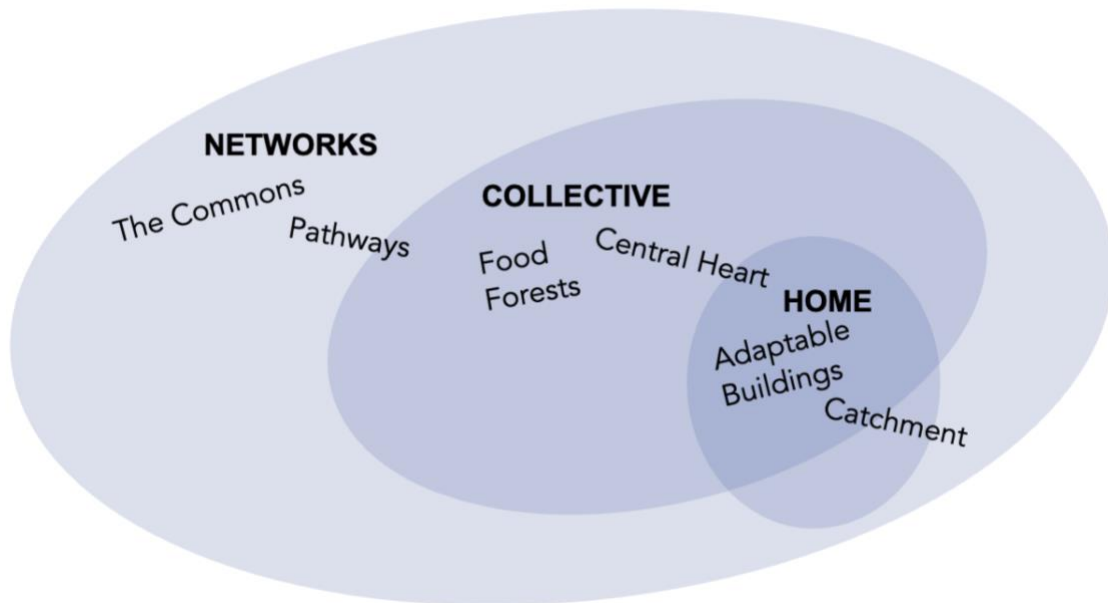
Alexander et al. (1977) define patterns as “problems” that occur repeatedly in our environment.¹⁵⁸ They note that these were derived from their personal experiences in building and planning work over the course of several years. The patterns are presented in a consistent format—organized roughly by scale and within thematic groups. Each pattern is explained in the following way: a) shows an image representative of the pattern, b) orients how the pattern connects to larger patterns, c) provides a summary sentence and then a more complete explanation of the problem including a diagram or sketch, d) provides a summary of the solution for the problem (presented in a form that can be executed in countless different ways for each context) and e) lists how the pattern connects to other related smaller patterns. (See pages x-xvi). Beyond this structure they also identify to what extent the solution to a pattern holds true for all instances of its problem.

Without being tied to an overly restrictive format, I take inspiration from Alexander et al.’s goals and basic structure. But first, I define patterns differently. I do not view patterns as *problems* seen repeatedly in our environments. Instead, I present *gestures*. I principally see these gestures as *repeated (spatial) arrangements of relationships* that nourish all members of the relationship and provide agency for them to support others.

In this work, I investigate a total of six gestures composed within three categories. While these themes overlap and can each be seen on many different scales, they are organized into the categories of networks, collective, and home (Fig. 16).

¹⁵⁸ Alexander, *A Pattern Language*. (x)

Figure 16: The structure of the gestures I unpack in this chapter “organized” under their three overlapping categories.



As an exploratory foray, these gestures demonstrate some ways to implement the entry points from my proposed relational framing so others can continue this work in their own context. As these gestures are not novel, I spend little time describing them. The primary analysis instead unpacks each gesture using a few particularly informative entry points from my relational framing that demonstrate how, overlapping these frames can provide new insights about the gesture and its implementation. To do this, I use personal experiences, literary and physical, and commentary using supporting images or diagrams where applicable. Finally, each theme is then explored through a narrative vignette that uses the technology of story to share, creating an experiential understanding for the reader that aims to create a less definitive or object-oriented understanding than often created by visual images or graphic representations.¹⁵⁹

While Chapter 3 will unpack each gesture independently, they often overlap and can be implemented together. Figure 17 shows how the gestures I present can transform current

¹⁵⁹ For example, think of the let down when you go to the movies to see the enactment of a book and everyone’s imagination of the literary world is eradicated by the visuals of the actors and special effects.

physical and social forms and infrastructures and combine to move towards a different paradigm of spaces and ways of living.

*Figure 17: An overview, using the gestures I unpack in this chapter, of some practical ways relational views can transform current physical and social forms and infrastructures (reading across each row as how the gesture can move **from** a situation common today, **towards** a different way of being).*

| | Gesture | From | Towards |
|------------|---------------------|-----------------------------------|---|
| NETWORKS | Pathways | Paved, Gridded Streets | Diverse, Permeable Contours |
| | The Commons | Individual Commodified Parcels | Community Stewardship |
| COLLECTIVE | Central Heart | Single Private Use | Shared Gathering and Conversing |
| | Food Forests | Segregated Industrial Farming | Diverse Ecological Exchanges |
| HOME | Adaptable Buildings | Static, Set lifespan, Single-use | Evolving, re-affirmed, flexible structures and components |
| | Catchment | Allocation, Net-zero, Use-focused | Continual gifts of mutual exchange; Love of water |

3a. Theme 1: Networks

The theme of Networks is inherently trans-scalar but concerns the physical connections between spaces and beings; they are the elements that link spaces together. Networks are inherently communal entities that are shared by all making them fluid and inseparable from the lives of the beings in and passing through the area.

* * *

The vociferous social convention of barn swallows, well underway by sunrise, welcomes me to the day as the light spreads through the open window space. A simple opening from the barn's second story sleeping floor, it has wooden shutters on simple cast-iron hinges. There is no glass. (My surprise at this turns to revelation as I note how refreshing it is to awake with my companions—the breeze, the humidity, the birds and more—instead of being separated and sealed off completely through our common glass enclosures.) The upstairs seems to inhale with

the morning through the open windows and the thin blades of light that outline the underside of the slate shakes.

After a simple breakfast of porridge from the communal food shelf, I begin to walk. The weekly community bulletin says the cannery is welcoming help, which I come to learn is creating an irresistible pumpkin-ginger butter. The cannery is on the far side of the community. I am staying in one of the two largest communal guest areas which is attached to one of the centrally located communes. While there are two main North/South arterial roads that cut through the heart of the community, the East/West transit situation is a different story. An overgrown path with two somewhat visible "tire tracks" penetrates into a dense wall of trees, bushes, brambles and grasses. Almost immediately the parallel dirt paths begin to hiccup and bump, then diverge around trees, mud holes, and pools of water. I realize it was a mistake to consider them tire tracks as it seems decades have passed since parallel wheels traversed them. As the rhythm of the walk establishes itself, a fairly clear way emerges linking the two paths into a single sinuous line that soon feels comfortable, if still engaging. This line cuts left, right, continues on then jogs back right and left tracing, I learn later, the edge of the small agricultural fields that are now more like stewarded meadows. The fields are hard to see through the thick density of the hedgerow-forests that engulf the path in almost continual shade, but the walk slowly makes their contours felt.

At times, I come across a more traditional house or a bright wooden sign painted by hand pointing toward a commune. As I settle into the rhythm of the forest, I begin to notice the abundance of chestnut trees. Their spiky mahogany jewels carpeting their feet, they exuberantly support all passersby in a gesture of communal joy. Over the ensuing days, as I begin and end my excursions to the Cannery along this 45-minute moving meditation, I learn more about the patchwork of fields that surround the hedgerow paths. Small historical farms from before the airport proposals in the '60s alternate seemingly at random with the anarchist common areas tended, used, or left to re-wild based on the unique persuasion of the nearest communes. I

learn these dense hedgerows are unique, a cherished friend to the community, and the result of a paradox: this anarchist community emerged in opposition to the airport proposals for this agricultural wetland area. Yet, if those proposals had not been perpetually revived, the municipality would have pushed this area to abolish many of these hedgerows to make the oversized industrial fields required by the mid-century funding from the Marshall Plan. This is the type of paradox that comes to define this area in my mind. While externally viewed by many as a dream anarchist community on which to model the future, in person, it is a community of diverse people, plants and other beings, striving to live in close relations with the land and others in ways that feel good to them. Besides this, there seems to be no unification under a single approach, mandate, or organizing structure. Shared “work”/mutual aid is welcomed. Food and lodging is shared. But critically, I felt a need to respect the potential differences of each commune and did not extrapolate or assume from one experience on to the next: each commune found its own way, with its own openness, its own positionality (and interactions with external monetary systems), its own focus and, principally, its own spirit.¹⁶⁰

Gesture 1. Wild Walks:

are the pathways that connect spaces—the areas we walk where lives are joined together—and are a foundational element of all communities.

As an element, paths extend beyond the surface for moving to also include the transitional spaces along their sides. For convenience, I will use “path” to refer to that surface for moving, and “edges” to refer to the gradient of transition along their sides. Together, I will call these “walks”. Regardless of the form these walks take, or the setting they are in/serve, they are a key element to building relationships that provide ecologically-beneficial spaces through functional connectivity. The specific function of these walks vary based on many factors, such

¹⁶⁰ To learn more about this ZAD see the excellent and inspiring work by Fremeaux and Jordan, *We Are 'Nature' Defending Itself: Entangling Art, Activism and Autonomous Zones*.

as the scale (the width, length, canopy height and structural diversity), the surface treatment, the surrounding habitats, etc. Applying a relational framing can center who (which species) these walks support, in what ways, and additionally, how—as that changes over time—the needs of the ecological community can continue to be met. Specifically, three primary entry points that can inform a relational reframing of the gesture of Wild Walks are: Permeable Surfaces; Dense Diversity; and Concise Connectivity. These are three frames/perspectives I find particularly useful but they are not the only relevant ones and they link to other entry points as these viewings are expanded.

Entry Point 1. Reciprocity: Permeability

Permeability for Wild Walks is about flow. Focusing on piercing boundaries, it is a balance between openness and resistance: the ability to accept, hold and let pass through.¹⁶¹ It can be informed by leaning into a water-first view of the world that sees space (land and air) as “gradients of wetness”.¹⁶² Beginning with wetness’ relationships, elements of permeability emerge, including functional components and dynamic change that allow for dialogue among beings.

Important functional elements of permeable surfaces include infiltration and runoff (ability to absorb and flow) and functional impacts such as those on water toxicity based on how pollutants collect and interact with the ground and water movement. Whether for wetness or other beings (like the nutrient and communication exchange within mycorrhizal networks), the physical and functional elements (e.g., compaction and soil health) impact the relationships and ability among beings to connect. Thus, these functional elements of permeability clearly do not exist as isolated fixed states but are part of interdependent exchanges among beings and communities.

¹⁶¹ For conceptual ease, I combine geological definitions of porosity (storage ability) with permeability (ease of flow) under this single category.

¹⁶² Da Cunha, *The Invention of Rivers: Alexander’s Eye and Ganga’s Descent*.

Dynamic change is essential to permeability. Flows are inherently processes: they cannot be separated from time. They continually change. Wild Walks embrace this dynamism by enhancing the continual variation and feedback of the bodily experiences with these pathways. Concrete treats the soil as a predictable, controlled, unliving substrate. When permeable, the woodchips, pine duff, dirt or grass, can change and react to build relationships with the mist, drumming raindrops, growing mosses, burrowing earthworms, probing crow beaks and human soles.

While permeable surfaces can reduce the life cycle energy, carbon, and materials used to create a path, that is not what a relational frame focuses on. Centering the relationships—and the lives that unfold around those overlapping dialogues—sees these ecological benefits as some of the ways Wild Walks can give care to and build connection with the broader ecological community one is a part of.

An Example:

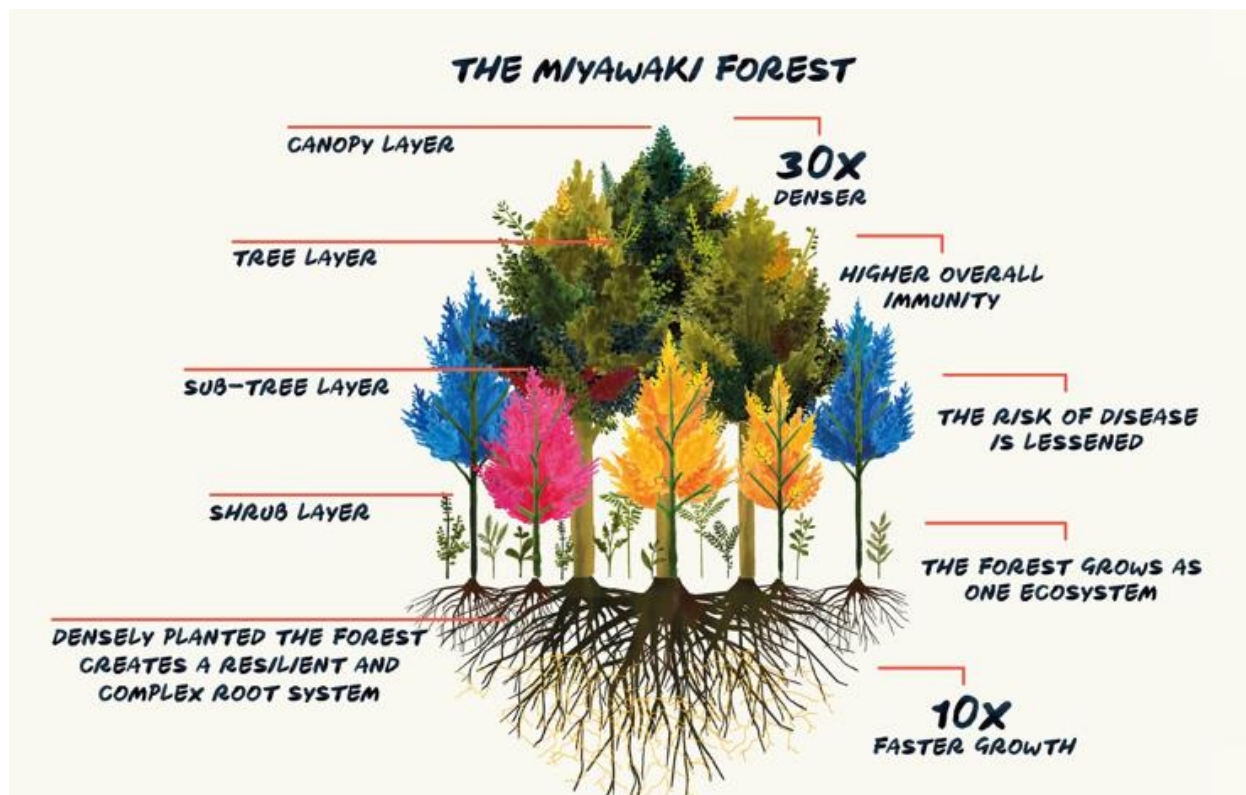
A wild walk in an agricultural setting can be seen in the humble hedgerow path. In their most useful form, hedgerows line fields with beings of many heights and character. They support the field's life and the lives of the hedgerow residents including humans who often place paths within or beside them. Especially older denser hedgerows, such as the *bocage* networks in France, have been shown to increase ecological support. These networks are wider, have higher-density plantings, and occur more frequently in the landscape than the post-1960 more industrial iterations. This type of dense planting has been shown to be effective in urban settings in mini-forests and parks using the Miyawaki method of dense native plantings using much closer spacing than industrial agricultural and conservation practices recommend.¹⁶³

Combining these ideas shows that existing city street grid networks could be renovated into similar dense, diverse hedgerows if streets are narrowed and de-paved to allow connected

¹⁶³ Schirone, Salis, and Vessella, "Effectiveness of the Miyawaki Method in Mediterranean Forest Restoration Programs"; Daou, Saliba, and Kallab, "A Review of the Miyawaki Method."

dense plantings (expanded in next section). Such green-blue infrastructure completely transforms the city's ecological functioning, providing stormwater detention and filtration, shade and infiltration, reducing extreme heat impacts and creating extensive connected habitats for healthy carbon and nutrient rich soils. However, as Maller (2020) notes, implementing these types of Nature Based Solutions (NBS) through a relational, multispecies approach is essential and can center and support all beings by asking questions such as: "Who and what is already in this place? Who and what else should be in this place? And, who else and what else in this place should benefit from this project?" (6).¹⁶⁴ This allows new forms of connection and care that can better inform ecologically supportive communities.

Figure 18: Diagram of the main features of a Miyawaki forest.¹⁶⁵



¹⁶⁴ Maller, "Re-Orienting Nature-Based Solutions with More-than-Human Thinking."

¹⁶⁵ Godfrey-Faussett, "Why We Use the Miyawaki Method | SUGi."

Entry Point 2. Abundance: Dense Diversity

Abundance is created through diverse pathways of **several types** that have **functional edges**, and are locally **repairable**. Thus, they maintain connection to and integrity of the ecological community between humans and others forming an abundance of quality relationships.

Functional edges apply to the transitional areas where a path turns into not path: its edges to the right and left but also above and beneath. The gradients that transition between different habitats/ecotones are a mecca for biodiversity. Biologists and ecologists have myriad ways to talk about diversity but most relevant to wild walks are: genetic diversity, structural diversity, and functional diversity. In brief, this deals with the number and different types of species present; the size of their gene pools (coupled to connectivity); canopy height, density, and complexity (e.g., species at all heights); and multiple species that carry out each ecosystem function (across scale/trophic group).¹⁶⁶ Focusing on the relationships among beings and groups of beings can reintegrate these conceptual definitions to respect the nuance of the overlapping, interdependent, evolving nature of their connections.

Several types of different paths with various widths, surface types, and for different species, are important. Humans tend to think of pathways as walking surfaces, but Wild Walks (especially for other species) can include movement paths through water, air and soil. Walks tend to get wider and harder/more permanent as use increases. However, context can impact this including soil type, precipitation amounts, timing and intensity, and cultural norms (e.g., around personal space and movement patterns such as single-file vs. abreast). Different species in different spaces have walks that support them and maintaining rich (diverse) habitat along all of these networks is important.

¹⁶⁶ LaRue et al., “Structural Diversity as a Predictor of Ecosystem Function”; Laureto, Cianciaruso, and Samia, “Functional Diversity.”

Repairability is a key feature of diverse walks, as are the related ideas of regeneration rate, modularity and impermanence. Wild Walks are designed and built so they can be repaired with local labor (energies) and bodies (“resources”). Having modular elements (cobblestones or pavers vs. cast-in-place concrete) can assist in repairability but soft materials like dirt or woodchips that can be remolded are even better and they also have a tendency to remold you—your dusted palms, fingernails, knees, and nostrils—in the process. Furthermore, Wild Walks are not assumed to have a long lifespan or be permanent. Instead, they empower a community to maintain and reaffirm them over time, choosing to use long-lasting materials like stone only when it is a continually valued community priority expressed over generational care.

Relationality informs the need to have non-reductionist or linear views of these attributes. This identifies the fact that more diversity is not endlessly better: it can lead to over-specialization where damage to one species more readily cascades to impact others.¹⁶⁷ Focusing on abundance of quality, not quantity, highlights the balance between the individual and the collective. Path surface, or structure, is not just an object, it is a relationship with the feet, scales or wings of the community members that use it. Diverse Wild Walks facilitate many community members of different types (human and more) to continually shape and co-create movement corridors through mutually supportive relationships.

An Example:

As noted, Wild walks are for more than just humans, they create worlds. Harie is a city in Japan that has become widely known, especially among landscape architects, for its relationships with water and other beings through *Kabata* (Fig. 19). In use for over three centuries, *Kabata* are indoor or outdoor pools, and connecting streams linking houses, where local spring water flows into a clay pot which overflows into the pool housing a few more family-

¹⁶⁷ Related to the idea of redundant diversity. An interesting different take: an XKCD cartoon of Haraway’s work “Bee Orchid.” <https://xkcd.com/1259/>

members (in the form of carp).¹⁶⁸ The water is used for drinking, cooking, washing and, for one community member, even making his signature tofu.¹⁶⁹ The carp keep the bottom of the pools clean to pass the water into open steam channels and then onward to the next house, cleanly and respectfully. They define the character and built forms of the entire town.

Figure 19: Kabata in Harie, Japan, where water, cabbage, woman, carp and moss commune and co-create living homes together.¹⁷⁰



Kabata provide so much more to people than just water. Some consider them the most important room in, and pathway to, the home. They connect humans with the mountain springs. They welcome carp as family. They create a culture of sharing, trust, and responsibility between human neighbors and with other beings. They connect to past generations and create a constantly flowing ethic of care that supports the future.

¹⁶⁸ From NHK Japan, Fujiki's *Through the Kitchen Window*.

¹⁶⁹ Kametani, "The 'KABATA', a System of Unique Water Utility Spaces in Japan."

¹⁷⁰ Fujiki's *Through the Kitchen Window*.

Entry Point 3. Feedback: Concise Connectivity

Concise connectivity highlights how Wild Walks facilitate interaction and close feedback within a community. It concerns how relationships (activities) are arranged spatially and the exchanges between areas and beings, identifying **proximity** and **encounter** as key considerations.

Proximity concerns both the distance between elements and the adjacency of how elements are arranged. This relates to the size of the element, the frequency of use, and cultural expectations around convenience and speed (a relationship with time). Functions that are needed more frequently should be closer together and occur more often in the spatial fabric. Urban planning work on walkability and the 5- or 15-minute city in Paris, Barcelona, and many other cities reflects the recognition of the need for pedestrian-based close proximity of elements (expanded below).

Encounter is about interactions—contact and exchange—that create new ways of seeing and respecting with empathy.¹⁷¹ Contact relates to who is interacting when, and includes planned and unplanned interactions. For humans, pathways that operate on a human-speed facilitate meeting others. Meetings—bumping into one another—are necessary for exchange and allow the possibility of encounter.¹⁷² Encounter is based in a genuine sharing of care and empathy: each sharing a part of themselves and uplifting their mutuality. A moment of intimacy, encounter does not create understanding, (you cannot circumscribe and define the “other” based on this moment) but is the basis for respect and feedback. Encounter sanctifies the small, frequent feedback loops and interactions, the meetings in a shaded glen or a breezy promontory, that are essential for connected ecological communities.¹⁷³

¹⁷¹ Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*.

¹⁷² Fleming, *Lean Logic*. “Encounter”

¹⁷³ Fleming. “Systems Thinking”

In urban spaces concise connectivity has been recognized and promoted through designs that support walkability such as the 15-minute city plans where all primary needs can be reached by all residents within a 15-minute walkshed (less than 1km radius). Acknowledging the value of people interacting at a slower pace face-to-face, many cities have created pedestrian-only streets often in their downtown districts and designs of car-free mixed-use residential developments are becoming increasingly common in Copenhagen and elsewhere (e.g., proposals for Nyhavn and Jernbanebyen).¹⁷⁴

Figure 20: Sankt Kjelds Plads in Copenhagen—a magnificent roundabout redesign by SLA has turned this area into a neighborhood hub adjoining the adjacent large organic roof-top garden, ØsterGRO, with cafes, a grocer, restaurants, a hair salon, and residential apartments.



¹⁷⁴ Cobe, “Jernbanebyen: A Creative, Livable City District.”

Gesture 2. The Commons:

the base fabric of our lives, a vast web, continually being re-created and nourished through the relationships that compose it.

I use the commons in the sense of “common pool resources” that apply to communally shared regions and beings (“resources/materials”). While conventionally used to refer to shared pastures, forest, fishery waters, etc., I expand these conceptions to all that creates the common base stage on which the lives of all beings (inter)act. The gesture of the commons, and its revival, is reliant on the entry points of **kinship** through communal stewardship, the **trust** that enables community sovereignty, and the **situatedness** that values the full impacts of land disruption.

Entry Point 1. Kinship: Stewardship

[Stewardship](#) is principally about maintaining care over time for ongoing flourishing for extended networks of kin among humans and their ecological community. It is an ongoing process. A relational view of stewardship highlights **generational time**, and the reinforcing of **enlivened** cultures of connection as key defining elements for organizing the relationships that sustain the commons.

A view of **generational time** applied to stewardship of the commons primarily concerns caring for the ecological community across several generations. As discussed in Ch. 2, this is important for continued expressions of care but, within the frame of the commons, it promotes a rootedness in place that allows for expanded kinships across time (and species). However, shorter-time scales are also important such as the ability to predictably enjoy the outcome of one’s communal efforts, whether through shared song or harvests. Seeing generational time from the perspective of many different species creates overlapping perspectives that support short and long-timescales ranging from sage grouse to bristlecone pine lifecycles or in non-

linear “generations” such as the ability for mycelial networks or eusocial organisms like honeybees to question the idea of a definable lifespan all together.

Particularly within The Commons, enacting perspectives of enlivening towards all beings that comprise our worlds breaks down boundaries between scales or “individuals” and furthermore can create living cultures of connection. By sharing experiences, values, care and dialogue with these other animate beings, humans can become part of their networks for kin and vice versa. This transcends views of maintaining the supply of certain beings and concepts such as “resources” or “ecosystem services” are seen as products of a transactional anthropocentric worldview. Instead, managing good relations through continual dialogue allows for respectful, adaptable enactments of mutual care.

Stewardship is an ongoing exchange of care. It is inherently situated. It eradicates *possession* of land and hence accumulation: it does not presume inheritance without continued care. It is not an object or completed state but a process that allows for the co-emergence of living relations. Stewardship requires commitment, time interacting with specific beings, building interdependencies, collecting experiences, sharing ways of knowing, that are only ever one momentary window into the undefinable and complex nexus of relationships that compose each interaction.

An Example:

In India, the Kurba are nomadic shepherds that are valued members of many communities. They¹⁷⁵ graze in the mountains, transporting nutrients through their feces to the valleys and the farms they pass through. Farmers desire and request for their fields to be grazed by the sheep for a few days to reciprocally exchange food to the sheep for nutrients from them. This herding tradition is seasonal. Often herders raise food or have other village-based endeavors for part of the year (mainly to support themselves and their sheep) and then spend

¹⁷⁵ Primarily the sheep but also the shepherds to some extent as they do form something of a single organism.

part of the year walking vast distances with their four-legged families. The fact their home moves does not diminish the intricate ties and knowledge across years, with vast bodies of land and countless beings (from the sun and rains, to the grasses, shrubs, sheep, microbes, humans and others). Here cultures and traditions interact to share and co-produce scientific, religious, and social forms of knowledge that continue dialogue and co-created care across generations.¹⁷⁶

Entry Point 2. Trust: Community Governance

In the Commons, Trust is enacted through community multispecies governance.¹⁷⁷ This requires bottom-up organization structures that inclusively prioritize **who** is making decisions (and for whom), **how** agreements are upheld and modified, and processes for understanding and **tracking** feedback over time. The capacity for community self-organization and trust is critical to create this inclusion and trusting accountability.

Inclusion speaks to who is involved in the process of making decisions. This includes which voices are heard, and how voices that aren't present are considered, be those of future generations or nonhumans that speak in different ways. The process of hearing can take many forms: measurements of environmental health (water/air/soil quality, biological integrity, etc.); rituals that may use observation and sharing of abundance; making a seasonal journey; or sharing stories that relate with others across time. For many indigenous peoples, practices like the Thanksgiving Address that can begin community meetings and celebrations alike, affirm and share the people's relationship with and appreciation for their place and multispecies kin. The forms of inclusion in a certain place arise from their specific relationships and culture and are thus continually being adapted and appended to include new methods and respond to emerging circumstances. But the essential element of this inclusion is the focus on building ways to listen

¹⁷⁶ *Bhed Chal (Herd Walk)- Trailer - YouTube.*

¹⁷⁷ See section: [Community Sovereignty](#)

and represent all beings in the community. These spaces of the Commons must be equally fluid, communally constructed and place/culture specific. They may include: small public huts, lean-tos, and observation platforms; long-standing walking/pilgrimage paths; central squares and crossroads; or community halls for discussion and sharing of perspectives.¹⁷⁸

Trust is emphasized instead of a concept like accountability as it underscores the driving logic behind how community members uphold and modify agreements. Accountability speaks to members being connected and engaged so their actions are felt, carried through on and their feedback is shared with others. But trust extends this to emphasize the critical nature and power in being trusted to contribute your quality gifts (rather than incentivized or coerced as in the wage-labor system) because you inherently understand that you are part of the community and contributing to it supports yourself. However, trust and accountability require a certain level of consistency of actors and actions to build the rapport between individuals and the place to avoid, among other things, frontier-ism: of ability to simply move on if the community degrades an area.¹⁷⁹ This uncovers private property as being no more inherently benevolent than the theory of paternalism of plantation owners during slavery. Personal ownership may incentivize but does not ensure good relations with others. Communal trust and enacted stewardship does.

Trust and accountability may inform settlement densities and distributions, orientations of communal and personal spaces and the way social groups are nested to maintain connection across groups that are too large for direct cooperative relations between all members

¹⁷⁸ Related to the [Community Heart](#) gesture

¹⁷⁹ Note: this does not mean communities cannot be nomadic as noted preceding example. Many pre-capitalist societies maintained strong relationships by returning to certain places at certain times of years to continue care across years.

(sometimes theorized as over 150-200 people although examples from the Jomon peoples of Japan may indicate groups of up to 600 people).¹⁸⁰

An Example:

One way a relational approach can help address this challenge is by developing feedback mechanisms through diverse types of entangled relationships between humans and other beings. An example of this is the multiplicity of tactics and members engaged in the multi-agency Great Lakes Restoration Initiative organized by the EPA.¹⁸¹ This initiative partners US governmental work with many Indigenous nations in the region to address ecological health in ways that are meaningful to each group. Different nations have focused on water quality, fish health (often focusing on a species especially connected to their culture and traditions, like sturgeon), non-point pollution from paved vehicular water crossings, and the health of other close kin such as manoomin (wild rice).¹⁸² Approaches of this sort uplift and continue long-standing relationships between various beings that have local, ecological and cultural significance. By overlapping these situated relationships and their respective ways of knowing, a web of mutual care is created that does not claim to know everything and does not prescribe universal solutions. Instead, it is grounded and responsive, enabling the emergence of unexpected, novel and positive system-wide effects while staying alert for unexpected negative impacts. It trusts the values and contributions of diverse groups and approaches.

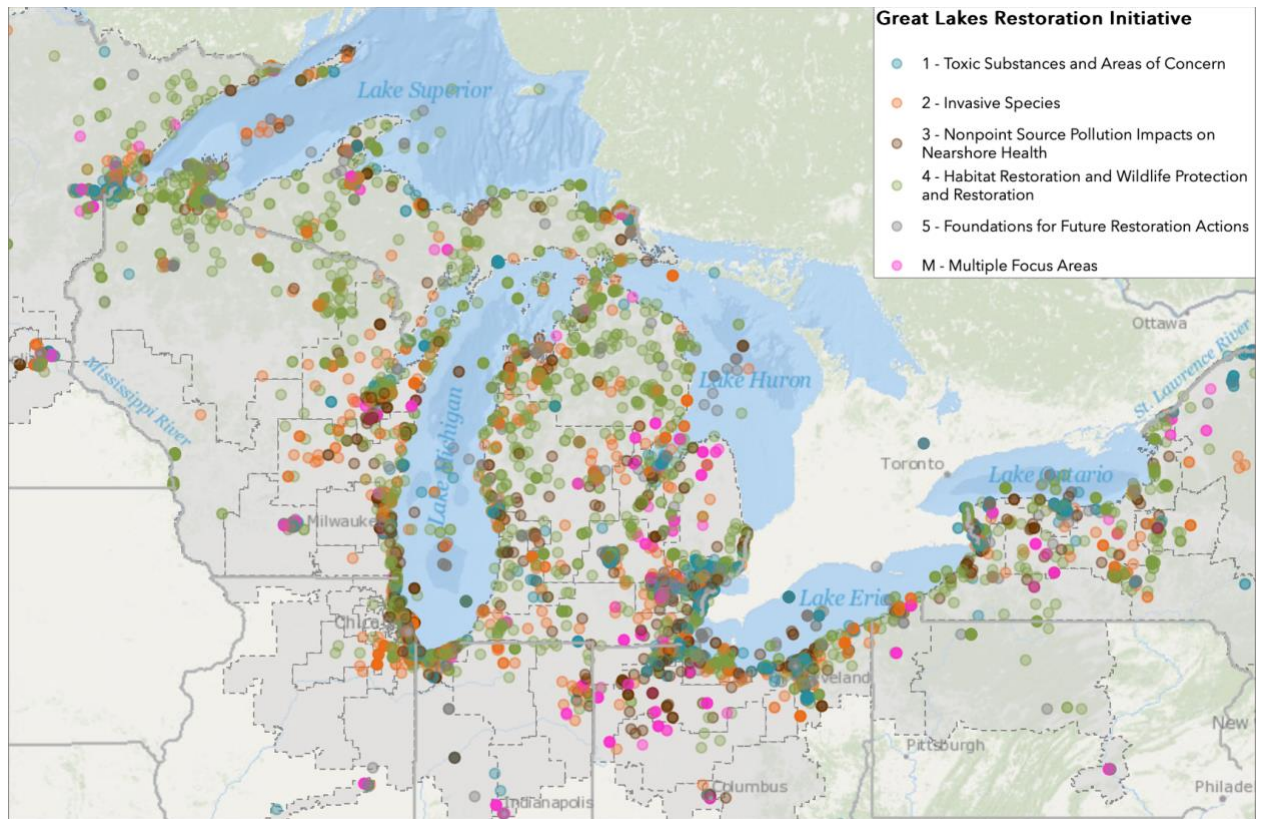
These types of diverse and overlapping relational approaches have the ability to greatly contribute to methods of decision-making and governance of the commons that are not just made *for* other beings but *with* them through trusting relationships.

¹⁸⁰ Ostrom (2008) has shown groups up to 15,000 people that organize through overlapping (“nested”) groups of smaller cooperative units. Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*; Fleming, *Lean Logic: “Group Sizes”*; “JOMON.”

¹⁸¹ “Great Lakes Restoration Initiative.”

¹⁸² Great Lakes Restoration Initiative, “Tribal Great Lakes Restoration: Culturally Inspired Restoration.”

Figure 21: Map of the various Great Lakes Restoration Initiative work displayed by approach. (Reproduced from: <https://qlri.us/>)



Entry Point 3. Situated: Land Disruption

Within a situated, integrated ecology of humans and all other beings (including earth, air, water, and sun) the idea of land disruption takes on a different light. I consider land disruption to be predominantly human-imposed, significant/permanent change to the earth's relationships including its form (topography), hydrological cycles, habitat/ecosystem functions, etc. This can apply to large-scale landscape changes such as mining operations and urban terraforming (flattening hills, filling valleys, turning wetlands into filled artificial shore, etc.). But it also applies on smaller-scale patches from the building site to gardens or swales.

A relational view of land disruption, then, does not focus on the form of the disruption per se, but on the relationships it severs and creates. It considers who is causing the disruption,

why and who is being impacted. It also engages time as a way to center the importance of elements such as the duration of impact and the rate of change.

Wendell Berry posits that any landscape change that a human does by-hand is unlikely to create significant disconnection as its scale is limited and the human is physically engaged and receiving feedback during the process.¹⁸³ Coordinated human labor can certainly create dramatic changes to the landscape. The Subak water management and cultural system of extensively terraced rice-paddies in Bali are an example of a significant human-driven land change but it is also an modification that has created incredibly bio-diverse habitats and continually productive agriculture for over a thousand years.¹⁸⁴ If land changes are done at a rate that allows response to feedback and modification of the approaches based on the interactions it creates for that community, it can lead to situated responses that supports the lives and relationships of others. This changes the narrative of greenfield versus brownfield; building or renovating brownfield sites is not inherently “good” and greenfield (previously un-built) sites are not pristine areas that are best protected by keeping humans away under a supposition that they are inherently destructive. Uplifting the relationships built and supported in the specific ecological community through an action (and thus avoiding disconnecting or damaging beings) opens up the possibility of land changes to be positive.

3b. Theme 2: Collective

A collective is not defined by a certain size. It is defined by cooperation as a collective unit: a community. Overlapping and interweaving sub-groupings create a smaller groupable network of relationships differentiated based on levels of intimacy and interaction. The collective is thus not definable and does not have static boundaries. It operates on different nested scales

¹⁸³ Berry, *What Are People For?* Chapter: “Damage”

¹⁸⁴ Thackara, *How to Thrive in the Next Economy: Designing Tomorrow’s World Today*.

but its intimacy, the networks of strong responsibility and reciprocity, make it distinct from the more universal and fluidly interacting relationships in networks (e.g., The Commons or Wild Walks).

* * *

Collective living can take many different forms. From my experiences traveling in Europe, I observed collectives in different areas but predominantly in more rural areas of Denmark and France with a few more urban exceptions. In both countries I found the collective to most often be a small unit of people who live together operating somewhat like an extended family. This combines shared space with more personal spaces. They often have on the order of 5-15 people (though these would usually partner with other such groups to form supportive networks). There tends to be a shared central building and then collections of small, personal living areas in the near-by vicinity. These collectives tend to be distributed across an area to provide gaps of less-human-inhabited land in between. These surrounding/interstitial areas may have some agricultural uses, but often include forest, meadows, wetlands and other key ecological habitats of the commons.

*The collective tends to be organized around a central building that is the **community heart** for the group. The central building houses the main (and often only) kitchen, and communal eating space(s). This is one of the primary nodes of community life. This space is often composed of an old farmhouse, maybe next to a barn often composed of wood, timber-framed, or local stone, stacked and joined with lime. Housing the kitchen, this building also tends to have a pantry and other food storage areas, sometimes including a root cellar. This space has electricity (either grid-tied or solar) with a refrigerator and cooking stove (usually propane using medium sized tanks, about 30 liters (~8 gallons), that are exchanged/refilled in the nearest town grocer). It is often heated, either with a wood stove or, less often, a central boiler and wall radiators or radiant floors. It frequently has plumbed water lines (although not always plumbed potable water), sometimes a washing machine, and can have a “wet” toilet,*

though composting/dry toilets seem more standard. In addition to the central eating and kitchen space, this building frequently has extra sleeping areas for guests and visitors. It also has other shared workspaces such as a tool shed, workbench, woodshop, or another special use, e.g., a bakery, cannery, brewery, creamery, forge, bike shop, sawmill or theater.

*Surrounding the main house are often gardens, usually small-to-medium herb and flower gardens. There may be a pond, swales/ditches, and/or **water catchment(s)**. A composting or dry toilet (outhouse) is usually nearby and sometimes there is a shared shower/wash-house. This main house area is always surrounded by trees, bushes and grasses (usually un-mown) and sometimes with a parking area slightly removed.*

At a slight distance, often separated by a row of large trees or other natural features, are the larger community food gardens and often orchard trees of edible nuts and fruits. Additionally, at this slightly removed radius, are the sleeping huts and personal areas for the full-time commune residents.

Gesture 1. Community Heart:

a central area to gather and share in the joys and trials of life is essential to the collective project of living beautifully together.

In what place did you last feel trusted and encouraged to contribute your creativity to a community endeavor?

To you, what space feels like it was built through and requires dialogue to exist?

The Community Heart is such a space. It unites the products of shared work, containing areas to gather and converse, feed one another, and celebrate.¹⁸⁵ It is a hub for story and sharing artistic expressions of all kinds; the nucleus of dialogue, it enables community connection and cohesion. In short it is the space of living communal culture.

¹⁸⁵ For more on shared work see [Gesture 2. Food Forests](#)

This community heart can operate on multiple scales, but often ranges from one building up to a small district and, accordingly, can be a household kitchen or living space, a communal house or a neighborhood playground, library, makerspace, or cultural center. Regardless of size, the community heart is a co-created cultural space informed by the entry points of **trust** (balancing autonomy and interdependence), **abundant** usability (open, social and spatial flexibility), and **participation** (blending cooperation and celebration).

Entry Point 1. Trust: Connected Autonomy

The community heart is the space where personal autonomy and collective reliance come together. It cannot be dictated or controlled from above. Trust concerns a bottom-up enactment of autonomy within interdependence: it uplifts the individual's ability to contribute to and support the communal project in ways that are inspiring and meaningful to them. User-control/agency and openness are important, as is support for times and spaces for seclusion and personal expression.

User-control or openness are dynamic spaces where individuals contribute without strict rules or boundaries (e.g., too many fixed partition walls, restrictions on who has access and ability to make modifications).¹⁸⁶ I think of it like the refrigerator door in my childhood home. It became a place to store photos, artwork, letters, wedding invitations, and more that initially were placed temporarily and then, over time, some became beloved standards, still shifted around but part of the ongoing story of the space: part of its web of relationships.

Openness empowers individuals by letting all contribute to the continual re-formations of a space. It could include many table and seating options; counterspace for ambiguous work of many kinds; area for communal cooking and cleaning; an open space for many people to meet,

¹⁸⁶ Sennett, *Building & Dwelling: Ethics for the City*.

sing and discuss but also with the ability to provide, or be transformed into, comfortable nooks for more independent time and conversations.

The communal heart is inherently public and cannot be dominated (including owned) by an individual or single party. Thus, it must be accessible to all community members at all times and thus managed through trust and understandings of shared support.

However, it emphasizes the importance of having areas (both more communal and more personal) for meeting different levels of activity, noise and seclusion. Levels of seclusion and personal space are culturally and contextually defined and thus must be enacted by the community and individuals in ways that support all members. Seclusion is dynamic and should continually be self-defined and negotiated. But, like the architectural concept of prospect and refuge, seclusion is a balance between gathering and withdrawing and is navigated through trust.

A sketch:

It is interesting to think about personal sleeping areas and wonder how their prevalence today may be informed by internalized capitalist individualism. Alexander et al. (1977) propose “communal (platonic) sleeping” to potentially be as comforting and important as communal eating yet also note the necessity of “your own home” to be fully comfortable.¹⁸⁷ This seems to be paradoxical but if “a home” can be distinct from where sleeping occurs, and “one’s own” is one’s family—using an expanded kinship view—then these patterns may not be contradictory. Many indigenous groups (for instance, some of the Coast Salish peoples in the Pacific Northwest, like the Haida, or the Jomon people of Japan¹⁸⁸) lived in collections of longhouses or similar structures in which many families shared sleeping arrangements and often used the sleeping areas during the day for other purposes, transforming them into sleeping areas only at

¹⁸⁷ Alexander, *A Pattern Language*. “Communal Sleeping” (861) and “Your Own Home” (392)

¹⁸⁸ “JOMON.”

night.¹⁸⁹ Thus our relationships, how we live, and the definitions of families or “one’s own” have significant implications for the forms and arrangements of our sleeping and living spaces.

Figure 22: Communal living space for up to 30 people that was used as a shared sleeping space at night. Reproduced from MacDonald (1983) “Reconstruction drawing of a Haida house interior, based on early accounts. G. Miller” (42).¹⁹⁰



Entry Point 2. Abundance: Flexible (Shared) Use

What spaces do you engage with that facilitate an evolving set of multiple community-directed uses?

Flexible spaces enable abundance through new uses and activities not planned or previously done. Not necessarily decided by the community they can emerge through living and negotiating in an engaged, interactive process.

On a basic level, it is quite clear that such spaces can greatly reduce resource and commodity consumption. While this is good, a mere reduction of ‘resources’ still operates within modernity’s view of objects that can be abstracted to universal, pre-defined, things to be

¹⁸⁹ MacDonald, *Ninstints, Haida World Heritage Site*.

¹⁹⁰ MacDonald. (42)

compared, summed, subtracted, or accumulated. Beyond abstracting beings out of their context, this view also assumes linear impacts where a one unit/percent decrease in consumption leads to a defined percent of improvement and doubling that reduction doubles the improvement. This is not how ecological communities, or other coupled systems, work.¹⁹¹

A relational framing can offer a more ecological understanding of flexibility. When a communal space is viewed as a spatial nexus of interacting relationships, flexibility enables those beings to connect, to express themselves and to creatively collaborate and nourish one another. The communal heart should be such a place that can be rearranged, perhaps expanded (able to spill outside or into adjoining spaces), durable and easily cleanable, likely conditioned (heated or cooled), and prioritizes physical accessibility for all.

Flexible shared use from a relational framing is, thus, not just multiple people using a single object or space. It re-animates shared beings (“objects”) and spaces, seeing each contributing member as their own unique, situated web of relationships that overlaps and interacts with the other members. In a library economy, with organizations for sharing numerous items and skills—not just books, but bikes, tools and machinery, clothes, instruments, etc.—the beneficial outcomes are not just about a reduction in the number of lawnmowers, shovels or pots, but also in the shared relationships, stories, skills, recipes and support.¹⁹²

A sketch:

When I visited the community bicycle repair hub, STPLN, in Malmö, Sweden it was immediately evident on speaking with one of the founders, that this space was not about bikes. It was also not about commodifying and transferring knowledge or a skill. It was about community. It was about creating a space that connected people, a place where they could share skills through workshops of all kinds, support their evolving interests and desires, host

¹⁹¹ Gunderson and Holling, *Panarchy: Understanding Transformations in Human and Natural Systems*; Alberti, “Eco-Evolutionary Dynamics in an Urbanizing Planet.” (114).

¹⁹² See section: [Sharing and Use](#). For an amusing, related aside see “A Story of Pots” in Fleming, *Lean Logic*. “Intermediate Economy” (226)

talks and movie nights, and provide accessible community roof gardens, sewing machines and 3D printers and, thus, engage youth and elderly alike in building and creating.¹⁹³ This bike kitchen turned community center renovated an old ship slip requiring no new construction. Skills shared on how to maintain or repair a certain machine extend beyond just the information exchanged. They ground an ongoing relationship that continues to support reciprocity by returning care for the giver of that knowledge and spreading it to others. These spaces to create community are an essential part of everyday life in anticapitalistic, socially-organized communities. They cannot be pre-programmed, designed from afar or purchased into being. They must be lived into creation. They are the avenue to replacing profit-oriented factory/office work to create (in the words of STPLN) “playfessional” spaces that unlock creativity and the potential of the community by the community.

Figure 23: From bike kitchen (top) to interactive theater and concerts (bottom), STPLN creates community within a historic building in ways that continue to evolve to support the community.¹⁹⁴



¹⁹³ STPLN in Malmö Sweden: now a community hub in what was an old ship slip for launching newly constructed steam ships. See: <https://stpln.org/>

¹⁹⁴ “STPLN: Overview | LinkedIn”; “Stplnmalmo: Global Carpet Dance.”



Entry Point 3. Participation: Cooperation

Participation is an important entry point for the community heart as it is a space that is formed through continually enacted and reaffirmed cooperation between members.

This form of participation is closely related to the entry point of trust and is in some ways the other side of the same coin. Both relate to how community members interact and co-create space but participation focuses on the dialogue and negotiation among interwoven beings.

Collective discussion and decision-making must facilitate cross-scalar processes that can operate between a few individuals or as a community-wide assembly. While a single space does not need to meet all of these scales, a nesting and overlapping of such spaces throughout the community will. For larger scales, the section [Community Governance](#) can share insights, while this section will focus on smaller scales.

Community hearts (whether communal houses or shared kitchen/living areas) are dependent on shared understandings of responsibility and cooperation between members. The

Collective is founded on meeting the foundational needs of the community (human and others), including access to food, shelter and community access (voice, inclusion, mobility). These are provided to all members of the community and cannot be withheld for profit or discrimination. But, what types of spaces and processes can transform current capitalist cities and their forms to ones which embody cooperative, community-directed initiatives?

What if housing was viewed not as a scarce object but an abundance we already possess that is created through the shifting web of relationships?

Such relational abundance sees value as the meeting and supporting of the relationships with others, not in hoarding or controlling scarce private commodities of land or structures. Cooperation is the process through which these overlapping, interdependent relationships are mediated and negotiated. In this light, cooperation cannot exist without spaces that facilitate community gathering and discussion. For individuals to contribute to these dialogues they must have their needs met, and have the time to engage (requiring liberation from the wage-labor system). Therefore, the communal heart should provide or be near community kitchens and food preparation spaces, free communal housing, accessible tool libraries and repair cafes and other shared amenities.

My travel and living experiences also highlighted the importance of having shared eating spaces and meals as an essential part of shared work. Especially in the ZAD, shared meals were a constant occurrence as part of community garden work days, a skill-sharing workshop, helping with the cannery, house modifications, or as a purely community event like one commune's weekly potluck lunch and informal community meeting.

An Example:

Byggefest, meaning building festival, is just that: a community celebration bringing together music, carpentry and creativity in Ebeltoft, Denmark. It is located in an old factory building, purchased by the community when the plant went out of business. During most of the year it is part tiny house workshop, and tool library and then serves a number of other

community needs and workshop spaces. The community hopes to be able to start a collective tiny house village soon in an adjoining area but are waiting on legal changes to allow this.

Combining such a dynamic and interactive community space with a week of summer music and swims in the sea connected people with one another, shared skills and creativity that empowered individuals (no experience was necessary), and raised money to support this community endeavor for the rest of the year. Encouraging participation by all (ticket prices could be offset by helping in the community kitchen or with other event needs) in an open, celebratory environment brought together diverse people, berries, sea breezes and other beings in mutually supportive ways.

Figure 24: Scenes from Byggefest 2023 showing the community tool library (top), and (below) two views of the tiny-house work yard.





Gesture 2. Food Forests:

the area of shared work that provides for the human and more-than-human community of the collective.

Food Forests are a gesture of sharing in the process of nourishing one another. Through shared sweat, joy, and purpose this shared effort creates bonds, reinforces respons-abilites¹⁹⁵ and is the flowing sap that connects and sustains the community. This is solidarity: mutual care, lightening one another's load. Food Forests operate relationally enacting the entry points of **participation, abundance and feedback.**

From the perspective of an integrated ecological community of humans and other beings, everything is produced through shared work: from the mycorrhizal fungi that connect many plants with the beings-of-soil-wetness, nutrients, sunlight and air to produce a seed that can be eaten and digested with the assistance of billions of microbes. All production and processes require many beings to join and work together.

¹⁹⁵ Country et al., "Co-Becoming Bawaka."

Entry Point 1. Participation: Mutual Care

Participation applied to forests that feed speaks to the power of collective efforts to meet the needs of one another dynamically and robustly.

Civita and Auerbach's (2023), *Feeding Each Other*, is an enlightening work on relational food systems. The parable of the long chopsticks presents it this way: It is said both heaven and hell hold a table with a group of people that have six-foot long chopsticks and one central hot pot. The only difference between these places is that in hell the people cannot reach the end of their chopsticks to feed themselves while in heaven people feed each other in harmony.¹⁹⁶ The food system is not about enabling the act of eating, it is about nourishing the relationships that enable feeding each other today and for the future. This is a transformative alternate perspective that enacts a relational view of participation and mutual care.¹⁹⁷

Feeding each other is similar to the concept of food sovereignty expanded to all beings. It uplifts the right and ability of all to access locally controlled and produced foods that are culturally valued. Communal approaches where labor is shared and coordinated can create abundant provisioning and adjust to seasonal needs and priorities. "Local" here is a relative term that is determined by cultural, ethnic, and other factors.¹⁹⁸ Additionally, this pattern is not proclaiming that "local" production is inherently better for people or the planet.¹⁹⁹ Rather, it focuses on the healthy relationships that compose the food system, which are far easier to maintain when they are with beings in your area who you interact with regularly.

Many small- to medium-sized productive agricultural areas in a community, especially when linked through strong relationships of reciprocity, allow for adaptability to climate variability. While climate change will impact average trends, its effect on variability and extreme

¹⁹⁶ "The Parable of Heaven, Hell and the Long Chopsticks."

¹⁹⁷ Civita and Auerbach, *Feeding Each Other*.

¹⁹⁸ Agyeman, "New Agricultures, Cultural Diversity and Foodways."

¹⁹⁹ Born and Purcell, "Avoiding the Local Trap: Scale and Food Systems in Planning Research."

events (heat, precipitation, disease/pest outbreaks) will cause severe impacts. Small diversified farms can coordinate shared labor, abilities and priorities, allowing adaptability of what is grown while connecting people to how it is grown. Organic small-scale agriculture can produce equivalent yields to industrial farming per arable land area and it can facilitate building relationships within the community, thereby improving (for all species) the processing and equitable distribution of those beings (“products”).²⁰⁰ This can eliminate pesticide and artificial fertilizer use by instead cultivating diversified plantings that both share and receive nourishment from the ecological community through collective participation.

A Sketch:

In one of the largest community gardens in the ZAD, they have weekly group work days on which they do most of the work needed to manage the garden for that week. Anyone who comes and helps work in the morning joins everyone for a communal lunch. And those who garden in the afternoon get to take home a portion of whatever is harvested that day. Accordingly, at least one member from most of the area’s communes would join for this weekly garden work day and then bring their portion of the harvest home to their commune. This was at the largest of the community gardens on the ZAD which, according to one member, produces about a quarter of the produce needs for the ZAD annually (though they don’t keep track closely as they are “not obsessed with the myth of self-sufficiency” as this resident put it). This community garden spans the space between two adjacent communes, a total of about 2.5 acres with three medium-sized hoop-houses; it is tended by hand with a small drip line to water the greenhouses. Equitable provisioning, both its production and distribution, is established not by hierarchical or complex systems but through shared efforts and personal connections.

²⁰⁰ Badgley et al., “Organic Agriculture and the Global Food Supply.”

Entry Point 2. Abundance: Forests that Feed

Central to the gesture of Forest that Feed is the entry point of abundance displayed here through diversity and multidimensionality. Diversity joins many different types of participants and their contributions while multidimensionality concerns the ability of a system to serve multiple purposes and be adapted to changing or additional needs in the future.

It is a false dichotomy to view agriculture as separate from forests or other ecologically functional spaces. Mechanized industrial agriculture benefits from larger operations and requires regularity and control, promoting mono-crop or limited mixed plantings. Forest that Feed can combine fruit and nut trees and shrubs with mini-meadows where needed for more field-based cultivars. This greatly increases the species and structural diversity of agricultural areas and, accordingly, provides more ecological functions and niches to support other beings. A practice common among many indigenous peoples, such mixed plantings have been adopted by other groups including permaculture practitioners where it is sometimes called a “7-layer forest garden” and can greatly enhance soil health, root zone soil moisture and habitat.²⁰¹ Reconnecting communities to the land and activities that sustain them (instead of wage-labor in service of abstracted commodities and industries) allows people to build relationships with the other members of their entire ecological community as they provide for the nutritional needs of one another.

Multidimensionality can refer to serving many functions and purposes (such as a food forest that increases soil carbon sequestration, serves as a spiritual reserve, cleanses water, provides connectivity to salamanders, and more). But multidimensionality can also be extended to mean the bringing together of different attributes. In a community, Food Forests are a gesture that can be seen as a way to promote and weave together the excellences of individual members. The Greek word *arête* means excellence, or fulfilling one’s purpose or virtue. This

²⁰¹ Hemenway, *Gaia’s Garden*.

type of virtue is the product of values collectively celebrated by the community. Excellence thus unites the ability of each individual to contribute their unique talents in support of the community. Nourishing each being's excellence and sharing these skills enables relationships that can shift and flex to meet the needs of the community across time and space.

An Example: Agroecology

Agroecology sees the cultures of a human group to be integrated part of the broader ecological community and thus uses traditional and ecological knowledge to sustain methods of just and regenerative agriculture that support humans and other beings. The UN has identified 13 key elements that define an inclusive and sustainable agroecology: “co-creation of knowledge, social values and diets, fairness, connectivity, land and natural resources governance, participation, recycling/compost, input reduction, soil health, animal health, biodiversity, synergies, and economic diversification.”²⁰²

These methods continue traditions of indigenous management and stewardship that today are sometimes called Diversified Farming Systems. I categorize such systems alongside topics such as forest gardens, food meadows, mini-meadows, and permaculture and regenerative agricultural methods. They include seasonally-variable forms (such as planting in flood plains after seasonal floods), and horticultural methods of mixed plantings that occupy different structural sections of the vertical canopy that were (and continue to be) essential to many indigenous groups.

²⁰² “What Is Agroecology? The 13 Key Principles of Agroecology.”

Figure 25: A horticulture farm in Denmark that combines goats, nut trees and bushes, wild fruit trees and bushes, chickens, and greenhouses for warmer-climate stone fruits, tomatoes and other key vegetables.



Entry Point 3. Feedback: Connectivity

Feedback within the shared work inherent to Food Forests, emphasizes the exchange of skills and knowledge, and reliability—consistently being there when needed.

Feedback requires connectivity and communication among different community members. Sharing skills and knowledge leverages the specific excellences of individual members to increase the capacity and abilities of the whole community. This creates value not just in the form of products but also in increased meaning and personal attachment among beings, based on the relationships that conferred a certain production or skill to you. This

incentivizes groundedness where those relationships are reinforced through time by continued conversations of feedback and the shared experiences they can create.

Seeing the impact of groundedness on feedback also reframes the idea of reliability. Reliability through grounded communication and feedback is an entirely different view than what people experience in the marketplace. Capitalist industrialization creates reliability through controlled uniformity for the purpose of making stable markets. Today, this can be seen through globalized supply chains creating universal products reliant on flights, cars and other devices through speedy deliveries (and profligate energy use). In the words of Charles Eisenstein, “financial security is not true independence, but merely dependence on strangers, who will only do the things necessary for your survival if you pay them” (183).²⁰³

Relationality sees reliability instead as created by building robust networks of cooperative relationships that can support each other when and as needed. Relationships based in local, daily interactions, and continual conversation and exchange among communities, can create reliability and reciprocal exchange that meets community needs and strengthens and deepens relationships to increase community adaptability.

Notes on “Self-Sufficiency”:

This also provides important insight about the myth of self-sufficiency. The goal of growing enough food for all of one’s personal needs is based on an objectified view of “products” as an output serving human needs (and upholding human exceptionalism). This imposes an artificially narrowed boundary of who is growing what for whom.

In a relational framing, an individual human cannot grow anything without the cooperation and labor of countless other beings locally and distantly that carry the water, cycle the nutrients to nourish soils, pollinate, and perform other functions (“ecosystem services”). Equally, that food production feeds many others whether the human consents or not. Thus, a

²⁰³ Eisenstein, *The Ascent of Humanity: Civilization and the Human Sense of Self*. (183)

human is never feeding just him- or herself (even if pesticide and herbicide use works hard towards this goal by killing these unwanted community members). Thus, self-sufficiency is a human construction and a product of anthropocentric egoism. Actively working to support and foster co-cultivation with, and for, others is a different paradigm that allows for reciprocity to respond reliably to feedback supporting all beings dynamically.

3c. Theme 3: Home

As used here, the theme of Home operates primarily on the “scale” of a dwelling and the beings that flow through it including water, air, light, materials, energy, animals and more. Here, the building (or the anthropocentric site perimeter) is not a rigid boundary and is still trans-scalar, connecting to gestures, strategies and processes at other scales.

This dwelling “scale” is one in which the architect feels comfortable. The architect is well-versed in materiality and flows. However, the comfort at this scale can lead to complacency that simplifies its trans-scalar relationships. When not careful, such comfort can also lead to increasing reliance on established habits and routines of modernity that design object-buildings to “solve problems” not nourish entangled relationships that can converse with and inform “complex predicaments”.²⁰⁴ It is thus important to retain a perspective that situates these human-scaled elements of a construction within their web of relationships, which, in each moment, extend into other scales from the microbial to landscape patches, bioregions and planetary interactions.

* * *

²⁰⁴ Machado de Oliveira, *Hospicing Modernity* (30); Till, *Architecture Depends*: “The problem of the Problem” (166).

I like to think of embracing relationality, and an alternate way of viewing the world, as being like learning how to swim, when you already “know” how to swim. This story elaborates on this nuance:

The tree-green fabric arcs overhead interspersed by its hexagonal wooden timbers as I sit down to the industrial sewing machine in the Sewing Dome at the neighbor’s commune. It’s the weekend in the ZAD: time for personal projects. I was invited back to the Cannery to assist with a yurt modification and winterization project.

We jumped right in and I was quickly in the deep end, paddling as I nervously cut the walls and roof of this acquaintance, I’ll call her M,’s sleeping hut to begin modifications. My worries about making a mistake started to fade as I took cool, composed strokes with the scissors through the colorful fabric. The trust placed in me—she didn’t even look on to see my progress—further bolstered my resolve to do well. We were cutting out the window and moving it to the other side of the yurt learning from her experience and new preferences after the previous winter.

Next was sewing. My insistence that she was welcome to do the sewing herself immediately landed me in the chair with my toe on the throttle. This was a new type of swimming between my big toe and the churning clunking needle tooth machine. Taking a deep breath, I took a stroke down and the needle moved with me faster than I thought possible chewing through 10 centimeters of fabric and leaving a mess of cloth and thread. I tore out the stitches and tried again. The needle moved so slowly that when it touched the fabric it just stopped lacking enough momentum. I tried a third time not thinking about the stitch, letting go of my fear of mistakes. I felt into my toe, sensing the variation in pressure envisioning the stitch I needed, feeling the blood beating through the toe’s capillaries.

Only then did I begin to swim. Together the machine and I found rhythm and flow, rising and falling together as M fed the fabric forward. M, myself, the fabric, the machine, the sunlight on the work surface, each contributing to re-forming her home before the upcoming winter.

Once we found this rhythm, we seemed to carry it through the day, quickly becoming fast friends, intuiting each other's movements, and needs for air or a supporting hand.

The goal was supposed to be adding insulation and reinstalling the modified wall and roof but when these were done, I knew we had accomplished far more. Here we went beyond swimming together with other beings, mechanized and not. We had learned how to live in water, how to flow-with, choreographing a beautiful friendship.

Figure 26: M's renovated yurt in the evening glow.



Gesture 1. Adaptable Buildings:

spaces that can are continually re-affirmed and maintained by the community and can flex and be reconfigured to meet evolving needs.

“Architecture is too slow in its realization to be a ‘problem solver’” - Cedric Price

If architecture cannot solve *problems*, perhaps it can enable, promote and further conversations. Adaptable buildings are one way of creating such spaces of dialogue that can support the agency of each being in their relationships and places across time.²⁰⁵ This is not a pre-planned, “authorial” architecture with precisely definable components drawn from a remote office.²⁰⁶ It is a process in which the architect is one member of the community who helps facilitate the understanding of certain types of spatial thinking and relationships while interacting on the ground to help people translate their larger spatial goals and visions into the physical space and beings (“materials”) of the construction.

The entry points of **participation** through flexibility, **situatedness** (in the form of material sovereignty), and **co-becoming** exemplified in dynamic lifespans, are useful beginnings to inform adaptable buildings.

Entry Point 1. Participation: Flexibility

Community participation and individual expression is enabled by flexible constructions for buildings that balance interdependence and separability of the construction’s sub-components. Here, I choose to emphasize flexibility instead of modularity because it includes the ability for the modules themselves to evolve and change over time.

Relationships are not interchangeable. But neither are they static, externally definable or able to be accumulated. They are rooted in a flowing dialogue with the other beings of one’s locale. Basic needs are not calculated, not hoarded, not considered precious or scarce. They are fulfilled through the reciprocal dance of tasting and giving deliciousness.

²⁰⁵ See Till, *Architecture Depends*. (151) and <https://www.spatialagency.net/>

²⁰⁶ In Rudofsky, *Architecture Without Architects* he talks about historical and vernacular “pre-authorial” architecture and urban design that grew out of the needs and visions of the specific community and place. Influence of historians such as Vasari, however, created a different story that emphasized the visionary, expert architect. Ratti and Claudel, *Open Source Architecture*.

Circular building systems seek to apply the circular economy principles of eradicating “waste” through infinite, closed-loop reuse and recycling. Design for Disassembly (DfD) is a central architectural strategy for creating circular buildings. DfD emphasizes the need for separable building layers and modular sub-components that can be replaced and recycled at the end of their individual lifespan, not the whole building’s lifespan.²⁰⁷ Thus, it seeks to dynamically maintain the functioning components, while letting tired parts and pieces be modified and changed. In this sense it could be described as a top-down, functional approach.

A relational framing for flexible constructions adds onto these ideas. It accepts the need for buildings to be constructed with separable layers that can be easily maintained, re-built, modified and eventually recycled or composted.²⁰⁸ However, relationality proposes a bottom-up, emergent vision that is always a contextual process of co-becoming. It does not assume a specific goal (e.g., maintaining an office building for 75 years). Here the function, the overarching goal or predefined end state, is unknown and, more importantly, largely irrelevant; it is the processes that are focused on. Such an approach nourishes the quality of the countless overlapping relations that coalesce to become a moment.

Participating with flexible buildings from this standpoint compiles individual components in a grassroots fashion. Flexibility subverts the reliance on industrially controlled practices and pieces thus differing from modularity. Industrialized components can be used (when available (“locally”) through personal/community relationships) but they are not relied on or necessary—whether that is dimensional lumber, plywood, bolts and screws, a prefabricated wall assembly, or concrete.

Participation also informs the interaction and input from more-than-human beings. The Doughnut for Urban Development and the Living Futures Challenge frameworks both advocate for the need to end greenfield development (building on land that was previously un-built). This

²⁰⁷ Brand, *How Buildings Learn*. “Shearing Layers”

²⁰⁸ Brand; Addis and Schouten, *CIRIA – Design for Deconstruction*.

respects the rights of existing residents (including the being-land) of these unbuilt areas to continue to participate and construct their environments without major disruption. Flexible relational Homes, value the land as a sacred being who should be freed from the oppressive long-term legal structures of private ownership and segmentation into parcels, and from damaging physical built forms that permanently and indiscriminately disrupt and shape their relationships with other beings. Relational flexibility and participation treats building reuse and adaptation as standard ways to respect and extend the personal connection with the being-materials of a construction. It takes new permanent or non-remediable disruptions to the land for building foundations or other infrastructures very seriously: avoided whenever possible and decided carefully by community consensus when deemed unavoidable. (See [Community Sovereignty](#) for more on consensus governance.)

Thus, adaptable buildings rest lightly on the land and their forms can be changed by local community members: whether through substitutable sub-assemblies, expandable/shrinkable skeletons, switchable awnings, etc.²⁰⁹ They can be moved, adjusted, and reconfigured by the users as needed and desired. They build relationships with bodies of earth, water in its many forms, fellow animals, fungi, trees and more.

An Example:

Backed up to the train tracks, next to the town's main station may seem a strange place for a community space but it doesn't bother L'HanGare. A new community hub initiative in Thiviers, France, the owners acquired it from the trainyard and transformed an old train station loading area and barn into a community space with a mixed-use studio (used for Qigong, dance classes, Tai Chi, yoga, etc.), a kitchen and gathering space, and a large mixed-use outdoor covered loading platform. While the studio has some scheduled events the space is open and

²⁰⁹ For more design strategies and transformation ideas see: Eberhardt, Birkved, and Birgisdottir, "Building Design and Construction Strategies for a Circular Economy" (98-100); Johar and Stancic, "Designing Our Futures."

welcomes new community initiatives and suggestions. Renovating the old barn structure, they chose to fully climate control only the studio space to retain the character and form of the majority of the barn. While the whole space is beautiful, one of the most loved spaces is the loading platform. A view onto the main street and cafe fronts, the passing trains behind you, and a wide covered space—it becomes is a canvas on which many community events and joys are shared.

Figure 27: The loading platform of L'HanGare in the midst of transformation between use for two different events.



Entry Point 2. Situated: Material Sovereignty

A relational framing situates every “material” as a being with agency and thus uplifts the “response-ability” of the community to know and be able to participate in the biographies of those being-materials.²¹⁰

Situated material sovereignty for a community uplifts the inherent value and ongoing relationship with each being-material in an area. It asks who, stressing the community’s relationship with those beings and the ability to know their biographies and have agency to relate in beneficial ways.

This transcends (without rejecting) the current emphasis of the circular economy on using “biological” and “technical” materials that are, respectively, biodegradable or recyclable.²¹¹ Prioritizing compostable, locally-grown, being-materials and responsible or circular use of cleanly recyclable²¹² technical being-materials is progress from today’s heavy reliance on a linear throughput model of extraction-to-use-to-landfill. But it still begins from the premise that human use of being-materials is negative and the best humans can do is to reduce this negative impact (primarily by isolating human systems away from “natural” areas so they can exist in their own “closed” loop). While superior to the current (delusional) state of capitalism’s endless extractionary growth, defining an environmental carrying capacity and, then, consuming the maximal amount per year that avoids destroying that “stock,” is a transactional relationship based on measures of allowable harm and managing scarcity in a static environment.

Centering mutually beneficial relations, promotes ongoing dialogue between species and generations listening and acting at the speed of trust. Material sovereignty centers the community’s relationships and enables ongoing cycles of reciprocity across generations. Thus,

²¹⁰ Country et al., “Co-Becoming Bawaka.”

²¹¹ Ellen MacArthur Foundation, “Towards the Circular Economy.”

²¹² ‘Cleanly recyclable technical materials’ emphasize that non-biological or regenerative materials must be recyclable in ways that are non-toxic/polluting to the environment and are executed using rebuildable methods of harnessing renewable energy eliminating the extraction of virgin materials throughout the supply chain processes.

soil health, forest vitality, or geological communities (“mineral stocks”) are family members that are cared for and, in turn, sustain current and future communities and their ways of living. This is only possible when the beings of a place and time exchange and navigate contingency together, continually, requiring material sovereignty.²¹³

Material sovereignty highlights not just the biography and community negotiation of each being-material in a construction, but also their materiality: the texture and feel, the way the surface reacts with sun, the interaction with microorganisms that create its smell, the way a being weathers and changes over time.²¹⁴ We use the phrase ‘material expression’ today, but rarely do we mean it literally in the sense of listening to and respecting our human reactions to the active expressions of being-materials and the constructions they compose.²¹⁵

Situated material sovereignty values deconstructable building techniques such as Japanese wood joinery not only because it can extend the life of a section of tree or because it allows that community to control production and its impacts. It changes the ways humans live, think, and relate by letting the knots of the wood grab a person’s eye and start a conversation, sharing a story of how it was felled, moved, processed, cared for, and the lives it has touched and sheltered over time. Yes, this stores and uses carbon effectively. Yes, it can promote connection and appreciation that may lead to a longer building lifespan. But critically, material sovereignty allows the opportunity for a human community to create lasting relationships with each other and with the other beings in the larger ecological community. It enables ongoing reciprocity that is negotiated and grounded through emplaced dialogue and respect among beings.

An Example:

What if the insulation used in a building supports the ecological community?

²¹³ Till, *Architecture Depends*. (55)

²¹⁴ For more on this idea see: Mostafavi and Leatherbarrow, *On Weathering: The Life of Buildings in Time*.

²¹⁵ Abram, *Becoming Animal: An Earthly Cosmology*. “House”

An interesting initiative of a few residents in the ZAD is an effort to create local building insulation alternatives. The goals started as an effort to reduce the use of distant, extractive capitalist products, specifically of insulation materials and energy fuels. To do this, a few residents acquired and transformed an industrial machine to compress straw material into dense insulation boards. Their process allowed the boards to be cut into smaller pieces without losing their integrity and thus is a good replacement for other industrially produced insulation boards. Additionally, the community forge and metal shop can help with repairs and modifications as needed supporting democratic manufacturing.²¹⁶

While this initiative has many benefits and can be viewed from many angles, I see it as an elegant example of reducing land disruption of the distant Commons in a way that builds relationships between local people, wheat plants, cycles of water and sun, and with technologies and knowledge-sharing from distant regions. Furthermore, this insulation initiative is testing other materials like hemp to see how the process and product differs. This experimentation creates connected knowledge in place. This is a gesture towards a future that can evolve with the community through physical dialogues between species to reduce the severing of relationships caused by land disruption both near and far.

Entry Point 3. Co-becoming: Impermanence

Co-becoming related to adaptable buildings engages the idea of the lifespan of a building to highlight its impermanence and dynamic capacity. As for all beings, buildings are continually, and simultaneously, being composed and decomposed. A focus on building longevity rejects the nuance of the processes of time, creating a binary, objectified definition of what the building is and by extension when it isn't: when it has ceased to be and is expired.

²¹⁶ Democratization of manufacturing was introduced in the Ch.2 Participation section: [Cooperation](#) on cosmopolitanism but there are many examples including initiatives like Precious Plastic at <https://www.preciousplastic.com/>

But reality is different. Buildings are used for many purposes. They are continually adapted, repurposed, and reconceptualized.²¹⁷ LCA tends to be agnostic to these factors. It focuses on reducing a building's environmental impact over its full supply chain and over a specified lifetime, usually 75 years. This can reduce harm, but it builds in a definition of the building as an object, with certain functions and uses and a prescribed lifespan.

As LCA practitioners emphasize, the definition of the system boundary is critical for this very reason. It acknowledges that beings are unique and can never be compared holistically; thus, if one option inflicts less harm over a comparable functional unit, that is only one piece of useful feedback. The hesitancy of LCA to make comparative claims (especially about complex beings such as whole-buildings) is thus warranted, but it does not offer a solution to the problem of how to value and include dynamic variability into such an analysis. Efforts are being made to enhance the Stage D, end-of-life, methods to account for materials that are recycled or reused instead of being wasted/landfilled. But these efforts do not account for dynamics such as “avoided emissions” from supporting a building that serves many purposes and avoids the construction of other buildings altogether. A relational, community, approach can value a building for its many potential uses today and, by getting to know it intimately, understand how it can be repaired, maintained, and modified, in ways that perpetuate its adaptive capacity to meet current and future needs.

An Example:

L'Arret is a dance collective in south central France. Originally a farm, the central house was transformed into the communal kitchen, living room and, upstairs, the guest dormitory (sleeping about 16 people). The main dance studio is in the attached, and lightly renovated, barn that has stood on the site for many generations. Instead of extensive modifications to this space they have kept it as an unconditioned summer studio and rebuilt the adjacent collapsed

²¹⁷ Brand, *How Buildings Learn*.

barn into an insulated and heated space that became their winter studio and is attached to some of the full-time resident quarters. This suits their needs well as they tend to have fewer visitors in the winter and do not need as large of a space.

Figure 28: Scenes from L'Arret showing (clockwise from top): a) the main dance studio with beams of varied ages, hundred- year-old walls with the new sound system and dance floor (it also has a great secondary use as festive space to cure and store their gardens' winter squash harvest); b) Garden and central house,²¹⁸ and c) Reconstructed conditioned winter studio: combining new and reused materials.



²¹⁸ "Le Jardin."

Gesture 2. Catchment:

mechanism/construction that mediates the collection, storage, use and re-release of flows that support building functions such as water, energy or air.

While catchment is often used in relation to flows of water, many of the principles and ideas also apply to flows of other beings including sun, heat, minerals/nutrients, plants (food) and animals (humans). Catchment mediates the relations with beings-as-flows over time through the entry points of **reciprocity** (including the cycles of flow, use, storage, and return/recharge) and **co-becoming**.

Entry Point 1. Reciprocity: Non-transactional Flows

Cycles of reciprocity can center the relationships between humans and being-materials as ongoing exchanges of care, not linear processes that end when a building function or form changes. Extending beyond the balance of use and growth rates emphasized by regenerative materials (as noted in [Reciprocal Being-Materials](#)), reciprocal flows focus on the respectful maintenance of relationships.

This asks how beings are nourished and exchanged and who else is impacted during the process. Exploring the dimensions of timber construction can provide insight into these factors. We consider timber production and harvesting to be a regenerative process. Many different timber management practices in different locations could lead to “regenerative” timber that can regrow at the rate it is demanded for building. Clear-cutting, thinning, selective cutting, the use of controlled burning and other strategies dramatically change which species are impacted and supported by the forest and on what time-scales: which specie(s) are planted to replace the harvested trees; do they create an even-aged forest; what is the effect on forest habitats and beings during harvesting and regrowing (including water, soil, insects, or the understory more generally). How do all of these factors change as evolution modifies species

and the relationships among beings in response to climate change, urbanization and other factors?

Cycles of reciprocity also center the connections between beings and communities informing the distance and locations that being-materials come from. Those cycles do not prescribe a given allowable distance or defined area, but allow “locally connected” to be a negotiated feature determined by the beings impacted and the mode of transportation’s impact on environmental emissions and personal connection and feedback.

One way to give in return is through sharing. This form of sharing is a dialogue that asks, who else can benefit from this water as it approaches me, nourishes me, and goes from me, until it returns again? How can this journey strengthen my relationships with my (multispecies) neighbors across generations? The same water that composed and sustained the body of my great-great grandparent and will feed the body of the neighborhood fox’s great-great grandchildren is the water that I drink. As the example of the Japanese town, Harie, shows,²¹⁹ the path of water through our communities can build trust and connection between humans, and create kin, providing for other species (the carp and others). Potential methods that support relational catchments include rainwater capture cisterns, greywater reuse, composting or dry toilets, native climate adapted (and resilient) plantings, open urban streams fed by stormwater runoff and cleaned by constructed wetlands or living machines, biochar/compost soils that increase and retain soil nutrients and water. These and other Nature Based Solutions (NBS) (as noted, especially when designed from a multispecies perspective to recognize coupled interdependence and increase adaptive capacity²²⁰) can improve water quality and water access for all species, reduce heat island effects, increase diverse habitats, and more.

An Example of the Cannery:

²¹⁹ As discussed in the [Abundance: Dense Diversity](#) section of the Wild Walks gesture.

²²⁰ Maller, “Re-Orienting Nature-Based Solutions with More-than-Human Thinking”; Alberti, “Cities of the Anthropocene.”

One of the collectives at the ZAD, the Cannery, utilized many of these strategies together to create a catchment system. This is more than the simple rain catchments I grew up with in the Marshall Islands where the heavy winter rains easily fill a medium-large, corrugated-tin silo next to major dwellings or group of dwellings. This collective in the ZAD did not have plumbed potable water so they created an extensive network of small rainwater collection barrels, connected with piping, ditches, and a pond. Combined with a small potable water tank they would fill from a neighboring commune's potable water supply, they met their water needs and connected to the seasonal precipitation patterns. This let them use clean, collected rainwater in the house and then return the used greywater water to the filtration swale supporting the linear forest that sprouted out of it, the pond and all the associated multispecies inhabitants.

Entry Point 2. Co-becoming: Situated Agents

For the gesture Catchment, co-becoming stresses that flows are not only situated locally but are themselves beings with agency that evolve, change and deserve care. Co-becoming sees elements, such as precipitation, as beings who change their expressions based on their desires and other relationships that comprise them (including interactions with the sun, trees, or particulate matter in the air). Thus, precipitation variability (including consistency and time between events; intensity and extreme events; and type, whether snow, hail or rain) is not just a change in the "state" of an environment that impacts water availability for humans and others. This view asks about precipitation's relationships and inquires about other entities/beings that are under stress or changing behaviors. And, it investigates the timescale(s) on which these interactions are occurring. Such a conversation is not about how much of a being ("water") a human community can take from the ecology in the short-term (e.g., storing enough water from the wet season to meet human needs in dry times). A relational framing emphasizes processes

that can adapt to climatic conditions in diverse ways to provide various mechanisms that support the ecological community (including humans). This is an adaptive, both-and approach.

Water catchments and ponds/reservoirs store water to create a delay between times of precipitation and subsequent use and re-release into the environment. Swales, contours and terraces are good at directing flows of water across a landscape and through plantings and other users. Green roofs and detention catchments increase absorption, slowing down runoff to manage high intensity events. Also, certain plantings and greater canopy cover can increase the root zone soil moisture, aquifer recharge, improve stream water quality and absorb spring flows. (For example, early evidence suggests that reducing Western Juniper prevalence and re-establishing sage steppe and grassland ecosystems in Oregon and similar High Desert environments can increase aquifer levels).²²¹

Tailoring the mix of nature-based solutions (NBS) like these to meet the specific “matrix” of relationships of a place and its beings in ways that can continually adapt and evolve is essential.²²² These strategies are always part of a larger network of ecosystem relationships, but they are enacted on varied being-scales and are instrumental in determining the form, use and function of a Home. Accordingly, it is not presumed that a sleeping hut should have plumbed water; this is dependent on the character of how precipitation falls on site, the other beings’ needs, and the dwelling’s history and lifespan (temporary structures rarely start with permanent plumbing, though they may choose to have seasonal water lines or catchments that feed the home to celebrate times of year with abundant water availability). NBS that enable grassroots community control and conversations, can adapt to increasing climate variability, and can build connections with water-as-a-being as it ebbs and flows throughout time to create connected and wholesome relationships with the ecological community of a specific locale.

²²¹ Abdallah et al., “Water Use and Soil Moisture Relationships on Western Juniper Trees at Different Growth Stages.”

²²² Cordova, *How It Is*. “Matrix: A Context for Thought”

The Cannery Example continued:

Most of the personal sleeping huts at the Cannery do not have running water. This reduces the extent of the piping system to move collected rainwater as it is only needed around and in the main building that is the heart of the collective. Dry composting toilets further reduce water and piping needs (and avoids production of black water that is much harder to treat on site than composted humanure). The ways of living at the Cannery are informed by their access to communal space and flows and how this interacts with personal spaces and needs. This way the sleeping huts or toilets can be moved or added to without needing to change piping infrastructure systems while still supporting the collective's water needs through the communal heart building. In this way the Catchment can evolve to be modified to continue to allow the relationships that form the collective to thrive together.

Chapter 4. Reflections and Discussion

My goal in this work has been to create dialogue, to start a discussion, and to investigate other ways of perceiving and relating to the world that can guide ecologically supportive communities. Both the “entry points” and the “gestures” I present are not exhaustive or definitive. Particularly the gestures presented here are only a few examples of patterns that my (primarily US and European) experiences have indicated as common features that facilitate social organization for supportive communities. I chose to focus on the process of how the entry points inform seeing these gestures in relational ways (and, in turn, how such viewings further refine the entry points). This aims to help readers understand this process of seeing and centering quality relations in different ways so they are able to support the wellbeing of all beings in their ecological communities.

An ongoing challenge, and also an important outcome of this work, is the inherent messiness of the dialogue between the entry points and gestures and how they co-create one another. Presenting them as two separate sections attempts to add clarity but this separation does not represent the depth of what I attempt to convey or the process of their mutual impact on each other. In a relational, non-objectified world, it is not possible to say a given example-as-a-thing creates a repeatable “solution” that applies relational principles to “solve” a “problem.” Thus, the gestures presented are experiences from my life where a relational perspective informed processes that oriented how a space functioned to support the relationships that constituted it. Each experience thus re-shaped and informed the entry points through which I interpreted and experienced that moment. This back-and-forth dialogue of mutual co-becoming is core to the mutual evolving care of a relational framing.

Questions

The final verbal presentation of this work helped me refine the key elements and arguments to be able to, in a limited time, share enough of the material with professors, students, friends, and others that we could have a meaningful discussion. This was quite informative and, I have tried to incorporate this feedback into the work. Specifically, below I will address some of the interesting questions and points raised and present some of them as ongoing questions that I look forward to exploring with you, and others, into the future.

1) The right sized story:²²³

Modernity-coloniality and capitalism are very large systems of thought with extensive histories, inherited philosophies, connected concepts and ramifications. My understanding of them is partial and influenced by my experiences and bias. In this work I have attempted to present clear definitions that I use to pull out some relevant threads of these concepts to investigate some ramifications of questioning these specific threads. I am not questioning all of the threads that create these systems of thought nor am I presenting prescriptive solutions. Instead, I demonstrate the distance that can be traversed and some destinations or overlooks this journey gave me by analyzing the definitions and threads that I did. In Haraway's words, I attempt to present a story that is the "right size" to be digestible, to present new perspectives while being understandable from current ones, and to, hopefully, inspire others to continue thinking and investigating in these directions and ways.

2) Usefulness: How do these entry points and gestures inform practitioners?

The implications of relationality for design professionals was discussed briefly in the introduction (and indeed is investigated throughout this work) but I will expand on additional notes here explicitly. First, as Price emphasized throughout his work, it is essential to begin by asking if a building is the right solution. This leads to my second point: a key element of a

²²³ Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*.

relational framing is its critique of the problem-solution view of architecture. Perhaps adopted/influenced by engineering approaches, it poses the object of design as a definable problem that has a solution. But this articulation of a problem tends to contain at least a shadow of the assumed solution, whether in the form of an initial hypothesis or the worldview that defined the problem and solution. In the words of Lynch and Hack “in embryo, the problem statement contains the final design” (5). Till (2009) makes a similar point that, accordingly, when the architect’s role has been expanded to that of a “spatial agent,” the primary focus moves from solving problems with buildings (especially buildings-as-objects with their focus on graphical design representations) to expanding and investigating “the brief” or the situation the community (“client”) is in and the reason and goal for the project.²²⁴ Thus, the design process begins by building relationships in community (with humans and others), listening/experiencing/engaging with them to see how they can be supported. This is done first by looking to reuse/modify existing spaces and only afterwards considering if a new building is warranted and can be constructed in an ecologically supportive, dynamic, relational way.

3) Usefulness: “How does this work help support skill-building for interested communities?”

Work on intentional living or co-living communities and on existing and past anti-industrialized societies can provide insight about ways to listen to other beings, make decisions collectively, negotiate conflict and create feedback to continually support the community while allowing for community continuance.²²⁵ This work seeks to inform skill-building of this sort but is only a beginning foray into such ongoing projects.²²⁶ However, I do not believe the endeavor I present here is only for “intentional” communities; we all live intentionally and collectively

²²⁴ Till, *Architecture Depends*. (169)

²²⁵ Whyte, “Food Sovereignty, Justice and Indigenous Peoples.” (3)

²²⁶ Fleming (2016) *Lean Logic* on moving from “Galley Skills” to “Manual Skills”; Also, the increasing movements in the fields of Traditional Ecological Knowledge (TEK) and Appropriate Technology.

whether we choose to recognize that or not.²²⁷ As a work on relationality and situated community co-becoming, my journey into the practical application of this work is just beginning, starting with building strong community relationships.

4) What does relationality mean for representation?

Representation is central to communicating ideas about space, use and construction for architects and designers. Relationality highlights considering the feelings and impacts of other beings thereby increasing empathy without promoting anthropocentric ways of experiencing. For architecture, this includes reducing reliance on graphical representation: especially the photo-realistic rendered images of potential future constructions. I appreciate Till's emphasis on architects utilizing other methods like storytelling, or multispecies designs such as Moreno's work role-playing other species not to feel what they feel, but to expand empathy and consideration of their lives and the impact of things like light pollution, vibration (noise), or soil compaction.²²⁸ Thus, my response to the reviewer who asked me at the end of my presentation about representation and "What do flowers think of the flowers on your shirt?" I would now respond that I do not expect flowers to see my shirt as having flowers on it as, such would presume they see in the same spectral ranges and ways as humans. But it asks, what would it mean to create a shirt that flowers think has flowers on it and then how might they respond to that?

In Conclusion, I list a few preliminary questions to continually ask ourselves during the process of design (as we are all designers). Does a design and its process:

- facilitate dialogue within all members of the community?

²²⁷ In fact, I see all societies as intentional– the normative Western "one" today is just organized around the intentions of perpetuating capitalist modernity at all costs, not intentional around the wellbeing and desires of the beings that constitute that system's body.

²²⁸ Till, *Architecture Depends* (114); Moreno, "Endarken Futures I." and see description in the [Responsibility](#) section.

- implement diverse, situated strategies that are adaptable over time by the participants?
- enhance beings' connections and groundedness in their locale?
- strengthen beings' ability to build kin with diverse others?
- bolster and rely on individual and community creativity and co-creation?

* * *

We say, “The water *is* hot and ready.” While objectified with “the” we unthinkingly still say it “is”: a state of being. It is a being that is ready at this moment and is enticing you and your bare skin to converse with it, to be soothed by it, for waters-that-constitute-80%-of-your-body to resonate with it.²²⁹

Relationships are not linear but interwoven webs, spiraling, overlapping, (re)cycling, always changing. Not only are the interactions changing but the members are changing. Da Cunha’s eloquent expansion of the concept of water and rivers to pervasive, omnipresent “gradients of wetness” dissolves boundaries and expands connectedness. The beings that comprise watery flows are part of an extended conversation passing between different communities and areas across time. Water speaks with the mountains as it creates valleys; it mediates between the sun and all beings as it moderates daily temperature fluctuations; it shares precipitation across watersheds and regions as clouds of gaseous water become liquid over a new body of land.

Kinship, situatedness, trust, and reciprocity can help us endeavor to see in different ways through mutual care for the relationships that comprise our worlds and make strides towards entangled collective lives and beautiful, nourishing ways of living for all.

²²⁹ David Abram: *Becoming Animal*: Chapter 2

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