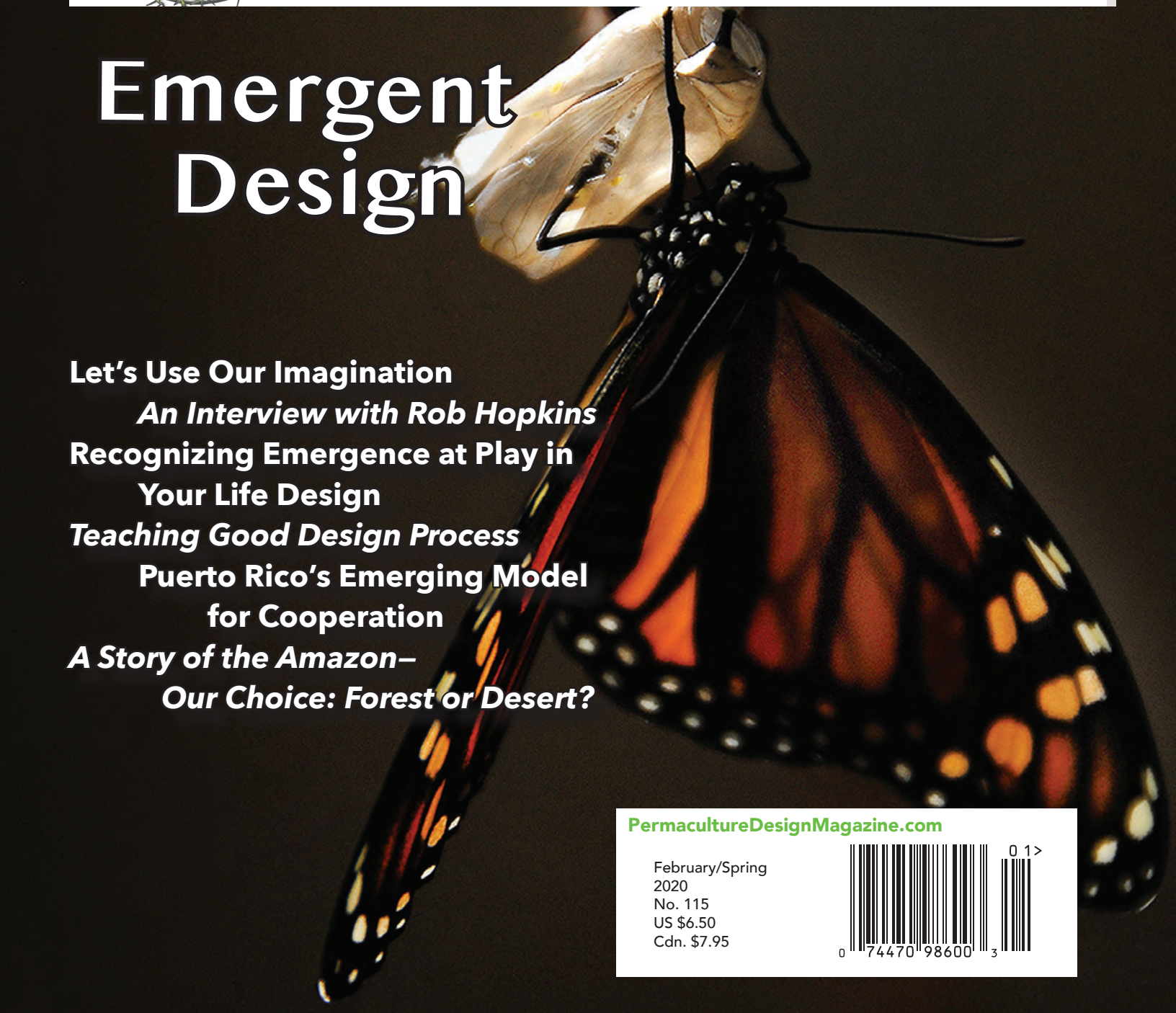
Permaculture Design

Regenerating Life Together



Emergent Design

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Recognizing Emergence at Play in Your Life Design
Teaching Good Design Process
Puerto Rico's Emerging Model for Cooperation
A Story of the Amazon–Our Choice: Forest or Desert?

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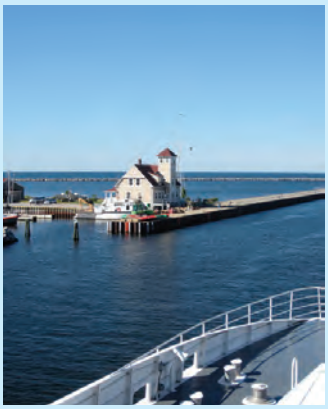

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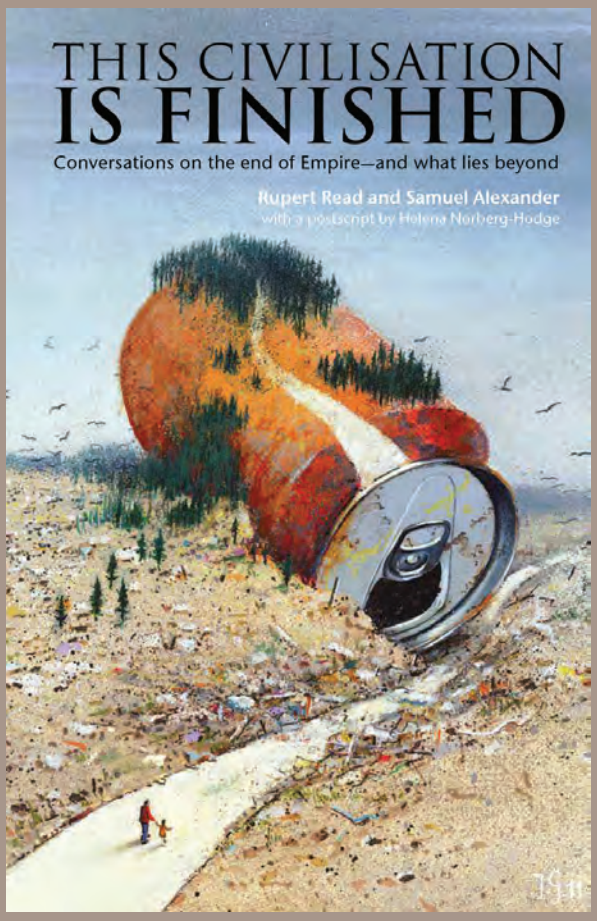

Samuel Alexander

...broadens his extensive collection of works with this book co-authored with philosopher/activist and XR spokesperson Rupert Read. While addressing some challenging themes, this series of thought provoking conversations explore how we can negotiate what lies beyond the industrial growth civilization that we know today.

Other essays, collaborations and works include:

Available in the US from us.permaculture**principles**.com

Permaculture Design
February/Spring 2020 Issue #115

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The Edge is Where the Action is

Rhonda Baird

EMERGENT DESIGN was one of the leading takeaways for me from our issue exploring Design Process *(Permaculture Design #108).* Most teachers, according to my understanding, approach the design process as a static, linear one which requires the designer to see and know all things from original principles—implementing them with flawless perfection. The resulting imprint of our imagination onto reality might make Plato proud, but it probably doesn't happen very often in reality.

Recognizing and valuing the fluid, responsive, and messy reality of design and implementation is crucially important. Perhaps it is so important because it requires us to be humble and question our assumptions. But recognizing this messy reality also helps students and clients proceed by accepting there will be valuable moments for feedback and by making adjustments along the way. Adaptability and imaginative response are wonderful foundations for survival and sustainability.

More to the point, emergent design allows us to find the growing edge of complex systems and respond appropriately. We talk about the concept of "the edge is where the action is." Permaculturists know the capacity to identify and engage that edge in our rapidly changing world is essential to our success in pushing systems in a positive, life-affirming direction.

The more experience we have in design and implementation, the more intuitive our processes become so that design takes less time and realizes more success. How can we work together to ensure others recognize the value of this work?

This issue of *Permaculture Design* tells the stories of teachers, designers, community organizers, and other permaculturists who work tirelessly to realize a better world—one of a healing Earth, connected communities, and empowered people. We are proud to share their (often differing) points of view.

Looby Macnamara starts us off with some thoughts on using the design web to guide our work. Rob Hopkins contributes from his new book on the power of imagination to solve our problems, as well as an interview on the subject. Dan Palmer, a strong proponent of the power of emergent design in permaculture, sums up his thoughts from several years of consideration. Gloria Flora, a frequent contributor, brings her perspective on the theme to its application in landscape design. Jillian Hovey highlights her approach to teaching the design process—based on decades of teaching permaculture all around the world; while a student from Gaia University, Silvina Miguel, speaks to the power of Gaia U's permaculture-based approach to education. April Lea and John Lago Gonzalez contribute a piece on what is developing in the third year of Puerto Rico's post-hurricane permaculture community. Right livelihood—Dawn Shiner and Frank Hyldahl share their (truly) unique artisanal work from the mountains of southwest Virginia. We welcome the contribution of a new writer, Loxley Clovis, who brings a new perspective to the story of the Amazonian peoples. All of our contributors for this issue are passionate, and I am very pleased by their rich offering for our readers. Please put these ideas into action. Let us know how your projects are going—and how these ideas inspire you.

In this new decade, in this moment of this year—today—we are committing to a pivotal change. The world is on fire; let's get to work. Δ

Using the Design Web

Looby Macnamara

MY JOURNEY INTO EMERGENT DESIGN began while I was writing *People and Permaculture.* People-care is one of the three ethics of permaculture, but at the time it had only been hinted at in the permaculture books. There were three motivations behind the vision of a book focused solely on the people-care ethic of permaculture.

The first was the recognition that while we have plenty of technologies and methods for massive-scale Earth-care and repair available to us, it is people that limit the implementation and effectiveness of these. On every scale—personal energy levels, relationship dynamics, neighborhood layouts, council policies, national budgets, international politics—the preferences, biases and priorities, communication, and decision-making of people make projects stall and fail.

Alongside this realization was the awareness of how powerful the ethics, principles, and design principles of permaculture are for creating positive change. Permaculture has been deeply influential in my life beyond the garden and for many of my friends; and I am motivated to share the sense of empowerment and purpose as well as the vitality and emotional health that many people have gained through permaculture thinking. I wanted to elucidate those benefits and make the pathways easy to follow, rather than hidden beneath the persona of permaculture as a gardening method.

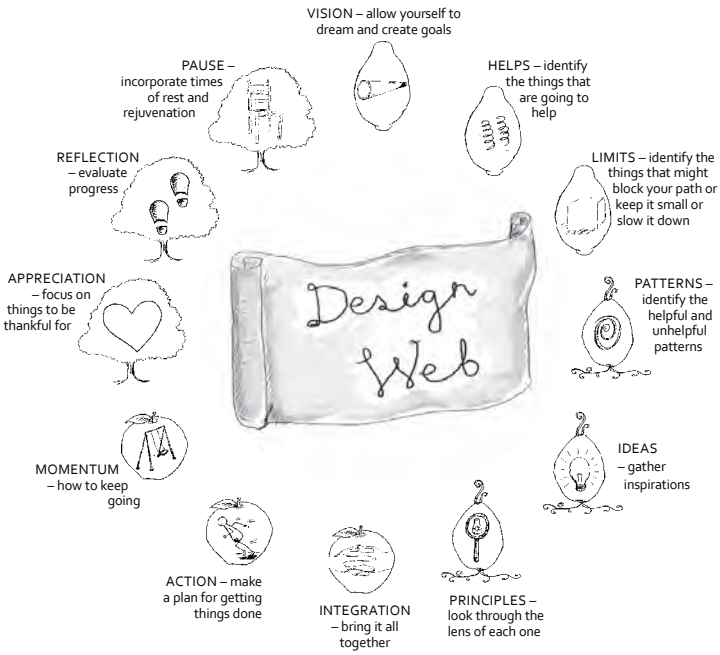
The third motivation linked with this was knowing that access to land is not available to everyone. For many people in the modern world, Earth-care is at least once removed from their day-to-day life; whereas every single one of us is directly involved in People-care. Focusing on the People-care ethic is a way of making permaculture relevant to everyone. With more and more people conversant in permaculture and proactive with design in all areas, we have the potential for massive global transformation.

While writing *People and Permaculture,* I wanted to create a design framework specifically applicable to people-based systems. I started with the intention of creating a funky acronym and mapped out the different stages. In this process, though, I realized that design isn't a linear process with discreet stages. Designing is a non-linear process where each stage influences and is connected to every other stage, and I naturally started to draw a web of connections. Designing for and with people is a non-linear process with non-linear results. With this non-linearity, anything is possible. Tipping points from climate change to climate health could happen at any moment. Let's allow for the possibility of the seemingly impossible.

People and Permaculture grew out of permaculture thinking and uses design thoughout its entirety.

People & Permaculture

Anchor points



Design and action

Designing is a way of being proactive, visionary, creative, and effective. Design is a navigational tool. Design is a process of organizing our thoughts, needs, and visions. It is a way of gaining clarity and a means of creating and directing flows of energy and thought. Design enables us to restructure components and combine elements in different ways. My friend Lucy describes using the Design Web for a co-parenting design as a way of organizing the tangle of spaghetti in her head. It is a process that moves us from desires, idea, intention, and imagination to reality and action. It enables us to widen awareness. It can be a way of making the invisible visible. It can bring to light our visions, our hidden limiting beliefs, our gifts, our cultural paradigms and patterns, our imagination, our patterns of procrastination and action, and the things we are grateful for and can celebrate. Design is a conscious, proactive response to needs, opportunities, and challenges.

Design needs to move into action. If we have too much designing without following through into action and manifestation, then these designs can become stagnant energy in our lives, in the same way that unused resources become waste.

Cultural Emergence

My work has evolved into creating a toolkit for emerging regenerative cultures called Cultural Emergence. It is based on the premise that it is not a 'permanent culture' that we need to create, as the term permaculture alludes to, a blueprint of a destination, but an ongoing process of design, emergence, and creating culture. Cultural Emergence design supports us in facilitating cultural changes for us as individuals and groups. The Design Web is part of the toolkit for designing cultures of personal leadership, collective intelligence, and planetary care.

Design possibilities

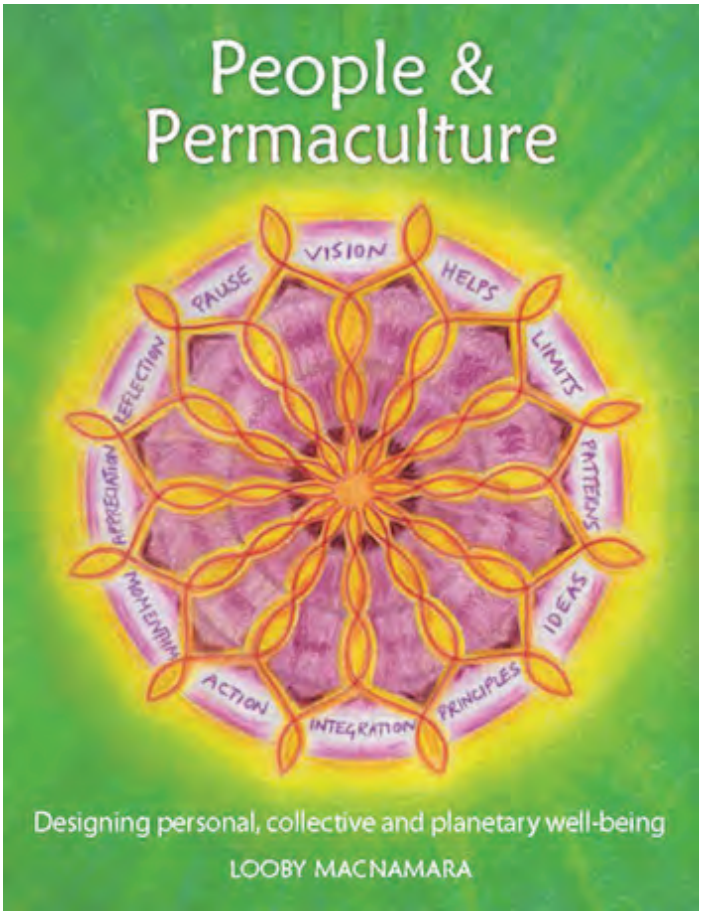
The Design Web has been used all over the world and in ways and situations that I couldn't have foreseen. It has been used to design pathways, places, projects, processes, plans, and products—from looking after elderly parents to becoming a parent, from organizing housecleaning duties to recovering from burnout and chronic illness, from running volunteer programmes to running events, from building homes to building businesses. People have designed changes in lifestyles, diet, location, and careers. Pathways have been considered for ongoing journeys as teachers, mentors, diploma apprentices, coaches, leaders, and elders. Plans have been made for regular reflection and effectiveness as well as for transitions and rites of passage—from birth plans and weddings to end of life and dying creatively plans. Designs have been made to support a variety of skills development: becoming a facilitator, learning a new language, or acquiring cooking or storytelling skills. The Design Web has been used to transform inner landscapes and create deep openings to our true potential.

Designs have enhanced family dynamics and brought harmony and connection to relationships. It has clarified intentions and unified singing, parenting, and transition groups. People have crafted portfolios of connected designs, building an holistic picture of their projects. Designs have manifested products such as books, courses, and learning tools. Momentum has been gained with ongoing processes such as nature connection and empowerment of women and marginalized groups through design. Teachers and health professionals have brought permaculture design into schools and hospitals to enable more people-care and resilience. Designs of plans have included land, buildings, homes, and offices. From gardens to woodlands to city farms, designs have listened to the land and have aligned its needs with the needs of the people.

International organizations and businesses have made designs for scaling up and restructuring their work. Designs have helped bring understanding across diverse cultural backgrounds. They have informed disaster relief and international development programmes. There has even been a global-scale conceptual design for how we could create a safe world for all women and children—a world without sexual abuse, it seems so far from where we currently are, but perhaps we could work towards zero for the statistics of abuse, why not try and design our way to a safety culture.

Design Web Anchor points

The Design Web has 12 stages that I refer to as anchor points. Each of the anchor points holds information, observations, and part of the design thinking. Taking any part away loosens the whole web, hence each of the 12 points anchors the design. The Design Web follows a natural pattern. Webs spread the load, catch things, make connections, are strong,



light, and repairable and create lots of edge. The more steps are made, the more connections and resilience reside within the design. The anchor points can be visited in any sequence appropriate for the design. After each anchor point, there are many possible directions of movement. Where to go next is governed in part by what arises in each step. The design can become an intuitive movement for the designer, or a dance between the designer, the clients, and the design, where one step naturally leads on to another. For example, you may want to capture your *ideas* after spending some time *visioning*, or exploring *patterns* may lead you to think about the *limits.*

All parts of the web could be connected with each other; this is a key difference between this and linear design processes. There is plenty of scope for seeing how one part of the design influences every other. Our *vision* sparks ideas, *limits* dictate our *actions*, *and appreciation* can provide *momentum*.

Once established, the design will catch skills and experience, as well as the yields of the design itself. That is, we learn through doing, and we increase our design skills for future designs—the more we reflect on the process, the more we learn. Reflections can be harvested with sharing, group awareness, and recording of the process.

A spider is aware of the vibrations in its web showing something has been trapped. In order to make the most of our design, we too need to be aware of the vibrations. We could get so carried away with designing that we don't notice that there is already a yield. Observation is a constant throughout.

Anchor points

Design has three basic steps: it starts with recognizing where we are, visioning where we want to be, and then identifying steps for how we get there. The 12 anchor points provide the details of these three steps. Each anchor point has questions to explore. These can be answered by journaling, talking it through with someone, or with embodied, experiential activities.

Vision—allow yourself to dream and create goals

Visioning where we want to get to helps us to set our compass in that direction. Ambition and imagination support us in creating visions that motivate and inspire. We can focus on the overall qualities and how it will feel to be living our dreams without needing to know all the details. Vision ignites hope.

- What is my ideal?
- What are the abundances I would like to create in my life?
- What are my wildest dreams?

Helps—identify the things that are going to help

Valuing ourselves—our gifts, skills, experiences, knowledge, courage, and kindness—shows us how many helps we have. Many resources are available within our groups. All of these resources boost the design and help it grow effectively.

- What are my motivations for changing?
- What resources do I have within me?
- What external resources are available?

Limits—identify what blocks the path, what might keep it small or slow it down

Limits show up in many different forms and are often invisible or hidden. It is a chance to recognize energy leaks, concerns, emotional ties, and individual and cultural beliefs. Time and money are the two most commonly cited reasons for not being able to do something, but if we dig deeper we find that it might be lack of confidence, belief, discrimination, or other factors. Acknowledging these influences allows us to design around them; otherwise they are like hidden wires tripping us up or holding us back. Once we have identified our current or potential future limits, we can flip them into needs of the design: for example, lack of confidence becomes the need to build confidence.

- What's holding me back?
- What are my limiting factors?
- Why would I not want to change?
- What concerns do I have?

Patterns—identify helpful and unhelpful patterns

Patterns guide our bodies and lives; from thinking and behavioral patterns, to daily and seasonal patterns, to the structural patterns within our cells and organs. This anchor point represents an edge in the design between what is and what could be. Some patterns have outlived their usefulness in our lives, and can be disrupted to create change within our designs. Patterns from nature can inspire our designs.

- What are the current patterns of thinking, behaving, and interacting?
- What patterns from nature, other people, or different activities could help within my design?
- What patterns of success from another area of my life can I translate into my designs?

Ideas—gather inspirations

This anchor point captures the sparks of inspiration, seeds of ideas and glimpses of solutions. They do not need to be fully formed or well thought through. It is worth going for quantity over quality of ideas. Ideas can be refined later and examined for their relevance and feasibility. For the moment, it is good to just be creative and wild with our imaginations, for they can lead us to unexpected places.

Using the principles is like throwing in a fishing line....

- What creative, adventurous, wild, and wacky ideas do I have?
- What big, little, practical, routine ideas do I have?
- What seeds of ideas do I have?

Principles—look through the lens of each one

Principles can help us with deciding between options. They can also provide a checklist. Using the principles is like throwing in a fishing line; sometimes we will get something useful, sometimes nothing, and sometimes something unexpected.

- If I look through the lens of each principle, what do I see?
- What does it tell me about my current state?

- What ideas does it give me about the direction I want to go in and how to get there?

Integration—bring it all together

The Integration anchor point is the critical one, here we make decisions about what we want to do. A convergence and divergence rhythm resonates between this anchor point and the others. We first revisit all the information we have from the other anchor points to gather the needs of the design. When we know the needs of the design, we cluster them into themes and priorities. Then we can look to the other anchor points again to harvest ideas of systems and strategies to meet these needs. If we feel we have identified viable approaches that we can commit to, then we can decide to bring them back into the design. If we are not ready for them, they can be parked in the ideas anchor point. When we have this information, it can be useful to put it together in a visual or symbolic form, this can help to keep the design alive for us and provide a portal to all of the design thinking.

- How can I integrate the information already gathered?
- What are my needs within the design?
- What systems could be put in place to meet those needs?
- What elements would each system be composed of?

Action—make a plan for getting things done

Appreciation brings us into connection with ourselves, each other, and the world around us.

Being realistic with the timescales and budgets of energy, resources, money etc. makes it more likely for things to happen. Action plans for non-linear emergent designs need to be flexible and adaptable. Having an idea of timescales of yields and outputs can be motivating.

- What am I going to do and when?
- What resources do I need?
- What yields and benefits am I going to get?

Momentum—consider how to keep going

This anchor point is about maintaining the systems we create as well as building momentum. Systems may require daily, weekly, or seasonal attention. We need to ensure we are able to stay the course before we set them up. Over time, our capacities and effectiveness grow, and we can do more.

- How am I going to maintain momentum?
- How am I going to build and increase momentum?
- What support might I need to keep moving towards my vision?

Appreciation—focus on things to be thankful for

Appreciation brings us into connection with ourselves, each other, and the world around us. It opens our hearts and minds, inviting us to practice our observational skills. Through appreciation rituals, we embed people-care into our designs.

- What can I appreciate about myself?
- What can I appreciate about other people and the world around me?
- How do I feel supported at the moment?

Reflection—evaluate progress

This is a chance to listen to the ripples of our actions. There may well be emergent qualities and unexpected outcomes that can lead to turning points in the design.

- What is the current situation?
- What is going well?
- What is challenging?

Pause—incorporate time for rest and rejuvenation

The pause anchor point honors people's needs for rest and renewal. There are many different strategies for pausing, and these include having fun and being creative. When we take time to pause with our partners, families, and colleagues, it brings everyone into a deeper connection. Pause can be integrated into the design if we find enjoyable ways to meet our needs.

- How can I recharge my batteries?
- How can I make times of rest and quiet a built-in part of my design?
- How can I rejuvenate myself?

Design can be a playful, enjoyable process that gives us unexpected yields and confidence. Design supports us to walk our talk and come into alignment with who we want to be in the world. Δ

Looby Macnamara is author of People and Permaculture*, the first book globally to directly explore the use of permaculture principles and design for people. She is also author of* 7 Ways to Think Differently *and* Strands of Infinity*. She runs Applewood Permaculture Centre in the UK with her family. She is currently writing a book on Cultural Emergence due out later this year. There is a free/pay-as-you-wish online Cultural Emergence course. For details of books and courses, see www.LoobyMacnamara.com.*

Imagine a New Way

Rob Hopkins

FROM WHAT IS TO WHAT IF by Rob Hopkins, founder of the international Transition Movement, is an inspirational guide on how to be bold, brilliant, and decisive for the times ahead. This book is a passionate exploration of our imagination: why it matters, what stifles it, and what we must do to revive and reclaim it. Hopkins argues that we have the capability to effect dramatic change, but we're failing because we've largely allowed our most critical tool to languish: human imagination. Imagination is central to empathy, to creating better lives, to envisioning and then enacting a positive future, yet it is demonstrably in decline at precisely the moment when we need it most. *From What Is to What If* is a call to action to unleash our collective imagination, told through the positive stories of individuals and communities who are doing it now, creating rapid and dramatic change for the better.

The following excerpt is from Rob Hopkins's new book From What Is to What If: Unleashing the Power of Imagination to Create the Future We Want *(Chelsea Green Publishing, October 2019) and is reprinted with permission from the publisher.*

There are stories from throughout history about how rapid transitions lead to ingenuity, flourishing, imagination, and togetherness.

GIVEN THE STATE OF THE WORLD, the message of despair is pretty convincing. Things look grim. But something about that doesn't sit quite right with me. In fact, there's evidence that things can change, and that cultures can change—rapidly and unexpectedly. And that's not just naïve, pie-in-the-sky thinking. In *How Did We Do That? The Possibility of Rapid Transition*, Andrew Simms and Peter Newell tell the story of Iceland's 2010 Eyjafjallajökull eruption, which sent fine dust into the sky that spread for thousands of miles and grounded most planes. Then what happened? People adapted. Quickly. Supermarkets replaced air-freighted goods with local alternatives. People discovered other, slower ways to get around, or decided they didn't really need to travel at all. People held business meetings online. The Norwegian prime minister, Jens Stoltenberg, ran the Norwegian government from New York… with his iPad. This isn't the only example. We might be focused these days on how we are only nine meals from anarchy, but there are stories from throughout history about how rapid transitions lead to ingenuity, flourishing, imagination, and togetherness. (1)

I've seen this with my own eyes, thanks to an experiment a few friends and I initiated more than a decade ago in our hometown of Totnes in Devon, England (population 8,500). Our idea was a simple one: What if, we wondered, the change we need to see in response to the biggest challenges of our time came not from government and business, but from you and me, from communities working together? What if the answers were to be found not in the bleak solitude of survivalism and isolation, in the tweaking of ruthless commercialism, or in the dream that some electable savior

will come riding to our rescue, but rather in reconnection to community? As we put it: "If we wait for governments, it will be too late. If we act as individuals, it will be too little. But if we act as communities, it might just be enough, and it might just be in time."

As we began floating this idea with our friends and the wider community, the term 'Transition' arose to describe the intentional act of shifting from high resource use, high carbon dioxide (CO_2) emissions, extractive business practice and fragmented communities to communities with a healthier culture, more resilient and diverse local economies, more connection and less loneliness, more biodiversity, and more time, democracy, and beauty.(2)

We discovered that if enough people came together, we could create an entirely new kind of story.

As 'Transition Town Totnes,' we began asking these 'what-if' questions, and things started unfolding apace in our town. People planted fruit and nut trees in public spaces, grew food at the train station, and connected neighbors who wanted to grow food with neighbors who had unused garden space. We crowdfunded to buy a mill—the first new mill in Totnes in more than 100 years—to grind local grains and pulses for a range of flours, and we hosted an annual local food festival celebrating food grown in and very near to Totnes. As I write this, Transition Homes is building 27 houses using local materials for people in need, and Caring Town Totnes has developed a network of caregiving organizations so they can work together more effectively. Through it all, we've held community conversations so people could come together to imagine and discuss the kind of future they'd like to create.

In 2013, we mapped the local economy with our Local Economic Blueprint and argued the financial case for a more localized approach to economic development.(3) Our annual Local Entrepreneur Forum invites the community to support new businesses and has now helped launch more than 30 enterprises.(4) Recently, some friends and I started a community-owned craft brewery, New Lion Brewery, which brews delicious beers using many local ingredients, often in collaboration with other emerging social enterprises.(5) And early on, Transition Town Totnes created the Totnes Pound, a local currency that has inspired many other local currencies around the world. When people asked us, "Why do you have a £21 note"? We asked, "Why not?"

Around the same time that we were mapping the local economy, Transition Streets brought together approximately 550 households in groups of six to ten neighboring households. Each group met up seven times to look at issues such as water, food, or energy consumption and to agree on actions they could take before the next meeting to reduce waste, cut costs, and develop community resilience. By the end, each household cut their carbon emissions by an average of 1.3 tonnes, saving around £600 a year (about $789 US).(6)

What was fascinating about Transition Streets was that when organizers asked participants what was most impactful about taking part, nobody mentioned carbon. Or money. They reported that they felt like part of the community, they felt as though they belonged, they knew more people, and they felt connected. This has been true across the board. More important than any of the actual projects was the sense of connection, of feeling part of something, of the underlying story starting to shift—a collective reimagining of what the future could be. I began to see that our efforts were starting to become, at least in part, a different story our town told about itself. And in the process, our collective sense of what was possible began to shift. We discovered that if enough people came together, we could create an entirely new kind of story from the collective experiences of so many people trying to make good, and better, things happen in our community. Part of the beauty of Transition is that it's all an experiment. I don't know how to do it. Neither do you. In Totnes, we were just trying to spark something that might unlock a creative spirit, a renewed sense of possibility, a fresh and hopeful way to think about the future, without any thought that it could spread to other places. But spread it did. As early as 2007, Transition groups started popping up in communities in the United States, Italy, France, Japan, Holland, and Brazil. The Transition movement now exists in 50 countries and in thousands of communities. Each group is different, and emerges from the spirit and culture of the place. It's a process that, from the outset, has invited and supported people's creativity and imagination. It has also profoundly affected how I think about our world's biggest problems.

What I saw ignite with the Transition movement taught me that we're often looking in the wrong places for the solutions to our biggest threats. Yes, political action is a vital part of democracy, and can lead to very real change, but in addition to thinking we always need to campaign and lobby harder, design bigger and more disruptive demonstrations, and rally more people through more online petitions, perhaps we need sometimes to stop, stare out of the window and imagine a world in which things are better. Maybe it's time to recognize that at the heart of our work is the need for those around us to be able to imagine a better world, to tell stories about it, to long for its realization. If we can imagine it, desire it, dream about it, it is so much more likely that we will put our energy and determination into making it reality. As my friend and mentor the late David Fleming wrote, "If the mature market economy is to have a sequel… it will be the work, substantially, of imagination."(7)

To experience the Transition movement in Totnes and see it take off around the world made clear to me how prescient

Fleming's remarks were. Bringing about the world we want to live in, the world we want to leave to our children is, substantially, the work of the imagination, or what educational reformer John Dewey describes as "the ability to look at things as if they could be otherwise."(8) It seems a lot of people are reaching a similar conclusion. Δ

Rob Hopkins is cofounder of Transition Town Totnes and Transition Network and the author of *The Power of Just Doing Stuff*, *The Transition Handbook,* and *The Transition Companion*. His latest book is *From What Is to What If* (Chelsea Green Publishing, October 2019).

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For more, see Jill Kiedaisch's interview of Rob Hopkins on page 29 of this issue.

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One Lens on Emergent Design and Complex Adaptation

Generative Transformation

Dan Palmer

Note: The content of this article is adapted from posts on Dan's blog project www.MakingPermacultureStronger.net

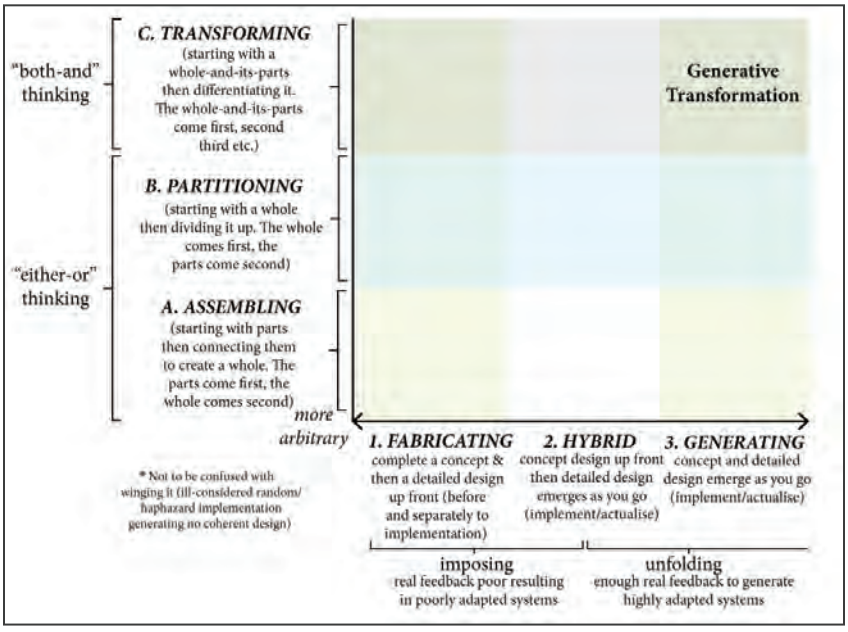
THE FOLLOWING CHART presents nine possible spaces any design process can sit within or move between. In the top right corner, the chart suggests a name for a space that I believe is permaculture's rightful center of gravity. I call this space *generative transformation*. As we'll see, generative transformation is a way of going about doing or creating anything, be it a garden, farm, organization, livelihood, or life.

Assembling—Partitioning—Transforming

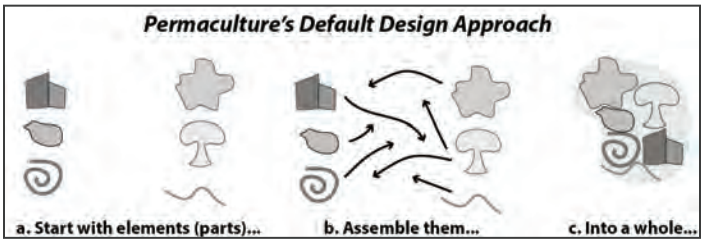
First, I'll clarify the two axes that give rise to the nine possible spaces. I'll start with the difference between what I'm calling *assembling*, *partitioning*, and *transforming*. I see these as three increasingly life-enhancing ways to think about whole-part relations as we design and create things.

A. Creating by *Assembling*

From an assembling perspective, how you go about creating is easy: choose some elements, then join them into whole systems. For example, you might get a wish list of desired elements such as pond, chook house, windbreak, and veggie patch, and then figure out how to best insert and connect them to create a whole permaculture garden.



Generative transformation: the sweet spot of design



While it has its value, a risk comes with this approach. With its focus on inserting and arranging elements, it is all too easy to *impose* solutions ("let's put the swale here, and then the herb spiral can go there"), even if you don't realize that is what you are doing. When you create by assembling elements, the outcome is an *assemblage of elements*.

B. Creating by *Partitioning*

Somewhere along my journey as a permaculture designer, I made an important discovery: *living systems are **not** assemblages of elements.* Indeed, this culturally widespread assembly approach flies in the face of how any living whole comes into being then evolves. It was Christopher Alexander that woke me up to this fact:

Design is often thought of as a process of synthesis, a process of putting together things, a process of combination.

According to this view, a whole is created by putting together parts. The parts come first: and the form of the whole comes second.

But it is impossible to form anything which has the character of nature by adding preformed parts *(Alexander, 1979, p. 368)*

Alexander has shown that contrary to an assembling process, it is more accurate to say that a living whole's parts, or organs unfold out of the growing whole—where the whole comes first, and the parts come second:

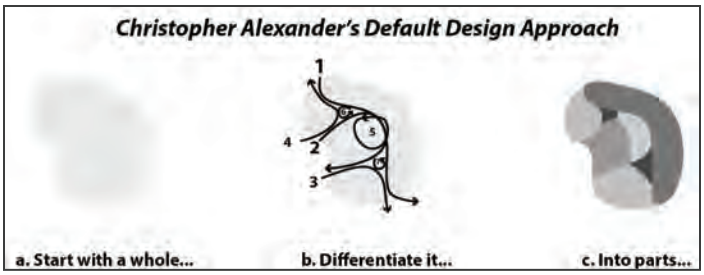
The key to complex adaptation… lies in the concept of differentiation. This is a process of dividing and differentiating a whole to get the parts, rather than adding parts together to get a whole (Alexander, 2002, p. 197)

This [approach to design] is a differentiating process.

It views design as a sequence of acts of complexification; structure is injected into the whole by operating on the whole and crinkling it, not by adding little parts to one another. In the process of differentiation, the whole gives birth to its parts: the parts appear as folds in a cloth of three-dimensional space which is gradually crinkled. The form of the whole, and the parts,

come into being simultaneously. (Alexander, 1979, p. 370)

Taking Alexander's words at face value, I conducted and documented several practical design examples (documented on my blog) where the whole design process was explicitly



about moving from pattern toward detail and gradually *partitioning the preexisting whole landscape*.

Here, for instance, you might start with an entire backyard, partition it into orchard and veggie areas, then partition the veggie area into annuals and perennials, and so on, right down to where the parsley goes.

One advantage of this approach, alongside being more aligned with how the rest of life creates itself, is it requires you to pay more attention to the pre-existing whole you are working with. The risk of imposing pre-formed solutions is thus significantly reduced—hence it being midway on the chart's y-axis continuum from *less* to *more* life enhancing.

C. Creating by *Transforming*

Eventually, after many years designing by assembling, then by partitioning up the whole, then by reading more Alexander, the penny dropped for me. He was *not* talking about flipping from assembling (joining parts into wholes) to partitioning (dividing wholes into parts). This is a *false dichotomy*. Following in Alexander's footsteps, I now use the words *transforming* and *transformation* as a bigger and more inclusive process than merely assembling *or* partitioning.

To transform is to make different, to *differentiate*. When we are transforming a whole-and-its-parts, we are making it different—no matter whether we are integrating new parts, removing old parts, or changing existing parts around. These are all different ways of transforming the system, of differentiating the whole. Yes, it is hard to disagree, I know, and it seems blatantly obvious when I say it. But here's the thing. Even though we might intellectually grasp and agree with this stuff, the way we then behave as designers and creators very often *disagrees* with it. As much as we might like the sound of this, it is *very* hard not to fall back into the culturally dominant design-by-imposing-and-assembling rut when the rubber hits the road.

So, I use *transformation* to transcend and include the seemingly contradictory approaches of *assembling* and *partitioning*. To transform is to start, always, with a whole that already has parts. Every whole landscape already has parts. Every whole person already has parts. When we *surf* or *dance* or *co-participate* in the evolution of either, the whole and the parts are moving forward together, simultaneously.

Permaculture is Transformation

Permaculture is *never* about starting something brand new, with a blank slate, and dropping something entirely new into a space or place. It is always about *stewarding* the *ongoing transformation* of what is already there. In this sense, we are only ever *retrofitting* what we already have. For there is always, everywhere, *already something going on*. Which is to say there is already a whole, which already has parts. Our job is to listen to the utterly unique narrative already unfolding inside any situation, then to *harmonize* with it and where appropriate *perturb* it in life-enhancing directions.

On this note, I always appreciated this comment from Toby Hemenway (2016):

> *I think Alexander's concept is much closer to how permaculturists actually design, by starting with something that is already a whole and then differentiating and integrating additional factors into it. The issue is mostly that our language has not caught up to our practice…. Thinking in terms of relationships and organic wholes rather than collections of parts is foreign to our culture and not easy for anyone from Western culture to do.*

The following table recaps the three-way distinction between assembling, partitioning, and transforming. I hope it helps and that you are getting a feel for the distinction and if and how it might shed light on how you see and work with things.

I also hope it is clear why I believe transforming is more life enhancing than merely assembling or partitioning. In transcending and including both assembling and partitioning, transforming is literally more holistic—it gives us more options both to *see* wholes and to more fully *develop* their potential.

Fabricating—Hybrid—Generating

Let's now focus on the x-axis of the chart. I'll explain what I mean by the progression from a *fabricating* through a *hybrid* to a fully *generative* approach to designing and implementing. I see these as three different ways designing (or thinking) and implementing (or doing) can be related whenever we do stuff or create stuff. We'll start with fabricating, then consider generating, then come back to the hybrid middle ground.

Fabricating (Master Planning)

A *fabricating* approach completes an up-front design or master plan and *only then* starts implementation. The plan for the Hayes Home is an example of a fabricated master plan: *fabricated assembly.*

Isn't it pretty! It also brings together hundreds of mistakes in the sense that many of these decisions would be made much better in sequence and in context as the site was being developed, rather than being dreamed up and crammed into a plan up front. This is not to suggest that there is not a time and place for such plans. It *is* to say we get in trouble when we forget what they are—diagrammatic guesses that can never, ever capture or respond to all the new details that only and

	Assembling	Partitioning	Transforming
What you start with	A background space or container (already containing some elements)	A continuous chunk of uniquely textured whole space	A continuous chunk of unique and evolving-whole-space-revealing-itself-through-its-parts
What you do from that starting point	Introduce more elements to the container and assemble them to maximise functional interconnection	Slice or partition the space up into a pattern of sensible units based on its unique texture	Iteratively transform the whole-and-its-parts in desired, life enhancing directions
Primary operation	Addition	Division	Integration, addition, division, subtraction, multiplication, modification, etc – in any combination that is appropriate with no upfront bias
What you end up with	A whole system of interconnected elements	A harmoniously partitioned whole	A more evolved (and harmoniously interconnected) whole-and-its-parts
Primarily creative or conservative?	Creative	Conservative	Both
Direction re patterns and details	Details to patterns	Patterns to details	Both
Capacity to enhance life	Almost non-existent	Average	Off the charts!

Put together by Dan Palmer for
www.MakingPermacultureStronger.net
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inevitably emerge as soon as you start to intervene in any complex system or ecosystem.

Ben Falk (2013) has put this very nicely:

It's easy to just take paper too seriously and have too many decisions based on what is or isn't on a piece of paper. It can be great to guide overall decisions and to know starting points and know general steps but if it's not coupled with the active hands-on that constantly changes what's on that paper master plan/site design, it can be very misleading and very dangerous.

Generating

A *generating* approach rigorously and repeatedly hones in on the *best next step,* then takes it. Here we generate a design layout or pattern in the very process of actively modifying whatever we are working with. Any design sketches are at best *servants* of the way things are unfolding on the ground, rather than upfront *masters* (as in *master* plans) where fabricated guesses are imposed.

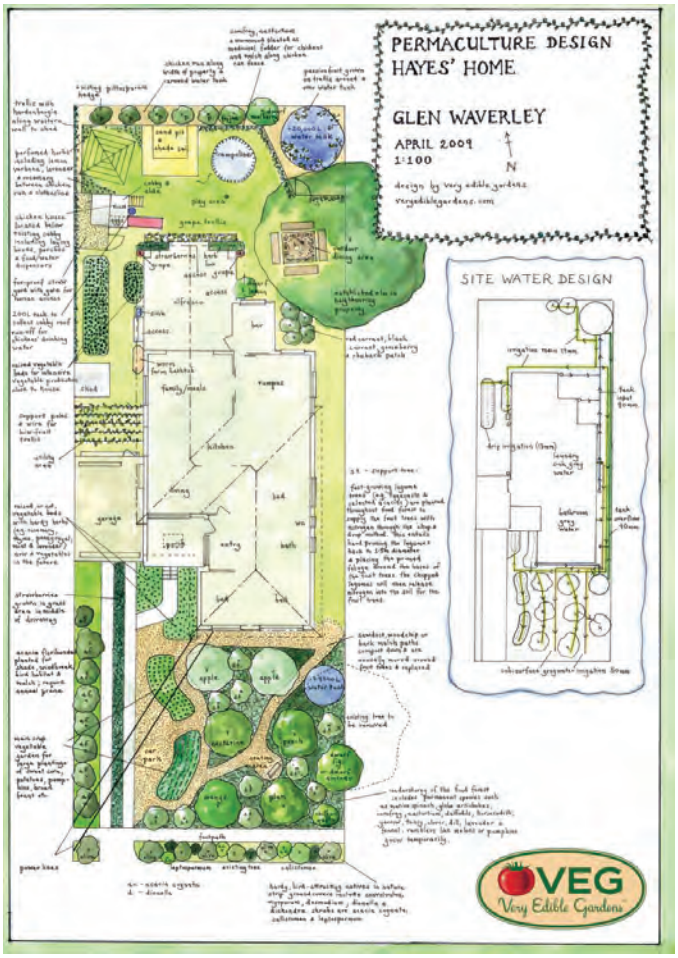
Though I first learned about generating from Christopher Alexander, I subsequently discovered that permaculture co-originator David Holmgren explored something similar for many decades. David contrasted *master planning* (fabricating) with *strategic planning (*which is something very similar to what we're calling *generating).*

***Master planning**, (where detailed plans are implemented producing a final fixed state which is a copy of what is on paper) has been discredited in the planning profession due to its failure to deal with complex evolving systems…*

*In **strategic planning**, the emphasis is on processes of development which are on-going and respond to changing circumstances. It recognises that complex systems can never be completely described, predicted or controlled but that forces can be identified and worked with to develop a more balanced and productive system. Most importantly, strategic planning can help pinpoint the initial step to get the desired processes moving without later having to undo what has already been done. (1994, p. 21)*

In a master planning or fabricating approach, it is difficult to avoid making premature decisions and then *imposing* them on reality. You thereby end up taking steps that are *not* the best suited to what is actually going on at that stage in the unfolding process.

In a generating process, on the other hand, we move from *imposing on* reality to *unfolding out of* reality. As a result, the decisions we make along the way are *non-arbitrary*. They are made at the right time in the presence of the right information, meaning we have at least a chance of getting them right. When by fabricating we make our decisions before we even start, it is as if we are turning on this massive tap



Master plan for the Hayes' Home: an example of fabricated assembly

of arbitrariness where the quality of the *outcome* rests on the nature of the *guesses* we made at the start.

Furthermore, if we seek to align with the rest of nature, nature only generates. As a result, an authentic generating process is much better able to connect with and enhance life. It just makes sense.

Here's a few images from the 10-acre Mayberry Woodend project in Victoria, Australia, where the residents and I have been experimenting with generating. In terms of our diagram, this was actually an example of generative *transformation*.

This next diagram shows all we *drew* before we started to ground-test and *do*—a diagram that includes only what we'd decided was the best next step—a new driveway.

Not only are functionally and aesthetically harmonious layouts achievable without drawing upfront plans, what emerges is in my experience *so much better*.

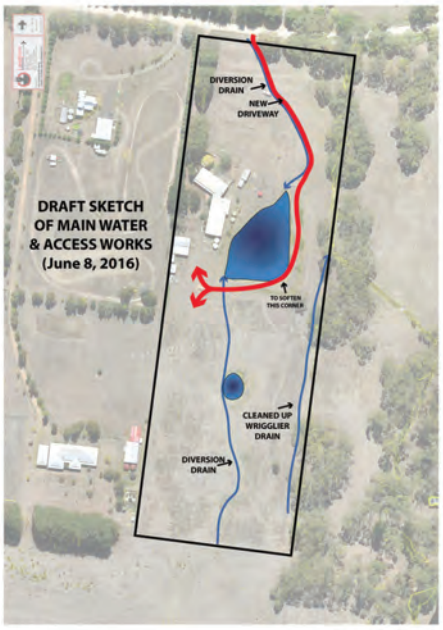
For the record, I am not saying that there is no place for drawing on pieces of paper or computer screens. Indeed, as I've shown above, part of the planning process for the driveway was drawing possible driveway layouts on paper. But the focus was honing in on and crash-testing the best next step, not creating a plan to impose.

Hybrid (Concept Planning)

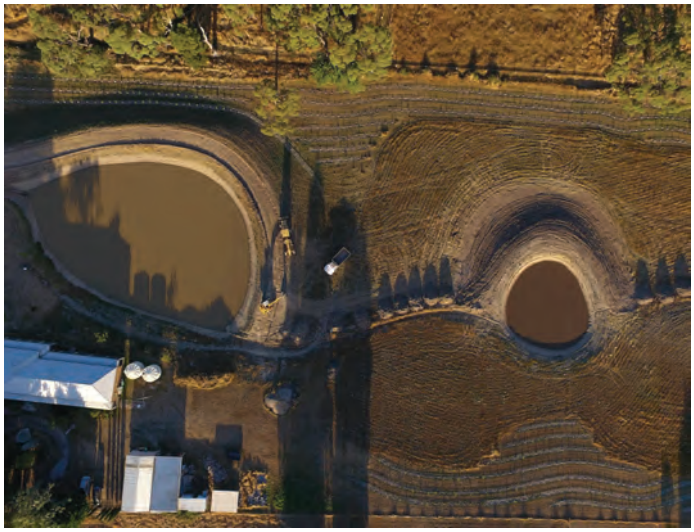
The hybrid approach is now easy to introduce. It mixes together equal parts fabricating and generating. In particular, it involves completing a high-level, broad-strokes *concept plan* ahead of starting to implement, then lets all the details fall out of the creating/doing/implementing process as it rolls forward.

Renowned ecological designer Dave Jacke (2017) described what I'm calling a hybrid approach well in this personal communication:

In reality, I design the overall pattern, implement key pieces after designing them, then redesign as more parts of the system get implemented. I have never had a client where I could implement all at once as a grand expedition! It's always been piecemeal implementation with design along the way, responding to changes in goals, site and emergent reality as the design goes into place. But having a big picture view, that is, an overall site design to at least a schematic level, is critical to help one work out where to begin the implementation. Then I would design the relevant patches, including their site prep and implementation strategies, and then proceed on the ground. Staking out is a critical part of the process! Field testing the design in reality, essentially.



Mayberry Woodend driveway.



Overhead view Mayberry Woodend site.

Next is a simple example of a rough concept design I sketched with my parents for the layout of their new house garden. We took the concept to the site and figured out the details with rakes and shovel rather than a pencil or computer mouse.

Winging it

You'll note a little asterisk in the diagram next to the *generating* label in the chart at the start. It says:

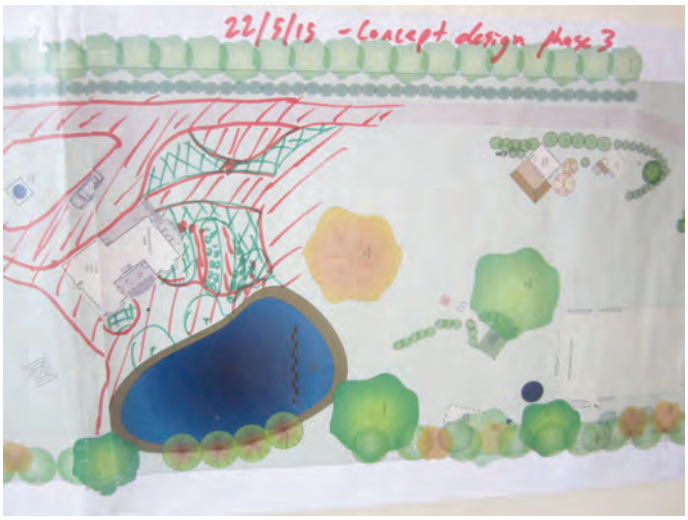
Not to be confused with winging it (ill-considered random/ haphazard implementation generating no coherent design)

I mention this to ward off any misunderstanding that a generating process is somehow less rigorous, logical, evidence-based, or documented/documentable than a fabricating approach. In my experience, it is more of all these things.

It is also harder work. You cannot just draw a nice picture and hand it over to the implementation team. You need to stay fully engaged as you make changes, immerse in the outcome, and figure out the best next move from there.

From Less to More Life Enhancing

In my experience and experiments, an authentic generating process is more able to honor and enhance the life in a given system than a fabricating process (where obviously a hybrid process fits in between). This is an important point I



Garden concept

want to flesh out a little more.

Life and *adaptation* are not separable concepts. In other words, all life *involves*, *requires*, maybe even *is* adaptation. To enhance life is to enhance adaptedness. Enhancing adaptedness is another way of saying enhancing fitness—fitness in the sense of the fitted-ness of a whole's parts to each other, and the fitted-ness of that whole to the larger wholes it sits within. The moment an organism doesn't fit its environment, for instance, it doesn't live.

Now here's the thing. A*daptation cannot be fabricated or master planned, period*. I believe it to be an essential truth that

Implementation.

adapted systems can only emerge or be generated iteratively, in an ongoing dance between a system's form and its context.

I'm going to let Christopher Alexander (2002) drive the point home:

…there is a fundamental law about the creation of complexity, which is visible and obvious to everyone—yet this law is, to all intents and purposes, ignored in 99% of the daily fabrication processes of society. The law states simply this: ALL the well-ordered complex systems we know in the world, all those anyway that we view as highly successful, are GENERATED structures, not fabricated structures.

The human brain, that most complex neural network, like other neural networks, is generated, not assembled or fabricated. The forests of the Amazon are generated, not fabricated. The tiger, beautiful creature, generated, not fabricated. The sunset over the western ocean with its stormy clouds, that too is generated, not fabricated. (p. 180)

The significance of generated structure lies in the concept of mistakes. Fabricated plans always have many mistakes — not just a few mistakes but tens of thousands, even millions of mistakes. It is the mistake-ridden character of the plans which marks them as fabricated — and that comes from the way they are actually generated, or made, in time. Generated plans have few mistakes (p. 186)

If a [human] embryo was built from a blueprint of a design, not generated by an adaptive process, there would inevitably be one thousand trillion mistakes. Because of its history as a generated structure, there are virtually none. (p. 188)

Summary

I have shared three ways in which wholes and parts can be related inside any creation process: assembling, partitioning, or transforming.

I have shared three ways in which designing and implementing can be related inside any creation process: fabricating, generating, or hybrid.

Together, these define nine possible spaces any permaculture design process can sit within or move between.

For me, it has been helpful to make clear which of the nine spaces I am in at any moment within a process. It has been even more helpful to realize that, in general, when I move from the bottom left toward the top right, the processes I am working with come more alive and are better able to enhance life.

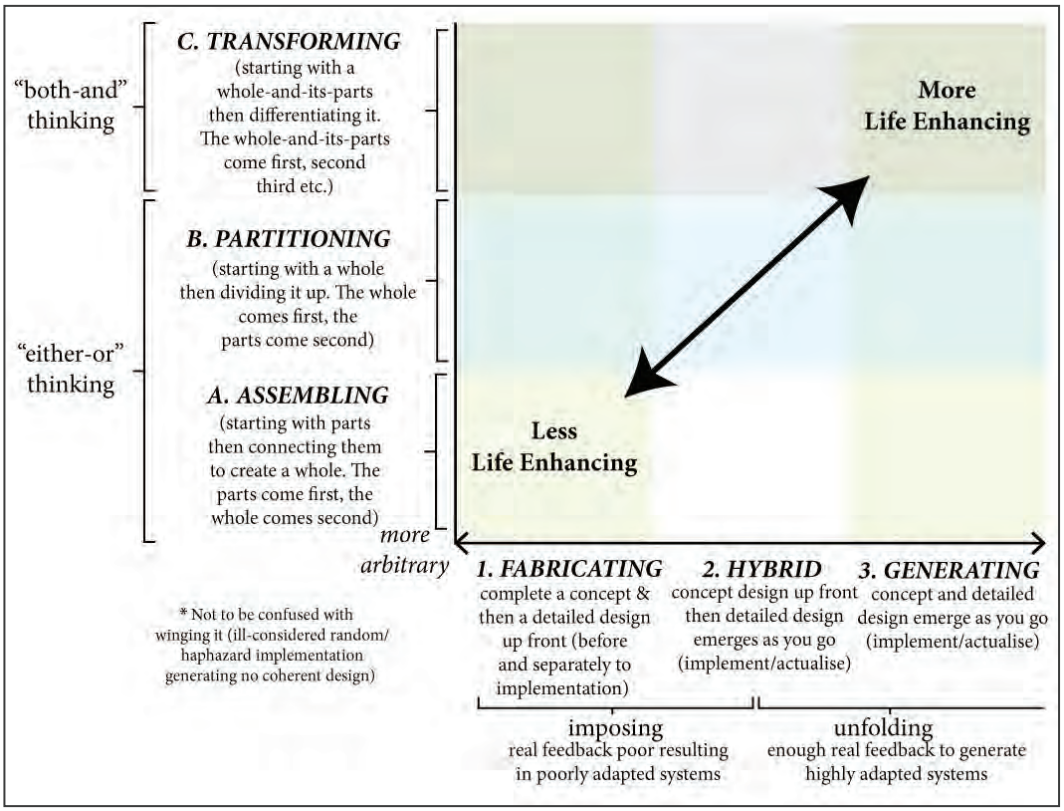
I mean it is all so simple really. Permaculture aspires to align with and fully participate in life, in living systems. What this really means, I believe, is that it aspires for us humans to drop back into being the life we already are and, in that sense, to drop back into *being alive*. At the very least, I'm sure we can agree that the rest of life creates itself via generative transformation. Or at least that generative transformation is the most accurate way of framing what the rest of life is and does as far as the terms of reference the chart has to offer. There are no master plans. There are no concept plans. There are no parts separate from wholes. There are no wholes separate from parts. Period. I mean, just watch a tree germinate and grow, or a baby growing into a child.

One thing that has happened for me as a result of all this is that designing has stopped being something separate from life. It has stopped being something I do in advance, or something I do only in a professional capacity. Generative transformation can apply to *everything* I do, to everything we do. To every space or landscape we work with. To every day we live, to our life as a whole. To how we show up as parents, as partners, as colleagues. To how we develop our own homes and all the spaces we inhabit, to how we plan and roll out parties, courses, any and all kinds of events.

This was initially a shock: to realize there wasn't this

specific set of skills I turned on and off as I arrived and left my work as a permaculture designer; to realize that in every situation I am ever part of I can choose to be alive to the wholes-and-their-parts I am participating in. I can choose to be alive to my intentions with regard to these wholes, and I can choose to be and act in ways that honor what is already there while drawing it out and developing it in the moment so as to add, enhance, and increase its life and beauty and function and flow.

Everything you do, every process you are part of, everything you help create, can be located somewhere within the nine portions of this diagram. I'd love to hear about your experiences, but I'd wager that the more alive the process felt, the more connected and respectful it felt, the more it flowed and the more its outcomes were beautifully adapted to the situation, the more you were approaching the top right corner. The more you were in the space of generatively transforming whole systems in healthy, life-giving, life-enhancing, life-welcoming directions.



After sessions working with generative transformation, I feel more alive, more energized, as do the folk I'm working with. Rather than being the expert who needs to manufacture brilliant solutions on the spot, I am a process support team, a facilitator, where so many of the decisions become effortless to make because we make them at the proper time in the unfolding process, rather than attempting too much guesswork up front.

Then there is the sheer satisfaction to have collaborated with others to reveal the most unexpected yet beautiful and perfect steps forward. Those of you who know what I am talking about know that it doesn't get much better than that!

In closing, I want to make it clear that I don't think that generative transformation is in any way a new thing. It is an attempt to describe and clarify an aspect not only of life's default operating system, but of what is *already happening* when permaculture is at its best. As in generating real, adapted solutions that wrap themselves beautifully into and around the specifics of given situations.

That said, I know permaculture designers who *talk*, *teach* and *write* about permaculture design as a process of assembly and at most partition-based fabrication who *in practice* especially at their own places are doing something far more akin to generative transformation! Have any of you noticed this phenomenon? It is like we say what we need to say for professional credibility then when we think no one is watching, we do what it is we really love.

What I am suggesting is why don't we do what we really love, ALL THE TIME! Δ

Dan Palmer is a permaculture design philosopher, consultant and teacher who lives in Central Victoria, Australia. Aside from co-directing permaculture design company Very Edible Gardens, Dan is constantly co-founding things (such as Permablitz, Holistic Decision Making, and Living Design Process). You can read more about Dan's work at www.DesigningForLife.com, and contact him at dan@veryediblegardens.com.

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Regenerative Futures through Emergent Permaculture Education & Design

Jillian Hovey

PERMACULTURE IS A POWERFUL design practice that, at its core, is about facilitating connections and catalyzing a webwork of relationships. "Emergent design" is a beautiful practice that listens and responds to the ecology of any given situation, where the design reveals itself and emerges over time. Emergent design has long been implied in permaculture, but perhaps we are not as well connected to the practice of it as we could be. We use the term "permaculture *design*," but there is still a great opening for us to continue to develop more skill in the art of design. I was glad to see Emergent Design as the theme of this issue of *Permaculture Design,* as I believe that emergent design is an essential aspect of permaculture design practice, and that it holds a lot of potential for a regenerative global future.

Permaculture Education

Our permaculture design education could be stronger on the design aspects of the training, with more opportunity and support to practice it in and beyond the Permaculture Design Course (PDC). The fundamentals of permaculture could be lifted up more, so we can really practice—to the point where they become natural and automatic, like breathing and walking. The goal is to learn to live in awake, grounded, inter-connected ways, so that we can achieve "permanent culture" as well as "permanent agriculture." The patterns of our dominant culture are largely at odds with that aspiration, so continuing to develop communities of support in regenerative living and design skills is critically important to our future.

Permaculture Design Course (PDC)

The fundamentals of permaculture design, such as Ethics, Principles, and the Design Process and Methodologies, are essential aspects of the PDC. But, we also have a tremendous amount of other content to cover in the curriculum: water, soil, earthworks, plants and trees; farming and gardening, from urban to broad-scale; the home system with green building, renewable energy, and biological waste treatment systems; economics, community, and invisible structures; etc.

The PDC was originally a three-week program which was created to train people so that they could get out in the world to practice and promulgate permaculture. This is because Bill Mollison, one of permaculture's co-founders, knew that he was just one man. He felt very strongly that we needed an 'army' of permaculturists doing regenerative work everywhere on the planet. That vision is a main reason why the original PDC, as well as the *Permaculture Designer's Manual*, is structured around teaching the world's main biogeoclimatic regions—so that people could have a base literacy to prepare them to go out to different parts of the globe. After only a few years of teaching the three-week PDC, a decision was made during the first International Permaculture Convergence in Australia in 1984 to shorten the course to two weeks as the three-week block of time was not always accessible to people. This gave us what we know as the "72-Hour" Permaculture Design Course curriculum that is the global standard for permaculture education.

I have been told that Bill Mollison spent quite a bit of time in the original courses presenting the world's problems and making the argument for permaculture. And even though we do not need to spend much time on that anymore as it has become common knowledge, the shortening of the course resulted in a very full curriculum to cover in two weeks. I have experienced that it can be fairly challenging to accomplish that well, as the syllabus can be quite 'heady' and intense for students. They can also become overwhelmed, especially these days when the next generation is wanting more holistic and human-paced learning experiences which are oriented to the body, heart, spirit, and not just the mind.

Students do not have sufficient opportunity to really *practice* permaculture design

Challenges with Final Design Projects

As a result of there being a very large curriculum to cover, the design practicum aspect of the curriculum at the end of

the course can often be under a time crunch. I have found that not only do students get negatively stressed by this, they also do not have sufficient opportunity to really *practice* permaculture design in the time available. I have found that people want to jump to answers or design solutions quickly as there is not much space to really explore design ideas and let solutions emerge and gel.

The potentially negative stressors in regards to the design practicum are further exacerbated by the social tensions which commonly occur in the human dynamics of the PDC final project groups. The short time frame for the design projects tends to stimulate people to use more of their "regular life" patterns of processing and decision-making, rather than engage with permaculture design processes. In these pressurized settings, there is a strong desire to relieve the tensions. People understandably use the social tools and patterns that they learned in our society, which are not always conducive to good design process. Conflict often occurs where people are not listening to each other, and people can become afraid to speak up while others can dominate. As teachers, we are generally aware of this and can help to navigate these human dynamics as part of the learning. Nonetheless, this is not necessarily the most effective set up to practice permaculture design. Design work needs us to take quality time to look and feel, and "push and pull" ideas around until we find a synergistic fit. It is critically important for us to have safe enough space to explore this heart of the practice so that we can learn well—especially when just starting out and learning permaculture design as a new skill set and practice.

Diversifying Design Education Pathways

While this "pressure cooker" of the design portion of the course can have its positive attributes, it can also be antithetical to practicing the newly introduced permaculture design skills. So much so, that I have found that one of my main roles in permaculture courses is to set up different and more diverse pathways for people to learn and practice permaculture design throughout the course rather than leaving most of it until the end. I do this because the permaculture design fundamentals are the most essential aspect of the PDC education. I think that it is critically important to hold space for

Core Curriculum Topics

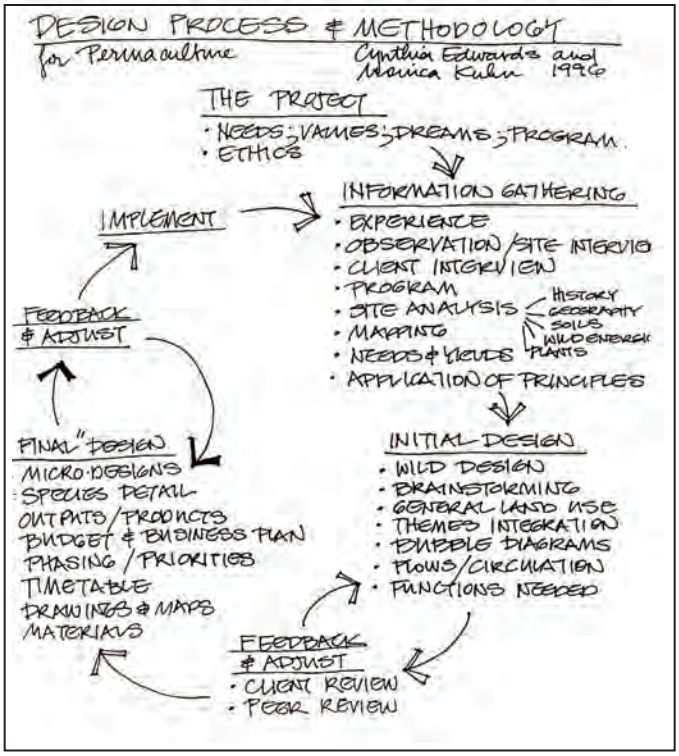
1. **Introduction to Permaculture**
2. **Ethics and Principles**
3. **The Local Ecosystem**
4. **Patterns and Pattern Application**
5. **Climates, Biogeography and Microclimates**
6. **Design Methods and Process**
7. **The Home System**
8. **Water**
9. **Earthworks**
10. **Soils**
11. **Trees, Forests, Plants, and Cultivated Ecologies**
12. **Animals**
13. **Aquaculture**
14. **The Built Environment**
15. **Waste and Bioremediation**
16. **Appropriate Technology**
17. **Design for Catastrophe**
18. **Urban Permaculture**
19. **Broad-scale Landscape Design**
20. **Design for Invisible Structures**
21. **Economic Systems**
22. **Access to Land**
23. **Ecovillage and Neighborhood Design**
24. **Permaculture Scene**
25. **Design Projects and Presentations**
26. **Passion / Talent Show**

From the Permaculture Institute of North America (PINA) www.pina.in/permaculture-design-course

the students to learn this part well.

We can learn about all the other subject matter of the course almost anywhere, especially in this age of the internet. When PDCs started around 1980, and even when I started teaching in 1996, we were still years away from the internet culture that we have today. Even back then, there was a framework for decisions about what to teach in the PDC that was based on whether the subject material was readily accessible knowledge in the world, like plant biology, which was therefore deemed unnecessary to be taught in a PDC. The thinking was to have the curriculum give enough exposure to subject matter that is relevant to the landscape of permaculture practice, but to have it all contextualized in permaculture ethics, principles, and design methodologies. These are unique to permaculture courses. The perspective was that permaculture is a design science that weaves together the knowledge from various subject matter areas and brings them to life in synergistic ways. The main intention of the PDC training is the thinking, ways of seeing, tools, and methodologies at the heart-center of the course, which inform the permaculture *design process*. That permaculture methodology is the essence of permaculture design. It is critically important to develop it further if we hope to be stewards of high-quality design that emerges in harmony with the wholistic landscape that we are designing for.

"Don't worry about being able to identify each of these plants (in your designs for clients). The world is full of botanists and horticulturists. All you have to do is design. You don't have to be a botanist; you don't have to be a bulldozer driver; you don't have to be a fence builder; you don't have to be an architect. What the designer has to do is look at the relationships." ~ Bill Mollison



"Design Process and Methodology" Handout by Cynthia Edwards and Monica Kuhn

Introducing Design Early

I think that it is very important for students to have more time to come to know and understand the design process, so I introduce it during the first couple of days and build on it as we go through the course content. This helps to keep the curriculum grounded in the process, which is the core of the PDC. To facilitate that, I give opportunities to practice design early and often throughout the course. By practicing design as we progress through the curriculum, people can connect the subject matter areas that they are learning to the overarching context of permaculture design. The benefit is they get fun and accessible incremental experience, which grows into a more regular practice during the course. This way, they are not just learning subject matter content, then trying to apply it all in a permaculture design for the first time at the end of the course.

A wonderful foundation for the design practice is time spent in nature. We start right away, in silence at first, and continue this practice throughout the course. We implement this pattern during site visits, where we begin with at least 20-30 minutes of non-talking observation and mapping. I then allow them to go into pairs or small groups to walk and discuss before the host talks about the site. This really helps people to use all their senses in developing observation skills which are extremely important in permaculture design. Additionally, by the time they have input from the client interview, it is grounded in their own site observations, so the permaculture design process is already connected with the site in its own right.

Permaculture Design Process

Colleagues of mine, Cynthia Edwards and Monica Kuhn, developed a great tool to illustrate the permaculture design process, which I was first exposed to in 1996 and still use to the present day. It is a diagram that they entitled "Design Process and Methodology." My first apprentice, Peter Cow in England, calls it the "Spirals and Loops" diagram. This is because the main tenet I use to explain the process suggests that for good design there are a lot of spirals and loops as you progress through the design process. This is the pattern of "Iterative Feedback Loops." Looping back around to previous parts of the process is a rich and productive aspect of effective permaculture design. This is unlike the linear model that is prevalent in our dominant culture, which gives the expectation that you do one thing, then the next, in a purely sequential order. This is not the whole truth of how things

work in real life. In fact, I think that for good, response-able design, you are constantly revisiting earlier parts of the process, and seeing it with new eyes as you learn and progress through the design process. This process is also a fractal—of patterns within patterns, which relates to the principle of "Designing from Patterns to Details." One does not go down into detail and just keep going—it is useful to loop back up to larger patterns in the process, which keeps us connected to various levels of the design. Indeed, iterative feedback loops, cycles of learning, being open to feedback, and setting up systems to receive and learn from feedback are integral to emergent permaculture design.

Wild Design Exercise

Another powerful framework that I use when teaching, is what I call the "Wild Design Game." The root of this comes from a game that was developed by permaculturist Matthew Arnsberger, which I had exposure to at the Eastern Permaculture Teachers' Gathering at Heathcote Community in Maryland during my early days in permaculture. Matthew was near the end of his active involvement with permaculture at that time, but the seed of the idea stayed with me, and it has grown and borne fruit in my teaching practice over subsequent years.

The intention of calling the game "Wild Design" is to help people to open up and have fun. The game has many layers which I build upon throughout the PDC. I usually start with the "Needs and Yields" analysis of elements, which I set up using the classic Needs and Yields Analysis of considering the permaculture chicken. This analytical tool helps people to develop the skill of really looking at the inputs and outputs of each element, and how they relate to

Playing with Elements and their Connections, European Permaculture Convergence, Germany, 2012

Wild Design Game cards used creatively in design jam.

the needs and yields (or inputs and outputs) of other elements. I give the students a variety of "Element" cards, like water elements, different types of structures (e.g., buildings, greenhouses, fences), animals, plants, trees, etc. This Needs and Yields analysis is the foundation of seeing and feeling interconnections between elements. It creates the webwork of relationships that is indispensable to permaculture design.

I then introduce Zone and Sector cards, so that the students are starting to contextualize the elements in a landscape that is influenced and informed by energies coming to the design area. It also gets them to start exploring the principle of relative location through placement of the elements in zones. I add cards with natural elements of a landscape which increases the context creation of a design landscape and begins to make things more real to life for people. I also bring in cards with the permaculture Ethics and Principles to keep the students connected to those core aspects of the permaculture teachings. The process gets even more interesting when I introduce Function cards, like Drinking Water, Wind Break, Electricity, Transportation, etc. These stimulate the inter-connections with the elements activated even more. I then continue into the more social and "Invisible Structure" realms, with cards for people (e.g., Neighbor, Intern, Child) and social organizations (e.g., Municipal Council, Home Business, Waldorf School). I also have cards for emotions and human needs, like Acknowledgement, Education, and Making a Living, which really bring the design landscape to life!

I have cards for all of the different categories described above—each of which has a different color. By starting simply, and engaging the cards in a variety of exercises, the students use the cards as an integral part of their learning. As we progress, I am able to use the cards to remind them of other aspects of the design landscape and permaculture tools which they may not be thinking of. For example, I can just slip a card into the edge of their work space which says "Cold Winter Wind," or "Angry Neighbor," and it will subtly and powerfully expand their frame of reference, as they may

Art of Mentoring PDC, Alpine Permakultur, Schweibenalp, Switzerland.

have just been designing for summer, or not thought about the other people who live nearby.

The building blocks of this Wild Design Game guide students through the fundamentals of permaculture in a range of settings. This allows them to build skill incrementally all through the course. I have found that exploring potential design solutions in a playful way gives the space for people to learn more effectively. The students become used to working together creatively and really playing with the qualities of elements and their relationship to each other and the landscape, and exploring ways to meet needs in synergistic, inter-connected ways. Spending time feeling into various options and their qualities, and allowing aspects beyond our conventional minds to emerge, becomes normal practice which is the essence of permaculture design. The "heavy lifting" is with our imagination. Indeed, another permaculture saying that was popular when I learned permaculture, is that a design is "only limited by the imagination of the designer." Indeed, that is where the magic is. Imagination is the ground from which high-quality design can "emerge."

Original Permaculture Principles

These days, permaculture principles are primarily taught through David's Holmgren's 12 principles, which are arranged in a circle, like on the face of a clock. I have become more used to them, and appreciate them; but I also still like to teach the original permaculture principles as I learned them when I did my PDC. I think they are very leverage-ful. The one that I center the other principles around is a design requirement that is phrased as a reciprocal statement (or corollary). It is that: "Each Element Performs Multiple Functions"; and its corollary is that "Every Function is Supported by Multiple Elements." So, for every element in the system (either pre-existing, or elements we are considering manifesting), we can challenge ourselves to imagine a variety of functions that element could perform. Then, for every function, we need to explore the variety of ways in which elements can be in relationship to manifest that function in the system. This concept may seem simple in some ways, but by working it, you discover the power and complexity it holds. The Wild Design Game exercises are really helpful in taking this corollary principle from an abstract concept into something more tangible, because we can start slowly and analyze one element at a time in a creative environment and then grow that muscle as we progress. Through really working this principle, you may come to see that this corollary represents the "Zone 0" of permaculture design.

Focus on Process and Learning—Not Output

By the time we get to the final design exercise, people are fairly relaxed and grounded, and have some skill in applying permaculture fundamentals to element analysis and making connections to performing functions—all set in a wholistic

Design Discussion, Toronto PDC (with the Canadian staple of Tim Horton's coffee!)

landscape informed by human needs. So even though there is still going to be stress during the final design project, I try to keep it more in the realm of positive stress than negative stress. One of the ways that I accomplish that is to keep things fun, and by not having the design project be too daunting for people, as many people can get overwhelmed by it. I far prefer to put the emphasis on the richness and learning in the *process*, rather than on the final design *output*. Then I can focus on encouraging people to stay open and not rush to more obvious design solutions. The aim is to feel the whole landscape and explore possible design responses which are intelligent and inter-connected.

An additional technique that I use to keep us learning well together occurs during design presentations. I have

taught in design schools, such as architecture and landscape architecture, and was amazed by the culture of the students being required to "defend" their designs. While there is no doubt some merit to that methodology, I find that co-creating a collaborative culture of sharing and learning together is far more suited to Permaculture Design Courses. So, in the PDCs, I set the tone of co-creating a course culture with a focus on exploration and learning together so they can graduate from the course with as much practice and skill as possible. As part of that, at various points, I speak about the final design projects so that we can allay some of the fears and build a culture of mutual support.

Students at the Ecosa Institute in a design project, Prescott, Arizona.

For the actual final design presentations, I ask each design group to remain at the front of the room after their presentation to answer any clarifying questions, and then ask them to sit down and re-join the class, while we discuss ideas that were stimulated by their presentations. This threshold of completing the presentation, distances the students from wanting to defend their designs, as the pressure of the design work and presentation stress are now past. They can be with the rest of the group in the richness of ideas that were catalyzed by their work. We are also able to weave threads from different design groups in our collective conversations. People learn a lot from this dynamic and have told me that they find it very satisfying.

Permaculture Diploma and Real-Life Design

One thing to keep in mind is that the Permaculture Design Course was developed to be an *introduction* to permaculture, with the expectation that people would go on to learn more in a variety of ways after taking that foundational course. The PDC was intended to be a threshold or foundational portal. People were to get out and practice and learn more afterwards. For that continuing education, there was the Permaculture Diploma which was structured as a journeyman or apprenticeship pathway, similar to what electricians and other tradespeople still have today. The Diploma was shaped as an experiential journey that was to take at least two years, where you worked with one of your original teachers and other guides and did permaculture design work. At the end, you were to have developed at least ten designs in your portfolio which you submitted for evaluation for a Diploma. The Diploma was a good idea, but there was insufficient support for this process; and in North America it never really got off the ground. A person could still submit their diploma to the Permaculture Institute in Australia to be evaluated, but it was not fully functioning for a long time. Many submissions languished without response. This lack of support around the diploma process is an unfortunate loss. Had that program been better functioning over the past decades, we would have had more support to become better permaculture designers and been able to develop more skill in the actual practice of emergent design.

The good news is that over the past few years the Permaculture Institute of North America (PINA) has been creating a new Permaculture Diploma. The intention is for it to operate in conjunction with the formation of regional hubs and mentors. It will provide much-needed capacity to nurture people in the development of their permaculture design skills. PINA has laid out an initial spectrum of focus areas for the Diploma in recognition that permaculture is not just about land design or permanent agriculture, and a student can have a focus based on one's own passion and directions. The focus areas currently identified are: Education, Site Development, Ecological Conservation, Economics and Business, Architecture and Building, Appropriate Technology, Research, Arts and Media, Governance and Legal Systems, Human Rights, Childhood Education, and Community Service. This diversity of pathways for permaculture design practice will hopefully be a strong infrastructure that will foster more depth of skill in holistic permaculture design practice beyond

Peacehaven Community design charette, North Carolina

the introductory Permaculture Design Course. This is much needed if we hope to become a culture of permaculturists. Ultimately, we want to get to holistic "real-life design" where we have the ability to see and design for any site, landscape, or situation, and support the emergence of regenerative solutions around the globe.

Advanced Permaculture Courses

An additional continuing education pathway is the Permaculture Teacher Training. Most people who take this type of course never really intend to go on to become permaculture teachers. They primarily want more experiences like the life-changing one that they had during the PDC. They take the Teacher Training as it is the most prevalent course offered beyond the PDC. More "Advanced Courses" in our permaculture education system would reinforce and progress the learning from the PDC, as well as build more capacity and grow communities of permaculture practice. We could have courses that re-visit the fundamentals of permaculture design and give opportunity to practice them applied to a variety of sites with professional permaculturists as teachers. In such an "advanced" course, we don't have to cover all the content from the original PDC. Instead, we can build on that foundation and go further into actual real-life, on-site design practice. There can also be more courses which specialize in certain areas, such as Urban Permaculture, Broad-Scale Farming, Permaculture for Children, Eco Community Development, Homesteading, Social Justice, etc. *(Please note the correlation here with the fields of focus in the PINA Diploma).* What would make these "permaculture" courses is the overarching and underpinning framework of the permaculture design process, and we would bring the usefulness of permaculture design to diverse communities of practice and grow our capacity to effect change where we are drawn to serve.

Permablitzes

Speaking of communities of practice, it is worthy to note the emergence of Permablitzes over the past decade or so. Here, people come together to work on a project and "blitz" it with a large labor input. On a permaculture tour, my Australian apprentice, Oliver Kristevic and I had the pleasure of meeting and spending time with Dan Palmer, a founder of Permablitzes, at his home outside Melbourne. *(Editor's Note: See his article in this issue).* According to their web site (www.permablitz.net), the term *permablitz* is a contraction of *permaculture* and *blitz*, where a blitz simply means a focused effort to get something done. They say that permablitzes are always free, public events, with free workshops and shared food, where you get some exercise and have a good time.

In my experience, permablitzes can be very valuable. However, I think that for them to go well, they require solid permaculture design ahead of time and direction on-site during the event. This is needed not just for the physical site, but also for the ecology of the realities of the labor force that will show up (work flows, education, tools and materials, etc.). So, we can "turn the problem into the solution" as this is a great opportunity to do holistic permaculture design for permablitzes. The Melbourne Permablitz organization also underlines the need for design on their website, saying: "… *to be defined as a permablitz, each event must be underpinned by a permaculture design by someone with a Permaculture Design Certificate (PDC)."* They further note this is "*the most basic permaculture qualification*." For these events to go well, I think that in addition to good permaculture design, there is also the need for us to grow our social skills in working together in co-creative, emergent design processes. Permablitzes can be great practice examples of emergent design and collaboration—both in the "pre-blitz" design phase, and during the actual blitz. People love to co-create and it is a huge source of fun, which builds community!

Emergent Communities Internationally

There are other communities in various parts of the world, especially Europe, which are exploring collaborative and emergent design. I was at a conference in 2016 in the Basque region of Spain, entitled "The Art of Co," as in *co*-creation, *co*-laboration, etc. My friend and colleague, Andy Goldring, the former Coordinator/CEO of the Permaculture Association of Britain (PAB), was in attendance. Andy says that conference helped to expand his sense of what was possible in the Next Big Step permaculture project that he was stewarding, which came out of the International Permaculture Convergence that the PAB hosted in London in the fall of the previous year (2015).

I was involved in and know of various projects in Europe, such as United Earth in Rotterdam, the separatist movement

Andy Goldring and collaborators at The Art of Co conference, Basque Country

in Barcelona, and a group exploring complexity in Vienna who are really delving into the art of co-creative emergent design. There have also been several conferences which are holding space for alternative ways of being together, including a focus on De-Colonization. In them, people are experimenting with co-creative, emergent processes, and really wanting to catalyze new ways of being and working together which are not in the patterns of the old paradigm. There are openings and progress, and there is also a deep struggle as these patterns and pathways of co-creation are different from much of what we have learned in our dominant cultural frame. We are on the cusp of a paradigm shift, and we need to skill-up and evolve into the next stages of how humans can be in relationship with each other and the world around us. Our permaculture philosophy, ethics, principles, and methodologies, which are modeled on nature, have something important to contribute to the cultural changes that are emerging at this time.

Emergent Futures

Permaculture is about co-creating a webwork of relationships that regeneratively meet our human and "other than human" needs of the world around us. The Permaculture Design Course is a rich introduction to the complex practice of permaculture design. There is tremendous potential in this practice to effect and catalyze the deep changes that we need to be able to transition to regenerative culture. Taking more time and space to learn, in a variety of ways, is essential to our success as permaculturists. Revisiting and learning more from the fundamentals of permaculture design are valid iterative feedback loops as we continue to skill-up as permaculture designers. The holistic landscapes that we design for are complex, and we need to develop more capacity to honor and work co-creatively with that complexity. It takes time, but working with complexity can also become quite simple. We will become faster and better at this process over time to the point where, hopefully, it will become a natural way of life.

> *"Though the problems of the world are increasingly complex, the solutions remain embarrassingly simple."*
> *– Bill Mollison*

We still have quite a journey ahead of us in terms of cooperation, collaboration, and co-creative skills. I am glad that we are moving into an era where we are now lifting up the ethics of "People Care" and "Fair Share." This helps to expand the context of our understanding and practice of permaculture design, as it is not just about land and permanent agriculture—it is about holistic ways of seeing, feeling, acting, and *being,* so we can manifest and merit a healthy, regenerative 'permanent culture.' If we invest in the humus and mycelial network of holistic permaculture design education and practice, I trust that much can 'emerge' from that rich soil. Δ

Permaculturist-in-training Ilya May Quinlan, at her family's permaculture site, Djaning, in The Channon, NSW, Australia (and don't let her age fool you—at 4 years old, she could point out everything on site in the air photo!)

Jillian Hovey has a B.Sc.(Agr.) and has been teaching permaculture since 1996. She helped to found and direct the Ecovillage Network of The Americas, as well as the Sustainable Living Network based in Toronto. She has been active in the field of eco-communities and regenerative design processes for 30 years, and has supported people and projects in over 35 countries across five continents. Jillian is dedicated to holistic approaches in our work and supporting the emergence of what we know in our hearts to be possible. To that end, she mentors young people in various parts of the world, as they are our future.

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All photos are by Jillian Hovey.

How Emergent Design Informs Gaia U's Action Learning Approach

An Invitation to the Unknown

Silvina Miguel

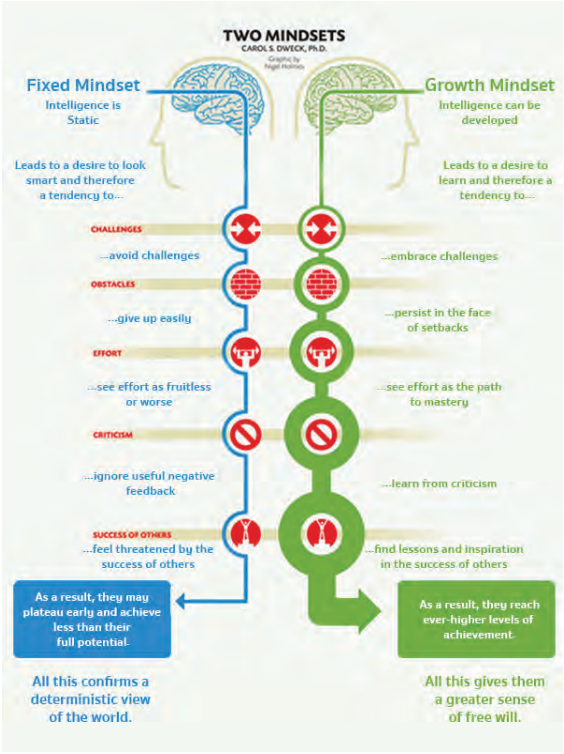
I ENROLLED IN GAIA U because I was looking for a mentor—someone to teach me how to read the world today and how to explain it to myself and others. I was searching for someone to give me a road map. I was doing what most of us do: looking for answers outside ourselves, seeking knowledge and guidance that comes from the Top-Down. That's the world we have been born into. Even though I had been facilitating training conceived from the bottom-up for the last couple of years, the power dynamic of the "teacher-student" relationship still applied to me.

I will never forget my first conversation with Liora Adler, Co-founder and President of Gaia University. I explained to her my need for a mentor, and she suggested that I start by exploring a technique called "Think and Listen." This is a process during which two people exercise deep listening with each other alternatively for a decided timeframe. There's no dialogue. It's the closest I've come to a therapy session outside therapy. During the practice of this technique, you basically hear yourself talk knowing that the other person is giving you their undivided attention. Liora explained to me that by using this technique, I will probably realize the knowledge that I already had regarding the goals that I wanted to achieve. She suggested I should follow that, rather than expecting a mentor to give me guidelines. Talk about a paradigm shift! I was invited to let my own personal design emerge from within. The design was already there—I just had to allow myself to see it.

"Emergent Design is so foundational to Gaia U," explained my work-exchange coordinator and Gaia U's outreach team facilitator Siobhan Vida Ashmole. "During our foundational program, the Certificate in Ecosocial Design, many people experience profound synchronicities with the content emerging at the right time in their lives. There's a very active invitation to associates to actually connect to their own experiences and share those with the facilitators and their peers; creating a bi-directional learning experience totally different from traditional teacher-student hierarchical dynamics."

I remember my own experiences, coming from that "fixed-mind" paradigm in which students were not supposed to express themselves—least of all question the content that had been given to us by teachers. Gaia U's approach—based on permaculture principles of observation, interaction, and integration—feels, instead, like an invitation to collaborate and to honor and heal my own "intelligences." This healing of our own distresses, as well as examining, exposing, and resolving our own biases, is a deep piece of the transformational aspect of Gaia U's system.

As Gaia U's founder and author of *Ecosocial Design,* Andrew Langford describes: *"I am more interested in the agility of mind-flex the designer brings to the table, which has a lot to do with how thoroughly they have processed their own 'liberation of intelligences.' A distressed designer can run an organic, emergent, holistic process in ways that generate fixed, complicated, fractured designs—and, at the other end of the spectrum, a psychic designer can make even the simplest process look obscure—in both cases, the designer is coloring the process with their distresses."* In other words, developing a growth mindset (mindflex), while actively healing traumas and facing our prejudices, is essential for the process of emergent design. How often have we seen our movements corrupted by unacknowledged and unresolved distresses even though the intentions and processes seemed regenerative?



As liberating as this Emergent Design approach to education feels, it's not without challenges. What to do with our new-found freedom is probably the most pressing of all of them. How do we allow our own emergent design to come to the surface without our own old-paradigm inherited habits sabotaging our work and derailing our evolution as designers?

"Everyone goes through Module 1 and 2 well-motivated, but by Module 3 a few people start realizing that they are not creating the time they need for Gaia U. That's when "Managing Time, Managing Promises" comes in. It's that synchronicity of coming at the right time—by design—into their lives while being in a supportive community which helps them to apply these tools in a meaningful way'," elaborates Vida.

Many people will crumble in front of the possibility of freedom as we have been born within a paradigm that

has been forcing us to become productive units of growth, instead of human beings with agency to design our own lives. "Industrial society does not give us the time or freedom to discover our purpose and design our own direction in life. When we are burnt out, our response to freedom is often to do nothing or to self-sabotage," reflects Vida. "Most of the associates that approach Gaia U are ready, meaning that they have become aware of the limits created by the fixed mind and they are willing to join the emergent, regenerative design movement towards an evolving, permanent culture."

Modules 4 and 5 of the Certificate of EcoSocial Design address "Learning and Unlearning" and "Worldviews." They elaborate on that realization—accepting that there are things that "we don't know that we don't know." Questions that would allow a new reality to emerge can only appear when we have done the homework of reviewing and refusing those concepts which are not entirely ours. Only then we will be able to transform our reality through engaged action, assuming the responsibility to design our own lives.

We are living in transition times, walking through a minefield of EcoSocial challenges that can be better understood through the lens of the *Three Horizons* framework. *Designing Regenerative Cultures* author Daniel Christian Wahl explains *Three Horizons* as "describing three patterns of doing things and how their relative prevalence and interactions evolve over time. The change from the established pattern of the first horizon to the emergence of fundamentally new patterns in the third occurs via the transition activity of the second horizon."

Based on this framework, Gaia U's educational approach would be a combination of the second and third horizon. Siobhan Vida Ashmole elaborates: "We need universities that are different. We need people in our movements to be supported, mentored, and encouraged to pursue this work at a deeper level. We need mindful practices to become fully rounded human beings and, in my experience, Gaia U is way ahead of this curve." By providing tools and knowledge on how to generate our own regenerative livelihoods to be able to disinvest from the mainstream (First Horizon) and to "reduce the power of the destructo-culture to co-opt us, our families, and our communities into performing extractive and life-threatening roles on its behalf." The Second Horizon is allowed to emerge through supporting diverse associate projects and in the creation of an epistemology that validates and provides a body of work for legitimacy.

When asked whether the focus on degrees and diplomas is not just reinforcing the old educational paradigm, Vida countered that "I see a degree in the middle curve (Second Horizon). Within a paradigm that is so new, in which many benefits are intangible or difficult to measure over the short term, it becomes very difficult to engage the big players, governments, and funders who are not yet on board with this new worldview. The technology to prove that regenerative agriculture has carbon sequestration benefits and produces food with better nutritional profiles is only just emerging (See Regen Network and the Bionutrient Food Association), so in order to challenge mainstream science and educational paradigms, we need to play by some of the rules. I'm a mixed paradigm person. We need governments and funding on board to accelerate transformation. Self-directed learning without an institution, community, or structure behind it has challenges when it comes to securing grants, publishing in journals, funding, publicity, and investments—even in a psychological way, it becomes difficult to create authority for ourselves if we haven't healed from mainstream educational wounds. That is not to say we can't do it: I did for years on my own path with herbalism, permaculture, and ecotherapy, but I see the deepening of my authority, my commitment, and the confidence that being within Gaia U has given me."

This work also points to the *Third Horizon* in Gaia U's emergent *Open Badge System*: a series of digital validation points, developed in the tech industry by *The Mozilla Foundation,* that prove that you've got the knowledge to do what you say you are doing which can be shared online and referenced to international standards. "It's a self-accredited system, in which the process of who is allowed to accredit knowledge is democratized," explains Vida. As knowledge keeps evolving—especially in fast-moving industries—by the time you complete a traditional qualification of a few years, the knowledge you have acquired is already outdated. Traditional institutes don't have the agility to develop new courses fast enough. "We can't know for sure how this system will change education, but there are some hints to more focus on lifelong learning in place, which is a core vision of Gaia U," adds Vida.

As this *Second Horizon* emerges, regenerating our relationship with knowledge, education becomes more about being *effective*, rather than being *efficient*. "It's not just having great ideas, wanting to do good work and having the right ethics but also becoming effective, being accountable to yourself, your team and the Earth to do this work well," says Vida and adds that "there's no point in designing a project that is efficient while there is no ethical balance or it's poisoning the planet or you're burnt out. At Gaia U, there's a lot of focus in balancing and integrating all of the pieces." It's a humanistic approach, a return to the idea of education as the development of the whole person transformed by an emerging vision of humanity." Δ

After more than two decades working for the Argentinian media as a producer, writer, and director, in 2015, Silvina Miguel moved to Bali, discovered permaculture and changed her life. She joined Gaia U's Fall Cohort as an Ecosocial Design Certificate Candidate. She is a Slow Food Advocate and a Regenerative Food Systems Designer.

Resources:

- Siobhan Vida Ashmole, work-exchange coordinator and Gaia U's outreach team facilitator.
- Gaia U modules from the *Certificate in Ecosocial Design*, by Andrew Langford, Gaia U's founder and author of Ecosocial Design.
- "The Three Horizons of innovation and culture change" by Designing Regenerative Cultures author Daniel Christian Wahl.
- Open Badge system, https://openbadges.org/.
- Regen Network, http://www.regen.network/
- Bio Nutrient Food Association, https://bionutrient.org/site/

Landscape Design

Following the ~~Primrose Path~~ Wormhole

Gloria Flora

EMERGENT DESIGN' IS AN INTRIGUING TERM; but just what does it mean? Is it referencing a complete and coherent design that emerges over time, built one small solution at a time? Or is it a cutting-edge design meme that explores radically new methodologies? Or is 'emergent design' descriptive of a deeper way of thinking about design, for example, from where and what does wise design emerge and how does it express itself?

As a regular contributor to *Permaculture Design* magazine, I looked forward to writing an article that explored the first question. And as a landscape architect and permaculturist, that seems like a pretty easy lift. A walk down the proverbial primrose path… enjoyable and easy to put together without a whole lot of introspection. But as I played with organizing the concepts of form, line, color, texture, and diversity, my mind kept sliding over to that latter question. Just where do these design ideas originate? If we're truly designing life-affirming, sustainable solutions for our landscapes, from where should they be emerging? That trickle of thought cascaded into a stream, each 'what' begging a 'why'.

Wise design doesn't just lay on the land, like a painting on a wall. It responds to and integrates multiple dimensions above and below ground as informed by its surroundings, as well as by atmosphere, climate, topography, flow (how people, creatures, air and water move through the landscape), and cues from the local community of life. This isn't just a drawing: it's deeply interconnected art, spatially expressed at multiple scales.

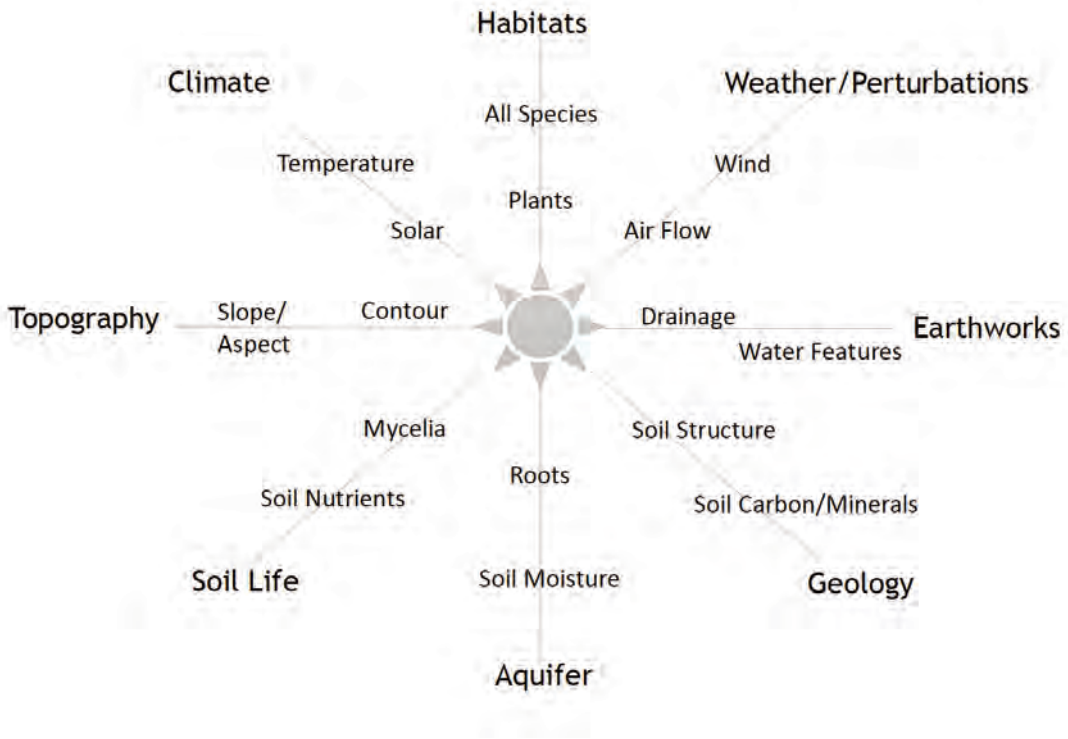
There is a time dimension as well. Successful design reveals itself both quickly, in appearance and problem-solving, but also over time, in longevity of beauty and function. Even as the landscape's site features and inhabitants change, the good design still fits the land like a glove, evolving with those natural and cultural dynamics.

Landscape design demands stretching your imagination to see in multiple dimensions of time, space, and scale, involving dynamic living elements you cannot completely control which operate under a very different set of rules within those dimensions.

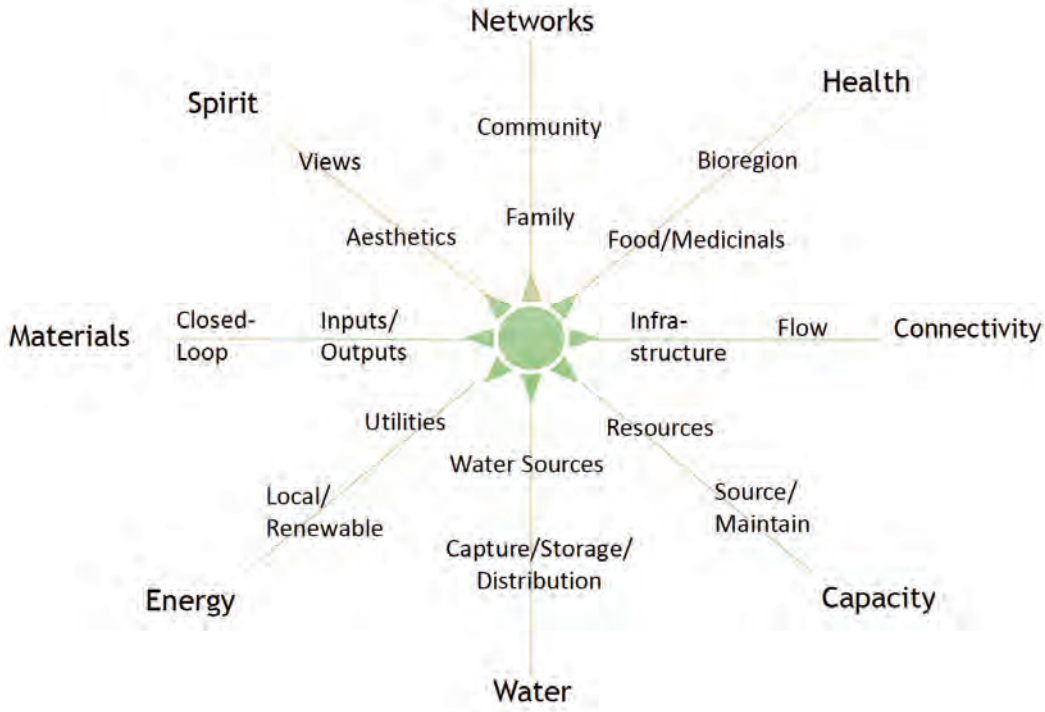
That primrose path I thought I was going to saunter along, paved with glib reflections on emergent design, became a wormhole, that theoretical passage through space-time that could create shortcuts for long journeys across the universe. (1) When we define the myriad elements from which wise design emerges, we really do have to 'go big' in space and in time to find the passageway that brings all design elements into coherence with the ethical foundations from which permaculture design emerges, at every scale.

Nested Considerations in Landscape Design

The act and art of landscape design combines one's



Systems, Patterns, and Details of the Bio-Physical Dimensions of Design



Systems, Patterns, and Dimensions of the Human Dimensions of Design

unique artistic expression with the desire to manipulate our surroundings, wanting them to look better, function better, and flourish along with us. Superficially, that seems like a fairly simple and pleasurable act: decide what you want to do outside and go do it. Well, first decide what you need to be paying attention to and then what you want, and why you want it. But maybe the land wants something different? Or should it be approached more like getting rid of what you don't want, but then having to decide what you want instead and where do you want it, and how big it should be? But will it fit or even work without unintended consequences? What will it look like as soon as you're done or, for that matter, in 30 years? But is it the right thing to do and the right materials?

Thus, landscape design embodies the intentional act of imagining and communicating a palette of engaging options that support ecological function while facilitating our enjoyment, comfort, and use of the natural spaces and places that we move through and inhabit. That's complex enough… but then add motivations, processes, natural laws, science, interrelationships, multi-dimensional design considerations, implementation, and longevity of outcomes. Like I said, welcome to the wormhole.

The illustrations in this article are one way to imagine a graphic depiction of multi-dimensional landscape design considerations. Start with envisioning a star emanating light rays in all directions. Closest to the star are the details we see clearly, usually in the form of current and fairly obvious needs and concerns. As we move further along those rays, the details merge to become patterns. Patterns then cluster into systems. These two illustrations show two slices through that star, depicting the bio-physical and human dimensions, stratified into details, patterns, and systems that inform design. But the foundation of wise design goes bigger than that.

All of these details, patterns, and systems lie within the conceptual and philosophical framework of the ethics, principles, and practices that we agree must exist for all life to thrive for the next few millennia. The third illustration describes these ethics and the practices that actualize them.

The act of designing flows from that values framework, pointing you to the systems that determine the ground rules, to the patterns required for complementary support for highest function of both the systems and the site users, which then inform the details of the design, the center point in our illustrations. To assess the efficacy of that design, the flow is reversed. Are the site details supporting the larger patterns? Are those patterns aligned with and serving the systems? Is the end result an expression of our foundational values framework?

This begs an update of a familiar adage: form follows function follows foundation.

Example of the Ethics-to-Design Process

An example might be designing Zone 1 of a homestead (the high activity area closest to the dwelling). Referring to the last illustration—**Ethics** tell us to: Apply permaculture ethics and principles through permaculture practices. Respect and highlight connectivity of structure with nature. Use life-affirming economics to guide resource selection and design implementation.

Our Zone 1 design further emerges from the elements shown in the first two illustrations, moving from the outer ring to the center. Additionally, the pattern and detail levels provide a good checklist for your site or sector analysis.

Systems: We'll create a design that uplifts the spirit, provides beauty and sustenance, and connects well with other site elements while minimizing our carbon footprint. Renewable materials and energy will prevail.

Patterns: The flow of people, water, and air will be

efficient and contribute to ease, comfort, and health. Soil nutrients, structure, and life will inform infrastructure and plant locations. Closed-loop systems for materials sourcing and waste management will be employed.

Details: Here we select and spatially locate the actual human and bio-physical design elements typically found within Zone 1: wood chip pathways from vegetation you've removed on-site, raised herb beds capturing water from the roof and directing drainage away to additional areas of need, flowers and unique plants to delight the eye and nose, cob bench from native soils for respite and warmth for adjacent plants….

To test the quality and efficacy of your design, walk back through the process in reverse. Do the details support the patterns which support the systems and remain compatible with the ethics? Is the wood framing my raised herb beds sustainably harvested? Can I repurpose or recycle the plastic irrigation pipe? Have I provided for beauty throughout the seasons? Am I providing fair wages and respect to my contractor?

And now for the spatial dimensions check, for example, have you been looking above and below ground—the habit or shape of the plants above and the shape and extent of their root systems below. That vertical imagining goes to the next level. What is happening in the atmosphere above and the aquifers below that will interact with or effect your design?

But we are not done yet! Think about your design in the larger temporal sense as well. Picture how each of your details elements, patterns, and systems evolve over time. Does the necessary maintenance balance with the resources and capacity of the maintainers? Will the design age gracefully and be dynamic enough to accept modifications to keep it functional and fresh? Importantly, do all elements remain in alignment with your ethical foundation over time?

To achieve the wise design that emerges from ethics, systems, patterns, and details, you're moving back and forth in a multi-dimensional continuum of scale, space, and time.

I wasn't kidding about the wormhole.

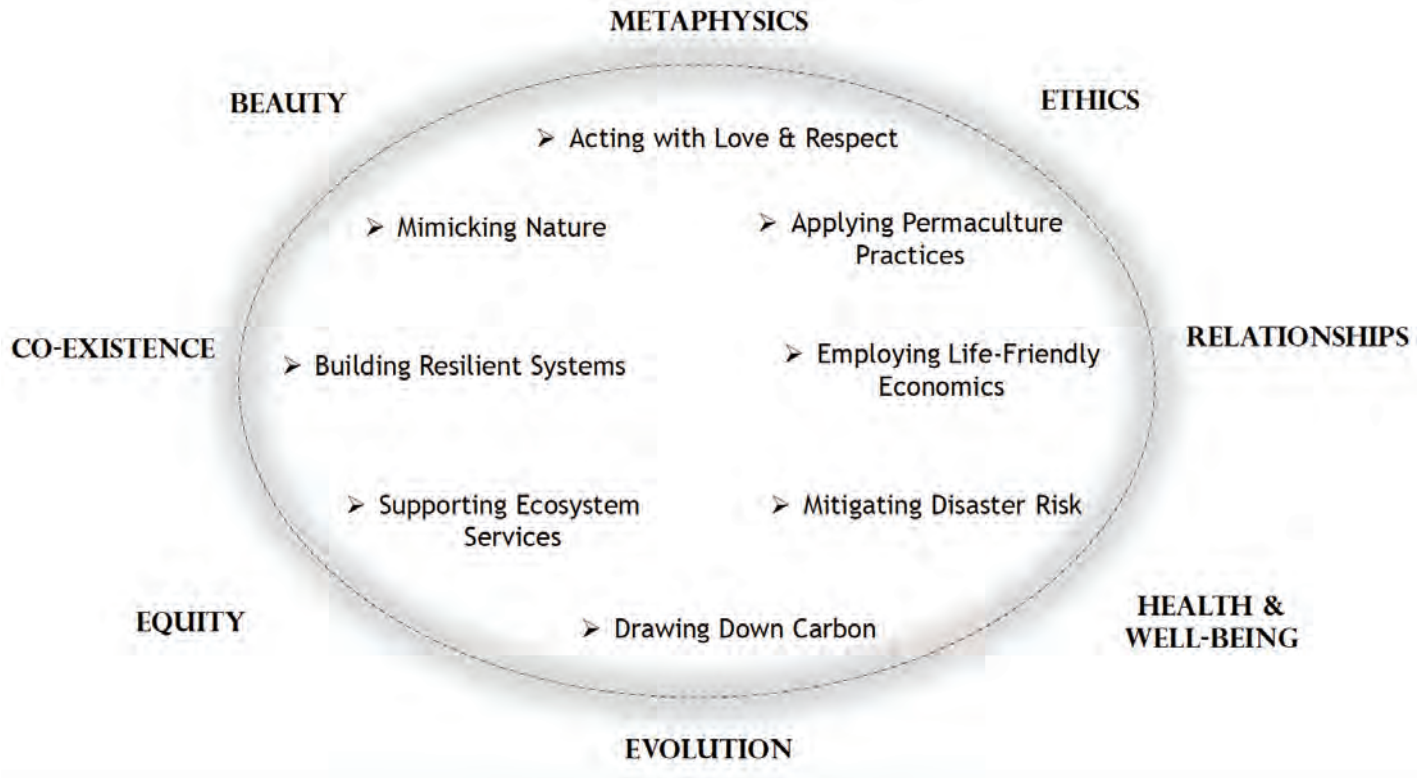
Summary

If you can imagine something and acquiesce to follow the basic laws of physics and gravity, it likely can be designed and perhaps even built. But just because something can be done doesn't mean it should be done. We're reminded of that regularly with a plethora of abominable examples of structures built and landscapes modified that crush the human spirit and the environment.

No singular creative process reigns supreme over another. We, as designers of things, places, spaces, and our own lives have at least a few thousand permutations on design methodologies courtesy of genetic roulette. The path creativity follows depends on values, motivations, preferred learning and expression modalities, education (quality not quantity), style, available time, capability, and capacity.

Regardless of the creative process or path, design reflects wisdom and functionality when it emerges from a foundation of ethics. Δ

Gloria Flora is Director of Sustainable Obtainable Solutions, a permaculturist and frequent contributor to Permaculture Design. She and her husband Marc steward TerraFlora Permaculture Learning Center in northeast Washington state.



Ethics Inform Design Action

An Interview with Rob Hopkins

The Importance of Imagination

Jill Kiedaisch, Chelsea Green Publishing

An Interview with Rob Hopkins, author of *From What Is to What If: Unleashing the Power of Imagination to Create the Future We Want*

From What Is to What If author **Rob Hopkins** is cofounder of Transition Town Totnes and Transition Network and author of *The Power of Just Doing Stuff*, *The Transition Handbook*, and *The Transition Companion*. He earned a spot on Nesta and the *Observer*'s list of Britain's 50 New Radicals and was voted one of the *Independent*'s top 100 environmentalists—which is to say he's unwilling to accept our inability to get a grip on the climate crisis, let alone any number of other societal, cultural, and global ills. In the following interview with Chelsea Green Publishing, Hopkins explains what prompted him to start asking "What if…?"

What set you on this journey to rediscover imagination?

It was really a journey of discovery and connection. I started reading Bill McKibben, Naomi Klein, and other brilliant environmental thinkers, and they kept saying, "Climate change is a failure of the imagination," and then they'd go on to talk about something else. But I kept thinking, wait now, what about THAT? Why are we failing at something that comes so naturally to us as children? Could it be that at this most critical point in our planet's history, when all our resources and senses are required, that we are not well equipped at all? We're so busy that there's no time for our imaginative lives. Our imagination is actually shot to bits. What should be a taught muscle is actually flabby and nonresponsive. There's something slipping through our fingers here… and when you point it out, it really resonates with people. It's an idea that gets under your skin. If climate change is anything, it's the logical, gruesome outcome of when Margaret Thatcher said, "There is no alternative." We keep doing the things that destroy life because we can't imagine an alternative. REALLY? Future generations will say, "You got so stuck that you couldn't even imagine it??? Come *on*!"

We've come to see imagination as a luxury.... Imagination needs to run through everything we do.

We've come to see imagination as a luxury. We need to move to see that it's absolutely *not* a luxury, that it should be fundamental to how our policy—and other aspects of public and private life—works. We need to create an environment where our imagination enshrines us. It needs to run through everything we do. Instead, we're creating a perfect storm of imaginary contraction, and that is the worst thing we can possibly be doing to ourselves, our families, our communities, countries, and the planet as a whole. We're suffering from pre-traumatic stress disorder—a constant background state of anxiety. When we have anxiety, the hippocampus shrinks by 20%, and we lose the ability to think about the future. Our collective hippocampus is shrinking, too. We're awash with cortisol as a society. This is driving the contraction of the imagination. I became fascinated with finding a place, an actual place, that could restore this shrunken part of our

brains… a campus for the hippocampus.

That's what brought me to Dundee, Scotland, in 2018 to visit a project called Art Angel. It was founded in 1997 to help people with mental health difficulties find their voice through the arts. In the book, I describe how Art Angel offers an alternative, an antidote, even, to mainstream psychiatric treatment, which many people experience as disempowering to say the least. At Art Angel, people receive the personal warmth and connection that should be part of all psychiatric care: being a part of a community, and the chance to create something tangible and meaningful. Art Angel participants are not called 'patients' or 'clients'—they are 'artists' because being an artist is a sign of being human and allows someone who has lost the ability to make decisions to make them again. In Dundee, I saw what could happen when the contraction of the imagination starts to go back the other way. If there's any role that we *need* to be playing, it's to create these spaces of safety and hope.

***What If*… our leaders prioritized the cultivation of the national imagination?**

Right! What if? At the moment, every government elected says, "We're going to make a national innovation strategy." But innovation is something you do when your fundamental model works. It's like pizza; you can innovate with pizza because pizza is fundamentally great, and everyone understands pizza. You can innovate with different flours and cheeses, but you don't need to reimagine pizza because pizza is fantastic. Neoliberal growth-based economics are *not* like pizza, and they're driving us off the cliff at great speed. When that is the case, we need imagination more than we need innovation.

So, what would happen if we had leaders who put the cultivation of imagination to the front? I spoke to an amazing woman in Mexico City who runs something within the city's administration that is basically a Ministry of Imagination, which sounds like something out of a Harry Potter book, but it actually exists in Mexico, and it's phenomenal. In Bologna, Italy, they have a Civic Imagination Office, which sits between the administration and the people and basically works like a Transition group, firing up people's imaginations with possibilities and ideas and then getting alongside them and helping their ideas happen.

In my book, I try to sketch out what it would look like if there were a National Imagination Act in which every public organization that spends public money would have to figure out how to set up the circumstances under which the imagination can flourish.

How will we know when our collective and individual imaginations are working for us again?

Yes, people want to know, "How do you measure imagination?" Is it possible to say Jill has an imagination score of 8.3 and Rob has one of 6.7, so Jill wins? That's not going to work. But we *can* ask what it might look like to live in a more imaginative world. At the end of a chapter called "What If We Considered Imagination Vital to Our Health?" I suggest that we'll know when our daily lives feel as though they're becoming rich with possibility, full of imaginative thoughts, less anxious, and more open to ideas. I asked Lucy Neal, an artist and Transition activist, for her thoughts on this. She said: "You could get out of bed and think, 'I have no idea what's going to happen today, but I think it might be something quite nice. I'll go 'round the corner and have a look.' There would be joy in the air, and joy is very radical… because it connects us all to life, and life is enthusiastic for life."

What's your dream for this book's impact? How do you want it to be used?

I hope it will kickstart conversations and help people reevaluate education and their relationship to technology and their relationship to the future. I hope it leads to activists making their activism more playful and inspired. I hope it becomes an antidote to the growing sense of despondence, and an argument for why that attitude runs the risk of becoming a self-fulfilling prophecy. I hope it unlocks a whole different way of looking at things. Δ

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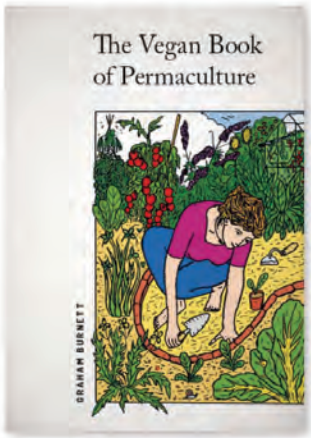

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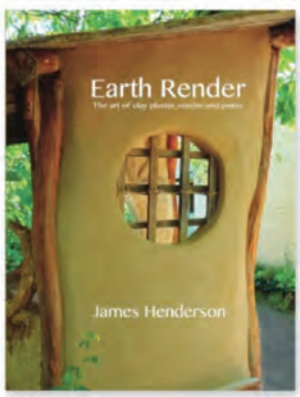

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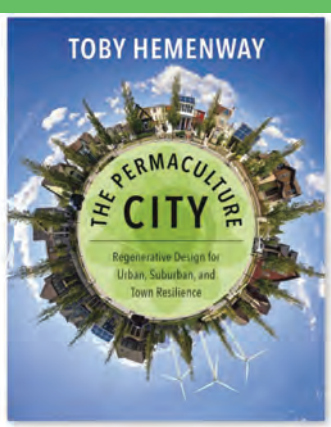

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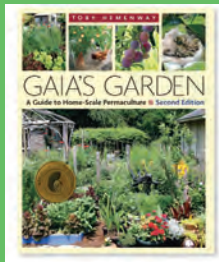

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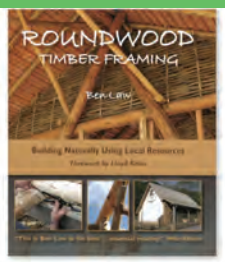

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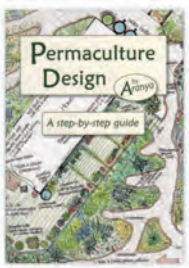

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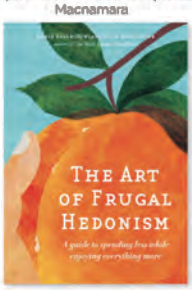

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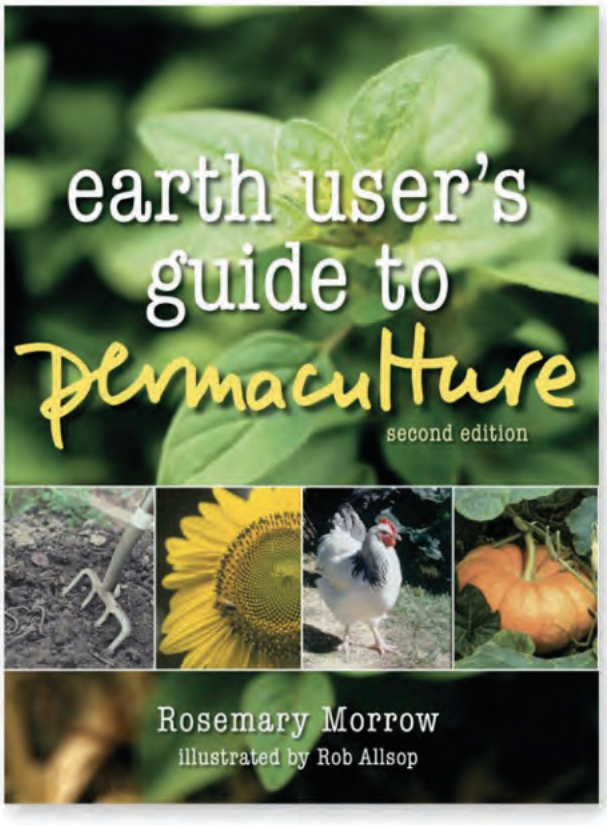

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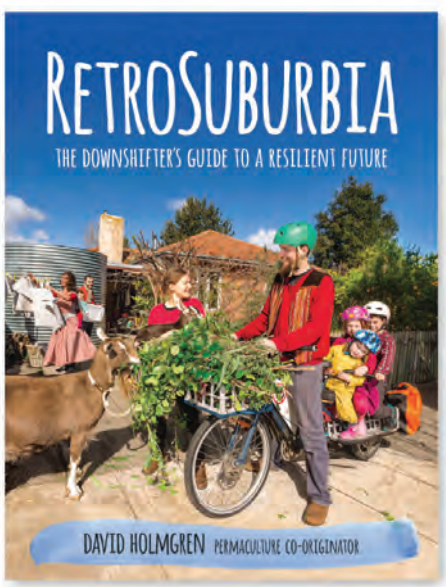

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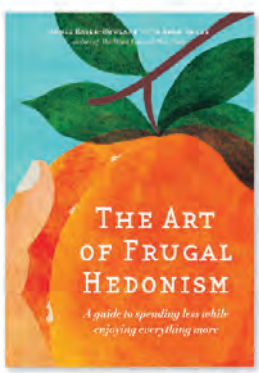

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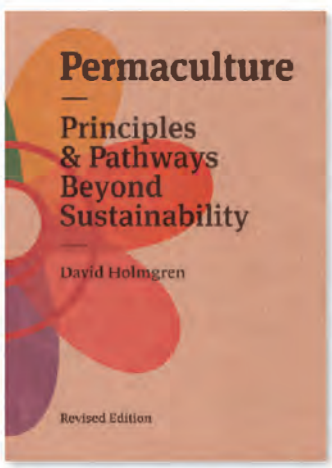

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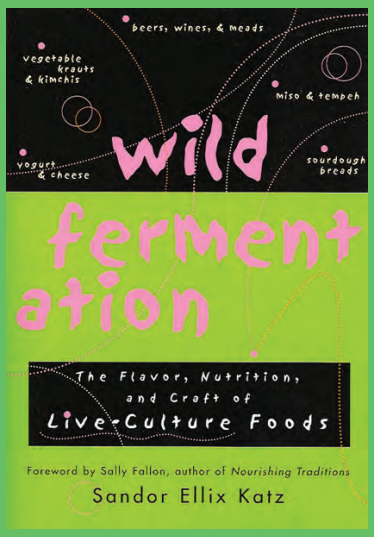

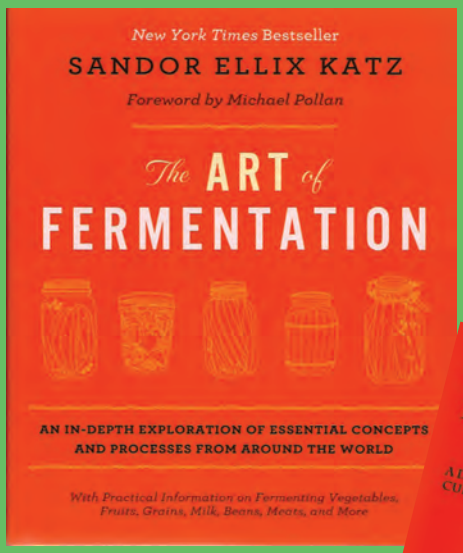

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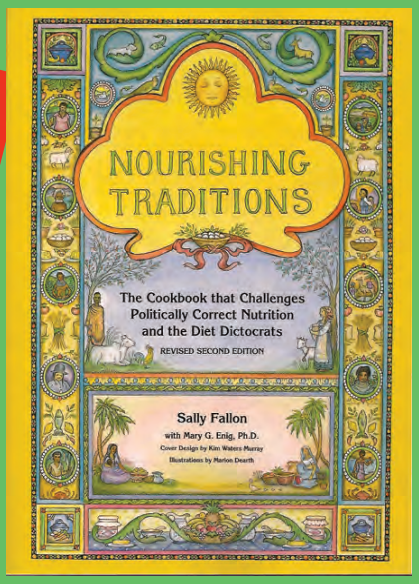

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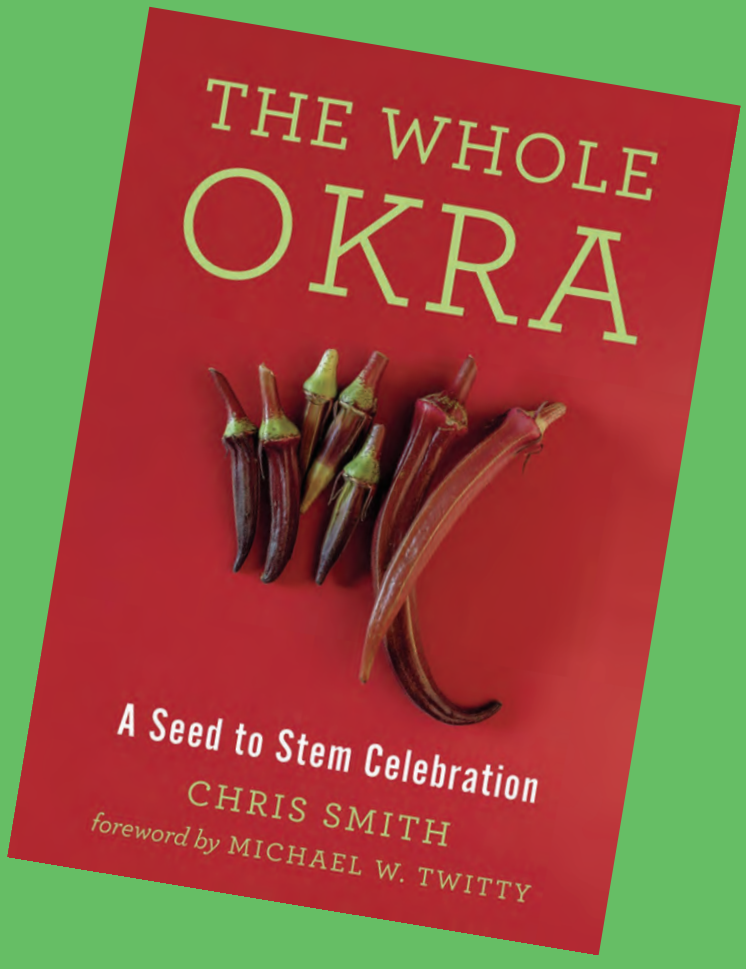
2d ed. (1999) $16. paper.
illustrated. 668 pp.



THE WHOLE OKRA: A Seed to Stem Celebration
by Chris Smith.
(2019) $25
Chris Smith brings okra to the masses. In *The Whole Okra*, he covers an amazing spectrum of delicious ways to cook and eat it, along with ingenious and surprising ways to process the plant from tip to tail: pods, leaves, flowers, seeds, and stalks. Smith talked okra with chefs, food historians, university researchers, farmers, homesteaders, and gardeners. The summation of his experimentation and research comes together in this lighthearted but information-rich collection of okra history, lore, recipes, craft projects, growing advice, and more. Beyond the edible, Smith covers the history of okra as a fiber crop for making paper and the uses of okra mucilage (slime) as a preservative, a hydrating face mask, and a primary ingredient in herbalist Katrina Blair's recipe for Okra Marshmallow Delight. Directions for saving seed for replanting, pointers for a breeding project, or making okra oil, flour, tempeh, and more.

Puerto Rico: Año Tres

Permacultura Pa'l Pueblo!

April Lea (Land + Heart Project) and John Lago Gonzalez (Tierra Nueva)

Cooperative, Accessible Permaculture Education for Eager Communities at the Front Lines of Climate Change

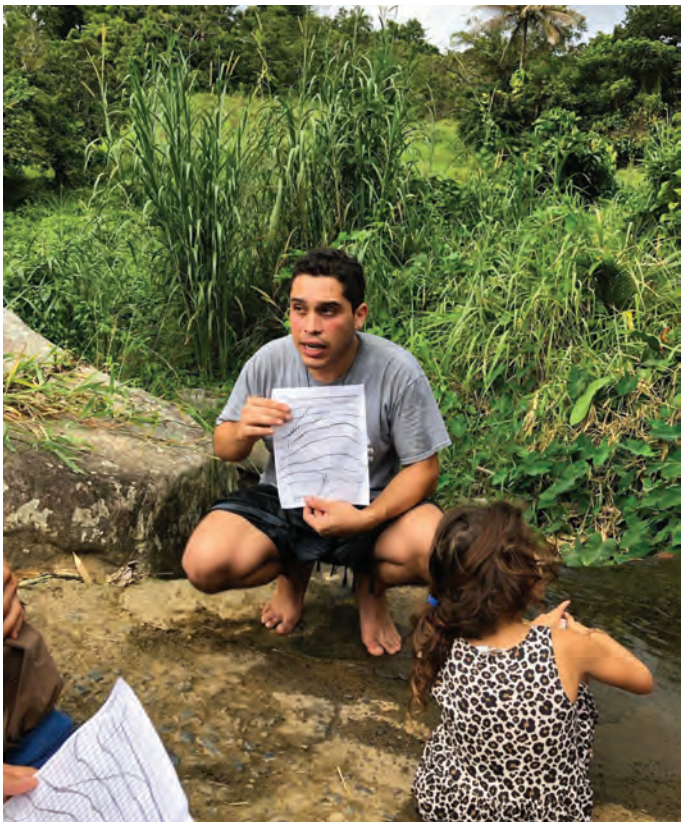
PERMACULTURE HAS ALWAYS BEEN intrinsic to the People. It is our nature and our way.

Like many forms of original human function, in modernity even permaculture has been packaged for sale and at times has a capitalist veneer. In Puerto Rico, where avocados have finally returned, but billions of dollars in aid have yet to arrive, this model simply does not meet the urgent needs of the land and people. Year Three of hurricane recovery finds our community ecosystem asking itself, how can we create a fair model of success and abundance beyond just money-based exchange?

It is the crucial question for so many. How do farmers and all those who comprise a balanced food system earn a quality living? How can talented educators, as skilled in science as any pedigreed graduate, offer this theory and expertise as widely as we all deserve—and as rapidly as we desperately need? If we want the work to grow, designers and educators must be able to feed their families as well. Preserving the integrity of permaculture techniques matters, too. *Pero*… full-time work in certified permaculture, as well as the actual technical information, remain more exclusive than is urgently necessary. Permacultura Pa'l Pueblo is a new format for cooperative, accessible PDCs and more, that nourishes the immediate and long-term needs of growers and communities where it counts most.

For a year, we have been drafting a cooperative ecosystem of permaculture educators, sites, and design/installation goals.

Agroecology in Puerto Rico is the beating heart of thousands of family *fincas* (small, multi-culture farms). School programs and collective organizations for fair food restoration are blossoming again like so many fireworks, majestic and awe-inspiring. The desire for true permaculture education is nearly universal. Here we band together, and for a year have been drafting a cooperative ecosystem of permaculture educators, sites, and design/installation goals. We are creating a new type of PDC: open-source, family-friendly, and community-supported. When we work outside the box of capitalist resource flow, logistics and economics require our most creative solutions.



John Lago Gonzalez leading site analysis workshop, finca Otra Cosa, Caguas Sur. Photo by April Lea.

Some Puerto Rico "permies" want techniques to apply immediately, where soil erosion threatens concrete foundations, or bioremediation could save family members' lives. Some wish to engage the community in a new understanding of the Earth. Some are eager for a design certificate, and some wish to become educators themselves, for neighbors and for the global audience.

A PDC is one thing. Developing as an educator is another. Running a successful permaculture demonstration and educational site is an additional skill set altogether. Permacultura Pa'l Pueblo makes best use of our collective superpowers, so that three, five, ten, and twenty-five years down

Charcoal for rainwater filtration made from coconut husks, Cayey

the line, Puerto Rico returns her scattered children and other global students to the lifeline that is food forestry.

John Lago Gonzalez of Tierra Nueva, Ponce, and April Lea of Land + Heart Project, Guanica, sit down to discuss the "PPP."

April: We spent a lot of this year listening… and self-teaching the "DIY" MBA required to legitimize and fund "alternative" business models and programs. Our pilot PPP-PDC was set to take place in July 2019. We wound up bouncing the governor in twelve days instead! It's been a time of trial and error, though more successes than errors, gracias a Dios@.

John: If we are talking about 'emergent design,' the immediate response might be to create physical designs for homesteads, restoration projects, farming/agriculture etc. However, we cannot ignore and/or forget about invisible structures. So, within the concept of emergent design, what we are designing and focusing on is a new type of educational program; a program that fits into the lives of local communities, is accessible and creates a web of cooperation. In many ways, the traditional two-week, 72-hour PDC is becoming less appropriate for a significant number of communities. Many factors come into play, including cost, time, health limitations, family responsibilities, community responsibilities, etc. Full-time farmers/homesteaders, people who have children to take care of, people who don't have $1,500; they cannot afford it and on top have to take 14 days off for the PDC.

April: One of my favorite things about the island is how folks constantly do so much with whatever is available. That's real permaculture! This model is also revolutionary for support teams: creating programs takes countless hours of backend organizing. We do our chores during hours-long phone meetings. We stay at one another's places to work side by side. It's intrinsically work-life as one entity.

John: As Bill Mollison says: *the problem is the solution*. How can we utilize emergent design in permaculture to create and evolve permaculture education? We start like we do with any design; we consider the three ethics and figure out how they are involved.

Earth Care: At the core of this design is encouraging the propagation of valuable and reliable permaculture education, with the emphasis that this knowledge be utilized to regenerate the Earth.

People Care: This program has been designed to be *cooperative*, *accessible*, *and location/culture specific*. Each one of these three aspects ensures that we are inclusive; creating bridges and connections between people in order to create communities. The program is designed to work as a functioning example of how these webs we call communities can work.

Future Care: By designing a program like this and providing a quality education about how to live regeneratively on this Earth, we are honoring our future generations and demonstrating that we are going to do what we need to ensure that the Earth and all its inhabitants thrive.

(John continues) There is a fundamental need to address and evolve how permaculture is taught, so that it can transcend, and continue to grow. One important aspect is that this program does not only apply to a PDC; it applies to Permaculture Education and any variation that it may take. So while it is true we are trying to create a PDC, the bigger picture is that we are trying to create a program that anyone can use for any type of teaching/learning environment. For

Locally-grown supper for PPP weekend by solar light at finca Siembra Tres Vidas, Para la Naturaleza, Aibonito. Photo by April Lea.

example, I facilitated two gatherings where the focus was to learn about site analysis, and I used this program as a lens to create the content, presentations, and the schedule. These gatherings were focused on site analysis because there is a lot of interest on the island to transition to using more regenerative methods, like permaculture; however there is little practical knowledge circulating about how to begin that transition. On top of that, in Puerto Rico and many other tropical regions, understanding water-flow, rainfall, and soil are essential to beginning this transition. These gatherings were created, where we visit someone's property for two days and we do a full site analysis together, creating a base map together, analyzing the topography, and taking all the other steps entailed. This was powerful, because, from the beginning, the participants were full of questions about their own properties and how what we were learning applies to their own situation.

April: Community education is a natural cultural constant. Each week, there are multiple *talleres* (workshops) all over the island, about growing food, keeping bees, making natural products, meditating, fermenting, installing rainwater catchment… you name it. Bolstering these programs is one of our hybrid goals for this model.

People learn to live in community through experience.

Cooperative Models

April: In Puerto Rico, we have a close-knit community that is both diverse and similarly inclined. Family orientation and group survival values work to everyone's benefit. The island community along with many in the diaspora share a vision for a sustainable Puerto Rico that really drives all our work. It does help that we deeply love this land; a large portion of the population understands the importance of preservation and restoration. Bankers, attorneys; nearly everyone has a beloved family *finca.* And nearly every *finca* needs a design and a brigade.

John: The island is a natural community; we live and work in close proximity. Emphasizing that natural connection is what we are trying to do. By making sure that we invite and work with local educators so that we can hone in on the local needs, challenges, and desires, this program by default encourages cooperation.

The essence of Permacultura Pa'l Pueblo is that it is not just one or two individuals who are responsible for its design. It is a cooperative collective, where working together and discussing diverse perspectives is the norm. Creating a team

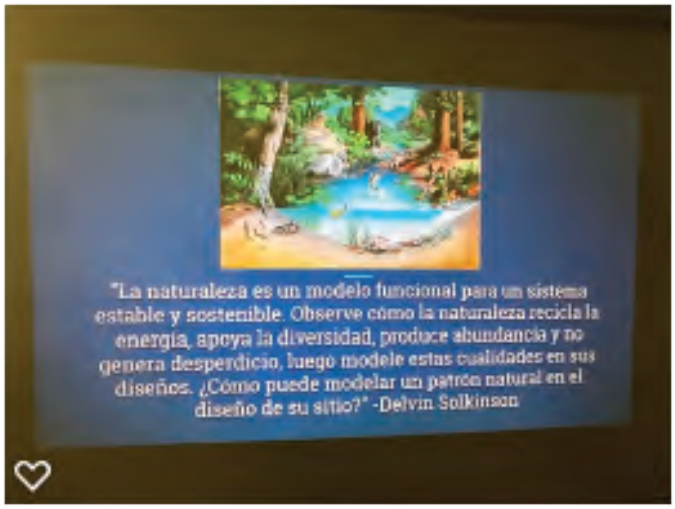
Designing for Soil and Water, finca Siembra Tres Vidas, Aibonito

of educators brings nuanced perspectives to the table.

To design a program that has the potential to break the mold, we have to connect and cooperate. Without each other, this framework could not come together, because each human holds their own world of power and potentials. Each person has something new and valid to offer. By concentrating people of the local community into one space, we are creating opportunities for connections to arise and relationships to form. Sooner, rather than later, they begin talking amongst themselves: "When can we go do a work-day at your place?" or, "I'm grateful to have people who want to not only visit, but help me with my project!"

People learn to live in community through experience. One of the most exciting aspects is that this program will be a working model of how a community thrives, because there is a community of educators, a community of students, and a community of *fincas* and people all working together. Even the PDC modules will be cooperative. Permacultura Pa'l Pueblo is designing a "passport" certification track, in which curriculum is developed by certified educator-members in a way that students may complete individual sections of the PDC, taking the rest or as many as needed at a later date since the curriculum is offered through various formats. For some, this is the only way this depth of knowledge can be absorbed and "approved."

April: I come from the cooperative retail food business.



La Naturaleza, Siembra Tres Vidas

To me collective ownership provides the most power and autonomy to invested communities. We're looking at membership models that cover the costs of transport, food, tools, host site fees, admin, and professional talent, which are affordable for small-scale operators. For example, if twelve growers each contribute $100 per quarter, in a year we have $4,800 in capital to work with. In the hands of Puertorriquen@s, that amount of money goes three times as far as it does in the States. $5,000 is a favorite award of these international competitions. Here, $5,000 would pay for two sturdy trucks to bring gear, people, plants, seeds, tools, and more up and down the steep mountains that are home to coffee and cacao, for years to come. It's already a different way of looking at money.

Accessibility: Permaculture Education that is Practical, and Equitable

John: Designing a diverse and open environment through this program has allowed us to reach different groups of people who feel marginalized and isolated from the world of privilege. It is important to talk about equity and not equality, because given the same exact resources not everyone can thrive. Each human is different, with different needs and limitations.

One of the main issues surrounding permaculture education, mainly the PDC, is that it is mostly accessible to people who have enough money in their bank account to spend a large amount of money; to largely privileged communities. Yes, there are sliding scales and scholarship options, but the reality is that the certification and knowledge itself are not accessible to people of lower income/rural areas/POC/Queer people/Indigenous people, etc.

Designing this program has allowed us to create something from the heart and not for profit. I don't believe that anyone should be making a living from teaching PDCs; as permaculturists we know better than to rely on only one source of currency.

Coconut Charcoal and Mango Planting, Cayey

April: The "gig economy" could sure use a redesign.

John: Included within the program is teaching the significance of ceremony, decolonization, Indigenous living, respect, self-care, non-violent communication, community living, acceptance, and openness, among other similar concepts. Doing this helps to create a safe space where everyone is welcome, everyone is valid, and everyone has a voice. This is extremely important and very much lacking in permaculture education. We cannot fully teach about earthworks and soil biology if we do not also teach about connection and unity. It's important to address community trauma; we cannot separate it, and healing, from the work we are doing.

April: Here we would like to say "Hats Off!" to the service of leaders like Heather Jo Flores and Permaculture Women; to the organizations centering others than the dominant economic and professional demographic. Perhaps a directory of permaculture serving marginalized communities is in order.

John: Permacultura Pa'l Pueblo (and permaculture itself) is inherently practical. By coupling the knowledge that we are not meant to make a living from these courses, we can offer PDCs and other permaculture education at a much lower cost than most. Our model is even working towards acquir-

ing funding to host free PDCs and other free permaculture education periodically.

April: We considered an equitable 1-for-1 model in which a paying student from outside the island would sponsor a student here. But the need for island-based community, and for this knowledge to reach as many folks living and growing here as possible, quickly, puts that tool on a longer trajectory. Instead, we are focusing on community-based exchange, whether monetary donations, resource exchanges, or barter. Combining this with sponsorship requests to local and global institutions will produce a quality program built on collective investment.

It's important for us to create a PDC that is accessible to parents, to people with varied physical or other abilities, to people of varied income levels. "Sponsor a farmer" scholarships are useful. Bartering resources is even more equitable and practical: exchanges such as use of a *finca* for other programs; ride-sharing; food provision; and organizational support. And, we know utility companies don't barter. So what we're making is a hybrid that intends to use the best of fair philanthropy and smart business to fuel an educational model that makes philanthropy obsolete. Just another day at the office!

The information is too precious and essential to be cast aside due to generational trauma.

Location and Culture-Specific: the Importance of "Pueblo"

John: This is such an important aspect of this design because it is what makes this program applicable to any bioregion, community, classroom, etc. The curriculum and presentations are all tailored not only to the physical location but to the surrounding culture. In Puerto Rico, we talk a lot about Indigenous people/traditions/ceremonies, POC, decolonization, women, LGBTQ+ families and similar aspects because they are culturally relevant and specific to the people here. Other areas of the globe might have different social aspects they could focus on.

Permaculture education is markedly lacking in transpersonal teaching. The reality is that when permaculture is taught, for the most part, we are not taught about the spiritual and transcendent aspects of life, including humanity. Having originated from Indigenous knowledge and techniques, permaculture is a system of accumulated information, not

Soil Tests, Siembra Tres Vidas, Aibonito

a system of novel information created by Bill Mollison and David Holmgren. The truth is that these Indigenous people will tell you that they learned their techniques by listening to the trees, the grass, the soil, the rocks, the wind, the sun, the moon, and everything else that surrounded them. They have an intimate connection, deeper than a reductionist understanding that we are scientifically part of the ecosystem; an understanding that we are all connected through spirit, something that goes beyond just the physical world. This aspect is not so much specific to each location but is more about bringing these teachings to each location. In the same way that we can't teach others about earthworks and soil biology without teaching them about community and connection, we can't fully teach others about permaculture if we don't teach them how to access the spiritual and transcendent aspects of themselves and the world around them.

April: There is a persistent myth that the Taíno people were wiped out of existence during Spanish colonization. A major news outlet propagated this fallacy just last week. In fact, the Taíno community remains a central part of the rebirth of Puerto Rico as a life-giving Entity. It has also recently been reported that a much, much larger percentage of the DNA of Puerto Rico's people is Indigenous than was earlier acknowledged. Interestingly, some research indicates this lineage continues strictly along the matriarchal mitochondrial lines. Madre Tierra indeed.

John: Many people on the island do have an aversion to permaculture because they feel that they don't want more foreigners to tell them how to live and how to be better, because the reality is that our history is plagued with others coming into our lands to steal them, under the guise of promising improvements and "better living," only to almost wipe our ancestors off the face of the Earth. Acknowledging this and using that information to create a program that can transcend centuries of exploitation, allowing permaculture to permeate into folks' lives and change their perspectives, is why we are doing this. The information is too precious and essential to

Semi-Urban Homestead Food Forest, Luquillo

be cast aside due to generational trauma. We must work at reclaiming our power and reclaiming the practices and techniques of our ancestors.

April: Regional hubs are key, using existing "mycelium" to root the PPP in Aibonito, Caguas, Cayey, Arecibo, Utuado, Orocovis, Ponce, and "out west." This tends to happen naturally, where 10-20% of workshop attendees will come from afar, while the bulk are neighbors. Localized opportunities for instruction and exchange have the widest and most location-specific impact, for the least expense. Microclimates and soil composition vary so widely across the island; variety is part of the beauty of the landscape. Each of these pueblos have ready teachers and sites, as well as existing cooperative brigade communities. Our task is to organize, outfit, and fund the reinvigoration of knowledge that really never left Puerto Rico.

Translation and interpretation is a great example of culture-centric teaching. Our teachers are essentially developing a living curriculum to serve the Antilles. Sure, we can invite volunteer educators to the island from those more privileged places. This means including the cost of quality translation and interpretation for every word written or spoken into local Spanish. We share all the Spanish-language permaculture resources we can find in online groups. Still there could be more. Web access is at a premium on the mountaintops. How do we bring the knowledge to the mountain? How do we nourish and compensate native talents? How do we then follow up with supportive installations? Land + Heart is especially excited about inviting skilled school and community groups from the Puerto Rico diaspora to participate in the rebuilding. So the Pueblo reaches much farther than the borders of the island. Pueblo includes all with family roots in all the municipalities. These folks' illuminated grins when restoring the island alongside extended family here are nearly powerful enough to run the power grid alone.

Recently, we realized that zone 5 is rarely discussed in literature, because until now, zone 5 was assumed to be whole and only required preservation. This is no longer the case in places decimated by winds, floods, fires, or drought. What John and I are saying is that the core of permaculture education is static, as the principles of nature are reliable. Like any living system, the static creates dynamic results. Therefore, the problems that permaculture can solve are dynamic, and so must be the solutions. Being "both/and" people, we understand this paradox as a sacred Truth. Designing solutions to dynamic social and environmental imbalances becomes a reflection of sacred Truth as well. The more we grow Truth, the more we grow food, the less we will rely on capitalist models. In Puerto Rico, this wakes us up each day with at least as much levity as concern. But we have to keep practical and time-sensitive considerations foremost in mind. The consequences quicken each season.

John: It has been, and continues to be, an honor and a blessing for us to be able to do this work, knowing that we are working towards something amazing and so much bigger than ourselves. Despite everything that is happening in the world, teamwork makes the dream work, which means that together we can progress. We simply have to believe in ourselves enough to make the change.

To volunteer your design or educational skills, to sponsor students of Permacultura Pa'l Pueblo, or to create a life-changing group journey to shore up and install useful designs at a *finca* in Puerto Rico, please contact **LandHeartProject@gmail.com**. Let's show Puerto Rico the world has not forgotten her! Δ

John Bio: I discovered the world of Permaculture in 2016, & Tierra Nueva came to fruition after about one year of planning, discussing, and thinking about what my purpose on this Earth is. Fueled even more by the devastation of Hurricane Maria, I moved back to the island in May 2018 and hit the ground running. Tierra Nueva is envisioned to be an ecoeducational village, regenerative farm, and cultural center, serving as a transitional and permanent home for people who want to learn life skills that they can take back with them and share with others. Discover more at ***TierraNuevaPR.com****.*

April Bio: Land + Heart Project was born a few years ahead of schedule, of twenty-hour days of outreach in the wake of Hurricane Maria, wondering whether family and friends had drinking water or medicine, and of shared determination that Puerto Rico's natural state as a life-giving food forest is one of the most sacred places on Earth that we can all still protect. "LHP" serves fair food recovery for PR through volunteer coordination, advocacy, truly local and sustainable eco-travel, partnership program development, resource networking, and more. Discover more at ***LandHeartProject.org****.*

Paradigm Shifts

The Healing Power of Trees

Diana Sette

IT IS ONE THING TO CLAIM that trees are healing forces with significant social, emotional, psychological, spiritual, physical, and even economic benefits to a group of tree-huggers. Like the choir, they sing along with affirmation. But try to make that same claim to a group of scientists, academics, and healthcare professionals, and one may expect to be laughed at or met with a high level of skepticism. At least, that was often the case in the past. The challenge of "prove it" has been met by many socio-ecological scientists who provided the scientific data to prove what humans have known since our existence: that trees, our ancient neighbors, play a vital role in the wellbeing of every area of life of humans on planet earth. Many industry professionals who historically did not focus on trees and forests are beginning to create holistic models. These models outline a growing popular healing movement that integrates the permaculture ethics of people care and earth care in paradigm-shifting ways.

In the US alone... forests make up 90% of the carbon sink.

"Trees are the solution" is a common slogan among community forestry advocates. But can it really be true for every problem? Yes. When we look at almost every aspect of life, trees provide the vital necessities of life itself. They clean our air and water. They improve our health and our communities, and bring beauty across the planet. Trees' leaves have the ability to cling to particulates in the air. The Arbor Day Foundation estimates that America's urban trees are removing 711,000 metric tons of air pollution annually. Trees also have a remarkable ability to filter stormwater and keep fresh water clean and drinkable. The Food and Agriculture Organization of the United Nations (FAO) estimates that forests provide 75% of the world's accessible fresh water. More than half the world lives in urban centers—with those numbers only expected to increase. So, when one considers how the removal of trees for paved surfaces also removes shade, it is not surprising that we have come to value the shade and cooling effects from urban trees. That shade can create a decrease in temperatures by a solid 10° F. Green spaces in communities are proven to encourage social interactions and integrations (Kweah, Sullivan, and Wiley, 1998).

According to a recent *Smithsonian Magazine* article (1), it is estimated that the Earth currently has three trillion trees. This number might outnumber the stars in the Milky Way. The amount of carbon these trees capture is crucial for our existence on this planet. Just look at the United States alone, and one sees that forests make up 90% of the carbon sink. They sequester about 10-15% of the country's CO_2 emissions (according to The Arbor Day Foundation). The value that trees play in slowing the rate of climate change is perhaps more than we can even quantify, because they are the foundation of life on this planet. Research being done by the likes of Dr. Kathy Wolf, a social scientist researcher, and her team at the University of Washington, have generated and gathered since 2008 a remarkable database of research and resources documenting the ways in which trees enhance our quality of life. Their research is all accessible for free on the website "Green Cities: Good Health" (depts.washington.edu/hhwb/). The US Forest Service has also teamed up with American Forests and The National Association of Regional Councils to create Vibrant Cities Lab (vibrantcitieslab.com) which presents online numerous case studies, research. and resources that support the cultivation of urban forests and their multitude of ecosystem services.

The tree benefits that have been gaining significant attention include the ways in which trees improve our health. The Arbor Day Foundation reports that childhood asthma

Green space in Boston.

rates are highest where urban tree density is lowest, with that rate decreasing by 25% for every additional 340 trees per square kilometer. Numerous studies show that exposure to nature can improve depression, anxiety, and attention deficit hyperactivity disorder (Sugiyama, Leslie, Giles-Corti, and Owen, 2008; Taylor and Kuo 2009). The US Forest Service's 2018 report, "Urban Nature for Human Health and Well-Being" (2) lays out the benefits of trees. Organizations like the American Public Health Association have been paying attention to the mounting research, and in 2013 created Policy Number 20137: "Improving Health and Wellness through Access to Nature." (3) In the same year, the non-profit Park Rx (parkrx.org) was created to support the collaboration between park and public land agencies, healthcare providers, and community partners. Through the clever Park Rx platform, people can write "prescriptions" to be outside and take in nature's healing without any insurance co-pays or side effects. Park Rx's work compliments the work being done by the Association of Nature and Forest Therapy (ANFT) which was created in 2012, inspired by the Japanese practice of *shinrin-yoku* or "forest bathing" which started in the 80s. As it reads on ANFT's website (www.natureandforesttherapy.org), they trained a growing global community of over 700 people in 44 countries in the research-based framework of forest therapy to support "healing and wellness through immersion in forests and other natural environments."

Out of this growing desire, emergent communities are working to create opportunities to access the healing properties of trees and nature in general. The Arbor Day Foundation recently launched Tree Campus Healthcare, a recognition program to encourage and acknowledge health institutions "that make a mission-aligned impact on community wellness through tree education, investment, and community engagement." (4) Not everyone, particularly in the urban environment, has the same access to tree cover. The associated health benefits of forests are, therefore, also not often equitably distributed. Health institutions can play a more concerted effort in designing experiences that include trees as part of the healing, and it is encouraging to see the growing trend to include trees in the US healthcare system. In Annapolis, Maryland in 1996, the group Nature Sacred formed (under the TKF Foundation) as a network of urban sanctuaries created to reduce stress, improve health, and strengthen community. On their website (naturesacred.org), they offer a model for designing restorative and healing spaces.

Cleveland green space.

It is besides the point whether or not the projects, institutions, and missions like the ones mentioned above identify as permaculture design. At the core, they integrate the permaculture ethics of people care, fair share, and earth care. They present hopeful actions and momentum towards embedding the healing properties of trees and nature into our everyday experience, particularly as it relates to our health and well-being. Hopefully, these types of broadscale and popular actions and projects are an indicator of continued and growing appreciation. Valuing trees creates a paradigm shift in the way we view our interconnectedness within nature. Δ

... reduce stress, improve health, and strengthen community.

Diana Sette is a passionate community cultivator, gardener, writer, facilitator, and mother. She is a Certified Permaculture Teacher and Designer, and is the Co-Founder of Possibilitarian Garden (Facebook: Possibilitarian Garden) and Possibilitarian Regenerative Community Homestead aka PORCH (www. buckeyeporch.org) in Cleveland, OH. Diana serves on the board of The Hummingbird Project (hummingbirdproject.org), and Green Triangle (greentriangle.org). More on Diana at dianasette.wordpress.com.

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A Choice

Forests or Deserts?

Loxley Clovis

JULY 1542 COMMON ERA, AMAZON BASIN

The scout's legs were churning at full speed, feet pounding the well-worn, wide road into town from the river banks, adrenaline racing down his spine. It was his duty to let his superior know immediately of any consequential, unplanned activity occurring on the river. As he approached town, armed guards nodded at him and parted to make way as he sprinted towards commander Arripuna's headquarters. Arripuna, the leader of an enormous, populous, forested area, was just finishing his final town meeting of the day when he saw his scout approaching, so he beckoned him forward to speak. The scout, despite severe shortness of breath from the miles-long run, began to recount what he had just seen rowing down the mighty river: a watercraft unlike any other with a wide hull and outfitted with tree-sized masts and several rowing oars on each side. The men aboard this unusual vessel wore reflective armor that glared in the light of the sun and was as inflexible as turtle shell. Arripuna furled his eyebrows skeptically at some of the more outrageous details as his scout still gasped for breath. The strangers were making their way downstream as fast as the rapid currents and their oars could take them, the scout added. As the sun set and the evening wore on, Arripuna's disbelief of his initial scout's report began to fade as more accounts began to trickle down from upstream from the great towns of the Omagua—corroborating similar events as well as physical encounters with the oddly dressed newcomers.

The men encountered over 500 miles of continuous population, including "very large cities."

MAY 1543 COMMON ERA, SPAIN

Brother Gaspar de Carvajal stood beside Captain Francisco de Orellana in a marble courtyard, lending the moral authority of the Church as they both defended themselves against charges of rebellion, desertion, and treason brought by the Royal and Supreme Council of the Indies and Charles I, the King of Spain.[1] King Charles' mood swung from vengence to wonder as he listened to the Spanish explorers who had recently returned from the rich lands across the ocean west of Portugal. They told stories of vast cities in the tropical jungle of the South American continent along a river so large that at times one could not even see the other bank[2], an unbelievable abundance of food: birds, fish, turtles, corn bread, yuca, too many kinds of fruit to list[3], artistic enameled pottery of very vivid colors and beautiful drawings[4], and an entire town lead by warrior *women*.[5] While some court members chuckled at the mention of women warrior leaders, the court scholar duly noted this fact. Europeans would later liken these warrior women to the so-called Amazon warrior women of the ancient Grecian mythological stories and dub the river that Orellana and his men traversed *Amazonas*. The Council of the Indies perused Brother Gaspar de Carvajal's handwritten book on the journey, *Account of the Recent Discovery of the Famous Grand River which was Discovered by Great Good Fortune by Captain Francisco de Orellana*, as he spoke. Carvajal had presented it to the Council at trial as evidence that he and his fellow travelers were still loyal to the crown. His account included exhaustively detailed notes concerning the dense population of people they encountered along the banks of what came to be known throughout the world as the Amazon River. At one point on the river, the men encountered over 500 miles of continuous population, including "very large cities."[6] Ultimately, the king and Council were so convinced by the sincerity of Carvajal and Orellana, as well as the evidence they presented, that they named Orellana governor of the Amazon region and sent him back to the river with two new boats and hundreds of men.[7]

A bust of explorer Francisco de Orellana by Trujillo. CC0 via WikiMedia.

So began the saga of events when the European world collided with the Amazonian world. For over four centuries, most people never knew of the flourishing, pre-European-contact civilization in the Amazon described by Carvajal as the sole copy of his book gathered dust on a library shelf in Spain.[8] Instead, the Amazon Basin has been—and continues to be—described with adjectives such as "virgin," "wilderness," and "untouched" even by respected academics. In fact, as late as the 20th century archaeologists such as Betty J. Meggars went as far as to argue that the Amazon Basin could never support a large human population nor social complex-

ity due to its poor agricultural soil quality and lack of reliable protein sources.[9] According to many archeologists, for thousands of years before the arrival of Europeans, the Amazon was only ever the domain of small bands of so-called "primitive hunter-gatherers." Adding weight to this line of reasoning was the fact that European missionaries, arriving in the Amazon Basin decades after the Orellana expedition, only ever mentioned these small bands of people. By the time of the missionaries, the image of the so-called "noble savage" was conjured up to describe the inhabitants of the Amazon Basin: people whose lifestyle was dependent on being part of the forest, not people who altered or managed their environment for their benefit and growth as so-called "civilized peoples" do. Instead, they lived in small roaming groups, hunting wild animals and gathering wild plants. As a result, Amazonian inhabitants themselves were considered "wild". It was supposed that they had not learned how to domesticate animals and plants as the "civilizations" of the Levante had done over ten thousand years ago. Centuries of writers conjured up images of the Amazon as a vast, untouched wilderness, capturing the world's imagination. For hundreds of years, many anthropologists and historians built their careers on this premise. In the 20th century, Amazon mapmaker Alexander Hamilton Rice Jr. described the people there as "scattered tribes eeking out an existence".[10] Yet Carvajal's 16th century account—not published until the 19th century and available to people worldwide in the public domain much later—shakes the very notion of the Amazon as "pristine wilderness" to its core. What Carvajal described from his journey down the river in 1542—vast settled cities, fine artwork, food abundance—went against absolutely everything everyone living outside the Amazon had been taught and were teaching about the region for the past three centuries. In fact, Carvajal's account was so contradictory to established history, that historians in the 20th century have claimed that he and Francisco de Orellana must have flat out lied about there being a large human population in the Amazon to the Spanish Court in order to secure governorship of the region.

Ceramics from the Marajoara. CC0 via WikiMedia.

Yet the narrative of a pristine jungle inhabited for millennia by small bands of hunter-gatherers is rapidly unraveling now that Carvajal's account is being more closely studied and as a steady outpouring of new facts have begun to emerge from the world's largest river basin….

1949 COMMON ERA, MARAJÓ ISLAND, BRAZIL

Betty Meggars shook her head in disbelief. She and her team of archeologists had just dug up exceptionally large pieces of pottery in the Amazon Basin; pottery from a 4,900-year-old culture too large to be transported around by a hunter-gatherer group and the art too fine to have been painted by a "primitive" people. Steeped in the primitivist Amazonian narrative, Meggars aruged that this pottery *must* have been created by emigrants to the Amazon from a higher culture. Perhaps they came from the region of modern-day Colombia, emigrants who only stayed in the Amazon region for just a brief time, she declared.[11] Today, with several more decades of uncovered pottery and careful study of Amazonian ceramics, modern archaeologists are challenging Meggars' assertions. Pointing to carbon dating that is placing the pottery within a 900 year time-frame, much longer that previously thought, archaeologists are now asserting that the Amazonian people likely did create this elaborate pottery.[12] Today, this very debate over the origins of these fine ceramics proceeds. But what did the first Europeans in the region see? Here is Brother Gaspar de Carvajal's 1542 first-hand account of Amazonian pottery:

"This stoneware is of the best quality that has ever been seen in the world...."

> *In this town were houses of pleasing interiors with much stoneware of diverse forms. There were enormous pitchers and vases, and many other smaller containers, plates, silverware, and candlesticks. This stoneware is of the best quality that has ever been seen in the world, and even that of Malaga does not equal it. It is all enameled with glass, of all colors and the brightest hues. Some are drawn to frighten, but on others, the drawings and paintings are delicate depictions of nature. They craft and they draw everything like the Romans.*[13]

Peering closer, more and more signs of sweeping, complex civilizations in the Amazon Basin continue to surface. Archaeologist Michael Heckenberger continues to astonish himself and his collegues. He and his team continue to unearth evidence of not only dense populations in the Amazon Basin, but actual urban planning replete with earthworks,

roads, geoglyphs, dams, and fishponds. It appears that the sophisticated, ancient fishponds—like those of the Kuikuro people from Xingu region of the Amazon—likely did generate a reliable source of protein that could have sustained the large population evidenced by the grand plazas and roadways that Heckenberger and team have been unearthing in recent decades. The earliest European account of the region seems to confirm this. In 1542, Brother Gaspar de Carvajal described a village of the Amazon they encountered as "having a great quantity of food, such as turtles in corrals, a lot of meat and fish, and so much abundance to be able to feed a lot of men," acknowledging that they had plentiful protein beyond just subsistence quantities.[14] He also describes "many large-sized roads that went inland from the river-side village".[15] Using the latest aerial techniques alongside his digs, Heckenberger is constantly uncovering roadway connections between various ancient city sites in the Amazon Basin.[16] When placing Heckenberger's findings alongside Carvajal's account, the multitude of confirmations of the tales of Francisco de Orellana and his men are striking.

The soils that Michael Heckenberger and his colleagues excavate are also shining some light onto how an abundance of food can be grown in a rainforest. A secret long known by indigenous peoples, as well as many farmers and gardeners of Brazil is now beginning to spread out of the region: extremely fertile soils known as *terra preta* (aka Amazonian dark earth) are scattered across vast regions of the Amazon.[17] *Terra preta* soils have been used for decades to improve crop production and garden soils. Extraordinarily, these dark earth soils are so nutrient-rich that the lands in which they can be found can be farmed over and over again, producing large, healthy crops without adding fertilizer inputs, despite what Betty J. Meggars and others have for decades claimed about tropical soils being infertile. Some people even sell *terra preta* as potting soil.[18] For many years, soil scientists assumed that a winter season would be necessary to create such deep, rich soils. Their reasoning went as follows: the leaves and twigs from the trees in temperate regions would fall to the ground during the autumn, rot during the winter, and turn into soil. In contrast, when organic matter falls from the trees in the tropics, the fungi on the forest floor almost immediately consume the material and make the nutrients available to the next living beings with no season of tree dormancy. According to this reasoning, deep, rich soils, therefore, do not develop in the tropics. All the biology essentially stays above ground. Thus, it has been widely believed for centuries that agriculture—which requires soil—is not possible in the tropics. And therefore, in the absence of food-surplus-generating agriculture, large populations cannot be reached nor sustained in the tropics. But new studies are unraveling this narrative. From a vast body of research that has recently emerged studying the origins of *terra preta*[19], we now know that the *people* of the Amazon actually *created* this dark, fertile soil, and some—like the Kuikuro people—are still creating it to this day.[20] The process of creating it goes roughly like this: beginning nearly five thousand years ago[21], people starting throwing their food scraps, green yard waste, and broken pottery all together into large piles. Then, they would eventually

Explorer Diego de Ordaz searched for El Dorado in South America. CC0 via WikiMedia.

char these piles using a charcoal creation technique. These charred earths became what is today considered one of the best possible soil amendments for growing large, healthy plants.[22] Nowadays, soil scientists understand that microscopic open pockets are created in the charred plant matter, creating habitat for a vast array of living soil microorganisms such as bacteria, actinomycetes, fungi, protozoa, and nematodes.[23] These microorganisms are so necessary for the sustainability of healthy, fertile organic soil, that they in fact define the difference between "soil" and "dirt." Dirt is simply sand, silt, and clay (essentially minuscule, sterile pebbles). Soil, on the other hand, includes organic matter, minerals, and an entire ecosystem in miniature: a complex, living food web of tiny critters that naturally work together in symbiosis to make nutrients available to plants. Scientists have started mapping where Brother Gaspar de Carvajal reported seeing Amazonian settlements in 1542 and searching for Amazonian dark earths in these locations. As it turns out, wherever Carvajal mentioned there being settlements, anthropologists and soil scientists have in fact found *terra preta.*[24] Based on the currently discovered Amazonian dark earth sites, it is now estimated that an area twice the size of Britain was settled by Amazonian people before the arrival of Europeans to the region.[25]

What paleontologist Alceu Ranzi saw in the grasslands sent a chill racing down his spine as he flew over an unforest-

ed region of the Amazon. He swiftly grabbed for his camera to photograph what were surely unnatural features upon the landscape. These features would later be identified as ancient, ruler-straight roadways, built causeways, canals, settlement mounds, forest islands, ring ditch sites, raised fields, fish weirs, and even reservoirs.[26] Today, decades after Ranzi's initial flights over the region, anthropologist Clark L. Erickson and his team carefully study these geometrically-precise earthworks. Erickson specializes in landscape geography. Over the past several decades, he and his team have continued to uncover human-created earthworks in the Amazon that date back thousands of years. As the Amazon is rapidly deforested at the same time as satellites are taking high-resolution imagery of the region, more and more of these earthworks are being revealed. Erickson posits that the earthworks may have been used as irrigation control for large-scale agriculture projects by the ancient indigenous people that once inhabited the region.[27] Based on his archeological findings, he estimates that these human-made agricultural fields probably cover hundreds of square kilometers and some are thousands of years old.[28] Curiously, Erickson describes what he calls "forest island mounds" in the midst of these large, terraformed, Amazonian savannas. In these forest islands he and his team always find vast quantities of potsherds: busted up pieces of pottery. Interestingly, they also almost always encounter what he calls "chocolate agroforestry" plots within the forest islands. It appears that the cacao tree, from which chocolate derives, was not only domesticated by the civilizations of Mesoamerica (the Olmec, the Maya, and the Atzec), apparently it was domesticated by Amazonian people as well. Many generations ago, people began to select for the best tasting and best yielding cacao pods, and replanted their seeds to grow new trees with similar desirable traits, thus beginning a process of plant domestication by the human population of the region. Researchers are finding that plenty of other plant species from the Amazon seem to have had a very long relationship with human settlement as well: the rubber tree, brazil nuts, various palms and fruit trees, and even tropical cotton *(Gossypium barbadense).*[29] Indeed, consistent with the findings of modern anthropologists, Brother Gaspar de Carvajal also wrote of his 1542 voyage down the Amazon River that the people there "had very fine cotton clothing,"[30] as well as "many kinds of great fruit."[31]

The uncovering of artistic pottery, urban cities with massive roadways connecting them, fertile soils, monumental earthworks and domesticated plants are not only confirming Gaspar de Carvajal and Francisco de Orellana's story of their travels down the Amazon in 1542, but also these findings are shifting the very foundational assumptions of what people from outside the Amazon Basin understand about the history of human habitation of this region as well as how so many people were able to live there. For centuries, people have claimed that the Amazon was sparsely populated before the arrival of Europeans, that it was unsuitable for large sedentary populations of people due to poor soils and therefore, it was only ever populated by small bands of nomadic hunter-gatherers, and that the Amazon has thusly existed as an unused and pristine "wilderness." Nowadays, with a torrent of recently uncovered facts from historians, anthropologists, soil scientists, epidemiologists, and ethnobotonists, some estimates now claim that *up to 6 million people* lived in the Amazon Basin before Europeans arrived.[32] In comparison, England's entire population was at around 2.6 million in the year 1500 CE.[33]

But what happened to all these masses of people in these large population centers in an area that has for centuries been nearly completely covered by a tropical rainforest? We now know that the people of Europe themselves appear to have played a major role in creating the conditions for the germs that caused plagues of epidemic proportions to thrive as a result of their particular form of confined-animal agriculture. Unlike the peoples of the Americas, Europeans kept large numbers of domesticated animals in confined areas, oftentimes even in cities near large concentrations of people. Some of the germs that make animals sick jumped the species barrier and started infecting humans, and they did so at epidemic scales. As a result, disease outbreaks wiped out massive populations in Europe.[34] These infectious disesases that jump from animals to humans are known as zoonoses.[35] For example, the flu virus originates from pigs and birds (e.g., chickens), while measles, tuberculosis, and smallpox came to humans from cows.[36] As the peoples of the Americans had no masses of domesticated animals packed into their population centers before contact with Mediterranean, monoculture agriculturalists, they had no zoonoses, nor did they have the immunity necessary to survive zoonotic disease infection. Upon contact with European peoples who carried with them these diseases originating from large-scale, confined-animal agriculture, it is now estimated that over 90% of the peoples of the American hemisphere were wiped out by these zoonotic plagues of Mediterranean and European origin.[37] Human population estimates of the pre-European-contact

Ceramics from the Cultura Marajoara-Tanga. CC0 via WikiMedia.

American hemisphere continue climbing as more and more archeological sites are uncovered. Current estimates stand in the tens of millions of people in the Americas and possibly even higher than the population of Europe at the time.[38]

The large 16th century populations of the Amazon described by Brother Gaspar de Carvajal and confirmed by today's recent studies, mean that Amazonian peoples must have been growing and gathering quite an abundance of food. But without agriculture to create such an abundance of food, how did the population numbers of the Amazon get so high? As a the original, sedentary Amazonian peoples are no longer around to tell us how they reached a population that numbered into the millions, if we want to know how it was done we must put the puzzle together ourselves using an interdisciplinary approach. We must take into account the oral histories of surviving Amazonian peoples, study art history, soil science, geography, history, anthropology, and the ethnobotony of traditional agroforestry. One possible puzzle piece is that the sedentary Amazonian people may have been sophisticated forest gardeners.[39] They appear to have been domesticating various plant species by intentionally selecting them for their best traits.[40] Domesticated Amazonian plants include over 85 woody species such as brazil nut, ice-cream-bean, Amazonian grape, all manner of fruit-bearing palms such as açaí, as well as non-food agroforestry crops like the rubber tree and tropical cotton for clothing. Individual species could even serve for multiple uses as is the case with the maripa palm *(Attalea maripa)* which—in addition to having edible fruits—was used in the construction of darts for blowguns, sleeping mats, torches, kindling, as well as for use as thatching.[41] Oil from certain palm tree seeds and edible larvae cultivated in palm trunks served as sources of protein.[42] With such an emphasis on domesticating an impressive array of woody species, the people of the Amazon were likely cultivating *vertically-stacked woody gardens* around their homesteads. That is, they grew vertical polycultures with understory shrub plants —such as cassava—growing in the shade of overstory fruit trees, while spiritual plants—like the ayahuasca vine *(Banisteriopsis caapi)*—climbed up the tree trunks. This style of vertically stacked woody gardening likely created a habitat for all sorts of animals to nest in the garden. Such an animal habitat in their woody gardens likely served as an additional source of protein, natural fertilizer, and possibly even companionship. In the same hemisphere, the benefits of the ancient polyculture horticultural technique of growing corn, beans, and squash together in the same spatial footprint—developed in North America and known as the Three Sisters—are today well understood.[43] The three distinct species of plants, when planted together, mutually help one another out. While growing together, they form a beneficial, symbiotic companion planting. So it should therefore not come as much of a surprise to those who already know about Three Sisters that there are likely South American counterparts to this polyculture gardening practice.

Had Orellana stumbled upon a civilization of *gardeners?*

Designing gardens of productive perennial plants stacked in a vertical fashion is today practiced around the world as a category of advanced gardening known as permaculture. David Holmgren, the co-originator of the term, defines permaculture as "consciously designed landscapes which mimic the patterns and relationships found in nature to yield an abundance of food, fiber, and shelter for the provision of local needs."[44] After delving deeper into traditional gardening techniques of various peoples around the world, permaculturist Toby Hemenway described some types of traditional gardeners as "horticulturalists,"[45] an additional category of how humans relate to their environment that he proposed to be added to the two traditional categories of "hunter-gatherers" or "agriculturalists." According to Hemenway, these people may do *some* hunting and *some* gathering, and they may also practice *some* domestication—as the Amazonians appear to have also been growing domesticated corn according to Carvajal[46]—but mainly, horitculturalists *tend semi-wild* plants and animals. They were not—and are not—so much hunter-gatherers, nor farmers as they were—and are—sophisticated *gardeners*. Carefully curated, vertically stacked, fauna-rich forest gardens might have been cultivated to grow nearly all of the food, fuel, timber, fiber, medicine, and spiritually significant plants together in the same relative footprint as a diverse polyculture *garden.* Such intentional, vertical stacking creates an enormous abundance of useful plant matter, possibly bountiful enough to sustain a large population. This *horticultural system* would likely have been perceived as simply wild jungle to Mediterranean Europeans and not the productive garden that it was, as Mediterranean agriculturalists were used to seeing their domesticated plants grown in vast monoculture crop *farms,* amber waves of grain from horizon to horizon. The cities that Francisco de Orellana and his men saw along the Amazon River in 1542 were likely what Heckenberger refers to as Amazonian "garden cities," cities which also included urban planning, earthworks, roads, and fishponds.[47] Had Orellana stumbled upon a civilization of *gardeners?*

We also know from Brother Gaspar de Carvajal's 1542 book that the Spaniards did not appear to have any knowledge whatsoever of the edible flora in the Amazon Basin. Because they had run out of food and did not know how to get it in the jungle, during their seven-month journey down the river nearly all the food they ate was obtained from the indigenous people living there. The few days that the Spaniards did have to fend for themselves, they wandered around digging up and eating unknown roots of unidentified jungle plants hoping not to be poisoned by them and even resorted to cooking and eating their own leather belts and shoe soles![48] In fact, on page 6 of Carvajal's book, he relates that the Spaniards were so excited when the first village of Amazonian people that they happened upon offered them an abundance of food to eat that they hugged them and gave them the clothes off their backs.[49] *Was this it*? Could this gift of clothing, likely with European germs, have been one of the first proverbial matches that lit the massive fire of epidemic

disease in the Amazon, the critical moment of first transmission of European zoonotic diseases to a population who had absolutely no immunity and massive roads and waterways of communitcation between their villages, towns, and cities? Europeans would not again write about their ventures into the Amazon until decades after Orellana and his men, leaving plenty of time for the introduced Mediterranean diseases—such as smallpox, influenza and others—to rip through and wipe out over 90% of the settled population.[50] Such a devestating epidemic event, along with having to flee from European expansionist wars, forced conscription, and slavery,[51] may have utterly undermined their ability to remain living a sedentary lifestyle as it likely removed the population base necessary to sustain such a way of life. The few people remaining likely fled into the forest, and reverted back to nomadism.[52] Thus, the Amazonian people very well may have evolved from hunter-gatherers roughly 10,000 years ago, to forest-gardening horticulturalists sometime before European arrival (possibly even thousands of years before European contact)[53], and *devolved back to* a nomadic, hunter-gatherer lifestyle, perhaps as a consequence of having to flee the newly disease-ridden urban centers of their Amazonian cities, slave traders and the cruelty of the conquistadors.[54]

Marajoara vase. Image CC0 via WikiMedia.

As the Amazonian people fled, their domesticated and semi-domesticated forest garden plots, full of plants which have had their evolution guided by the purposeful, human selection of certain traits, may have been spread by means of reconstruction by these horticultural refugees when they moved to other areas, as well as by mammals and birds that continue spreading the seeds of their forest garden plants to this very day. As the people of the Amazon Basin had focused on perennial plant propagation, such as the aforementioned 85 long-living, woody species, and because their curated forest plots were vertically stacked, mimicking the patterns of a natural forest, these plots harbored the potentiality of surviving without the help of humans far into the future. Some of the smaller forest garden plots may have been reclaimed by the untended, wild plants of the rainforest. Perhaps both scenarios, the spread of domesticated species into some areas and the reclamation of wild species into others, played out to varying degrees depending on the environmental factors of the area and the sizes of the original garden plots. Indeed, many of the once-tended Amazonian forest gardens are today feral, meaning they exist in the wild, yet they descended from domestication. One recent study "found that human influence is exclusively responsible for about half of the explained variation of the abundance, relative abundance, richness, and relative richness of domesticated species in the southwestern and eastern regions" of the Amazon.[55] As Clark L. Erickson puts it, "instead of viewing Amazonia as a pristine form of nature, it is therefore more accurate to conceive of it in the same way that we would conceive of a garden."[56] Consequently, large swathes of what we today refer to as the Amazon Rainforest may infact be *feral, human-created forest gardens*.[57]

In contrast to these human-created forest gardens that supported millions of people in the Amazon Basin, the peoples of the Mediterranean supported their populations with agriculture while creating a curious ecological trajectory for themselves with their methods of farming. Year after year, century after century, millennia after millennia, Europeans tilled the soil, for over *ten thousand years*. Not only that, they tended to plant crop after crop of the same grains over and over again in the same place. This degenerative, monocultural form of agriculture exhausts the soils of its nutrients, while plowing exposes all the life of the soil food web to the relentless radiation of the sun and beating of the wind, thereby degrading—and eventually depleting—the soil's fertility and its ability to grow anything at all. The long-term effects of such agricultural techniques are bleak. What once was referred to as the Fertile Crescent is today a desert where people battle for access to fresh water and for the last remaining pockets of fertile soil. What's more, the plow-monoculture agriculturalists exported these farming habits to the so-called New World, where in short order they turned the fertile Great Plains of North America into a dust bowl. Today, these plow-monoculture agriculturalists are lighting enormous fires in the Amazon rainforest to clear the way for the repetition of this very destructive practice of creating massive monoculture crops for export: beef, soy, sugarcane, and timber, while—in contrast—indigenous communities and small farmers are producing over 70% of the food for Brazil's internal markets.[58]

Yet, there is a verdant glimmer of hope. With the recent wider acknowledgments of their innumerable, incredible feats, indignous peoples are regaining pride in their traditional systems of knowledge and land management techniques, and they are uniting against these patterns of monocultural expansionism. Simultaneously, permaculturists are spreading the ideas of regenerative forest gardening in its many forms—from the tropical climate techniques of syntropic agroforestry[59] to the colder, temperate climate techniques of agroforestry[60], Whitefield permaculture[61], forest agriculture[62], and edible forest gardens[63]. In a hyper-connected world, ideas and techniques are being shared between traditional gardeners and modern gardeners at lightning speed, and a new fu-

sion of techniques is emerging which could point the way to a regenerative future. As folks look to nature once again, and to the varieties of ways humans have interacted with nature historically, more people now are learning that we can have a positive impact on our environment, and they are choosing to do so.

Careful study of history is showing that both the Amazon Basin and the Mediterranean Basin each supported artistic cultures and sizable populations for considerable periods of time even though they chose two very distinct agricultural tracks. Understanding what we now understand to be true about these two regions, it is becoming clear that there are now at least two very distinct models for agriculture: we can either produce our food, fuel, timber, medicine, and fiber plants by erasing functioning ecosystems and replacing them with massive monoculture crops thereby further desertifying the planet. Or we can grow those plants in localized, small-to-medium scale, stacked forest gardens, creating and maintaining healthy ecosystems as well as habitats for animals while generating rain[64] and cooling the atmosphere.[65]

The choice is ours. Δ

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(See Endnotes, next page.)

Endnotes

1 Arre caballo! "Francisco de Orellana." arrecaballo.es/edad-moderna/conquistadores-espanoles/francisco-de-orellana/.
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3 Carvajal, Gaspar de. (1542). Relación. pp. 6, 9-10, 17, 22, 24.
4 Carvajal, Gaspar de. (1542). Relación. p. 23.
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6 Carvajal, Gaspar de. (1542). Relación. pp. 33-34.
7 *Arre caballo!* "Francisco de Orellana."
8 Shockingly, according to the Miguel de Cervantes Virtual Library, copies of Carvajal's book were not made available to the public until the 19th century when it was finally published by the Royal Academy of History in Madrid, Spain. And it wasn't until forty-four years later that the errors in the aforementioned transcription were corrected. [i] Today, no one knows exactly why this story was not widely published until three centuries after it was written. However, one explanation may be that since Carvajal mentioned the fertile abundance of the land as well as the presence of gold and silver[ii], it is possible that the Spanish Court might have suppressed the story from the public's view by not widely publishing the account for geopolitical reasons. Perhaps they did not want other European powers to find out about the riches in the region so that the Spanish Crown could get an earlier colonial foothold in the Amazon Basin.[iii]

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[ii] Carvajal, Gaspar de. (1542). *Relación*. pp. 21, 23-24, 36-37.

[iii] Afterall, this is apparently how they handled Cristóbal Diatristán de Acuña's later account of the Amazon according to the *Encyclopædia Britannica*: en.wikisource.org/wiki/1911_Encyclop%C3%A6dia_Britannica/Acuna,_Christoval_de.
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Collaborating with the Trees—Tree Shaping

A Grafted Union

Dawn Shiner

CREATING FUNCTIONAL BEAUTY as living form on living trees finds a growing number of humans in collaboration with Earth's precious trees. In an emerging international movement (1), kindred souls are seeking right livelihood by choosing to work with nature and learning patterns of tree growth. Through the craft of tree shaping, they are creating gazebos, playground tunnels, tables, coat hangers, chairs, stools, and even grafted wedding rings (2).

Tree Shaping is a functional design edge and an elegant opportunity to honor the intrinsic value of living trees, which are unique in their cooperative life-form tendencies. Trees change form in response to their environment.

By becoming part of that environment and cooperating with the trees, Frank Hyldahl has deepened his own life while creating a way of manufacturing that harvests solar gain and sequesters carbon, while respecting the trees. Sparked by Nature's natural emergent processes since childhood (3), the Wizard in Frank made a cathartic, creative breakthrough guided by his innate curiosity and heart-felt passion. Choosing to no longer tear apart trees for lumber, but rather to collaborate with trees, Frank Hyldahl became midwife to a durable wood product, *Water-friendly Grafted Tree Rings*.

Frank doing grove maintenance.

Working with the trees

In 2003, Frank began tying every living twig, sapling, or seedling that would flex into circles, on every edge of his 3.1 acres,"to manufacture a thing by growing it." The trees became Frank's elders and rooted his creative passion and patience. He evolved a listening skill that is more conveyed than spoken (4). "The more I listen to what the trees are saying, the more successful the results," Frank affirms. "The trees' willingness to collaborate with my passion to work with them was the richest feedback I could have received." Thus informed by placement, species, soil, guilds, cycles, and flows, Frank has been receiving both actual and implied feedback from hands-on experiences with many of the same trees for over a decade. "Tree Rings have a sense of place. This continuity of relationship greatly refines my actions and botanical comprehension. For me, Tree Rings are a chance to cultivate a deeper relationship with all the living things around me."

While wondering, "What can I produce on my small acreage?" Frank listened and adapted. He scaled down his living form inosculation and inclusion research from living panels to finger rings. "I still have a tree growing inside a metal frame, and I've harvested frames around plastic and magnifying glasses. I've worked with small rows of willows for walls (5), some with their roots forced outward before spreading. I've used our inner property edges to include tiles, gems, and beads in the trees; and of course, I grafted circles on twigs. I mostly focus on the rings now."

No trees are killed to harvest Tree Rings. Tree Rings are harvested by pruning, a natural part of a tree's life. When branches are pruned by storms, trees use their "inclusion" process to cover the exposed living tissue with callous and protect the whole tree. "A lot of the rings that I harvest are on branches that the tree would eventually drop naturally anyway," observed Frank. "Tree cells are extremely small devices capable of autonomous action. When tree branches grow together, you are seeing this action as the self-grafting inosculation process." Without tape, wire, glue, or steam bending, a ring tied in a half-knot against itself (if kept alive by the tree) will self-graft through both layers of bark on the tree's twig. "Not all tied rings become Tree Rings," Frank notes. Yet often, the trees show their willingness to meet Frank's inherent respect with collaboration.

The trees are maintained in functional, life-sustaining, interconnected plant and microbial guilds. Like all trees, they sequester carbon, produce oxygen, purify the air, build soil, regenerate the watershed, grow food, and provide habitat, plus they produce a product whose sale works for their survival.

Learning to dance with the trees

In 2005, a bracelet and a size 11 ring were the first successful grafts. "Encouraged, I tied rings in ever smaller

sizes just to see how small I could grow a ring. I have even grown fully grafted rings on sprouts of our American chestnut stump (6). With nature's feedback informing decisions…, "best practices reveal themselves," assures Frank. "This was creativity and artistry, not an industry. The self-organization of Tree simplifies the unanticipated, making working with living form more easily understood and maintainable. For me, Tree Rings are a chance to cultivate a deeper relationship with all the living things around me."

By the end of 2006, Frank the Wizard was consistently producing, harvesting, carving, and finishing rings in standard jeweler sizes. "We wanted to know the durability of the grafted and semi-grafted joinery, as well as the benefits of a deeply-penetrating finish, so we enlisted friends and family members to increase data on the best of the grafted rings." Tree Ring wearers were feeling the aliveness (7), and their gifts of feedback helped perfect the grafting and durability of the rings.

Frank expanded his research using the trees' inclusion process to eliminate any need for metal fasteners or glues to hold the fresh-water pearls in the grafted ring faces. To keep the tree from pushing out the pearls, he created metal jigs. The jigs attach to the hardwood armatures, and a screw holds the inclusion in place. When checking for harvest, the screw loosens, and the jig moves for monitoring. This inclusion process usually takes an additional year of tree growth. By 2008, the screws in the inclusion jigs were refined and consistently guiding the trees' growth over the gem edges. Seeing the need to fill in the gaps in available ring sizes, Frank began sizing numbered armatures.

The year 2009 evolved with Frank's desire for a more affordable product and less carving. He began prying, rubbing, and brushing the bark off ring faces and carving just the sized finger hole, band, and shoulders. This process revealed the dimensional character of each wood species and the most natural surface possible. "… and every now and then there would be one with the perfect shoulders; there was no need to carve the face or the shoulders for wearing comfort; it simply grew the best it possibly could for a human finger," Frank marveled. More often, the ring face is brushed natural, and both the shoulders and band are carved.

Tree Ring grafting.

Wearing and sharing their excitement about the quality of the rings brought modest sales. Frank sold his first promise ring in 2009 and first pair of wedding bands in 2010. "… the whole ecology of relationship inspires me. Selling wedding rings inspires me. It feels like a natural part of the whole of what I'm doing… the union of two people and the union we have with the trees," Frank shared.

As Frank's wife and business partner, I set up Green Wood Wizard's online Etsy shop (8). Our first wedding band patron helped us start a Green Wood Wizard Facebook page (9). In 2017, working with Floyd Economic Development's Director, Lydeana Martin, and Tourism Director, Pat Sharkey, we learned more about marketing the rings.

Features of the Tree Rings

After 14 years, feedback from field trials on seconds under heavy wear have served five to six years max, less for those bark-covered or having experienced working with chains and block. Field Trials on the visibly well-grafted Tree Rings has some now up to their tenth and eleventh years and others coming along. Cracking and thinning bands and graft failures have been few (some expected, some we possibly don't know). Frank's ability to better discern the "invisible" within the grafts has allowed him to cull the "questionables." Feedback also showed that grafts or bands on rings that failed tended to do so before their sixth year, and informed our five-year warranty. "Selling locally as we developed allowed us an ease in getting feedback on our rings. We want the stories, and we enjoy the connections. Seems now we mostly sell wedding rings. Often one is worn first as the engagement ring," remarked Frank. "My focus as Green Wood Wizard is on the quality that deserves a wedding and delivers durable, water-friendly, everyday wear."

In addition to the comfort of wood's warmth and lightness, the trees themselves create the finest features of Tree Rings:

The strength of inosculated joinery. With all the time they need, the trees do an impeccable job of joinery.

The water-friendly durability. With the lack of exposed grain ends on the band (from tying the twigs in circles), the self-grafted joinery, and the deeply impregnated finishing mix, the rings are water-friendly as well as durable.

The deeply impregnated finish. Each ring is immersed in a blend of the hardest natural wax (carnauba) and the hardest natural oil (tung), both hypoallergenic and food safe. The wood's moisture bubbles out and the wax-oil finish moves in. Buffing with a soft cloth restores the luster. When that's not enough, a dot of Tree Ring Balm cleans and regains the luster. Tree Rings appreciate cooking and massage oils, as well.

The slant of the band. With Tree Rings tied in half knots to graft, the natural slant of the ring band

actually matches the angle of a human hand where the palm joins the fingers, giving comfort.

Wide faces with regular bands. For those who love the wood displays of wide bands yet want more comfort, the trees often create bands one twig wide with a ring face two twigs wide. I find these the most comfortable of all, and they don't twist around much.

Protection? Yes! One very surprising gift from a Tree Ring came when a van door closed on a ringed hand. The ring held space, keeping the fingers safe. The band cracked in three places, never gave completely, and held the door from the fingers. That said, we appreciate that patrons who risk catching their rings on machinery know to remove their rings or wear silicone rings for finger safety.

For the adventurous...

Tying

Joinery is the tree's natural process of inosculation. Without removing or scraping any bark and with meticulous care and patience, so as not to crack or otherwise injure the twig, Frank eases living tree twigs into half-knots that circle around notched armatures. Each twig self-grafts to its encircled self, breaking through both layers of bark to naturally form an extremely strong, grafted union. Some fully grafted Tree Rings display the bridges that are the work of the callous. To hold these ties from loosening, Frank also uses frankincense on the surface. Researching always, "I've been working on replicating a fresh-water pearl inclusion ring I managed to grow during our early years. The twig inosculated against itself from the side for a perfect twig ring, and I was able to include a pearl. To do so again, I've created a different jig and I'm using frankincense. We'll see."

Species

For each species and their individual cycles, biological collaboration is about time, observation, maintenance, and patience. Although Frank has experienced tying sweet

birches throughout the year, "Most species need to be tied in spring when the wood is brand new. To be more precise, before their woody stage and after their snapping-asparagus stage (no fiber being present). Feeling the twigs educates the fingers into knowing which twigs will tie without cracking and which won't." Flexibility is the criterion, and the right size twig must be searched out. According to Frank, sweet birches, maples, and the flowering dogwoods have the easiest tying twigs. "Look hard and teach yourself to see differences. Pick and choose quite a bit. See lots of choices, lots of possibilities and give yourself permission to make a lot of mistakes. Be tactile, patient and remain in awe."

"There's actually a lot of variables by species, including where the twig you're going to tie is on the tree," notes Frank. "I tie on the lower branches, taking off the upper branches. The advantageous lower branches of a tree produce less growth since they mostly export energy to the rest of the tree. This is good for growing rings because the rings grow more slowly. The more slowly grown the wood, the denser the wood. Some of the rings I've grown have taken over six years to finish grafting. I've also had rings that grew in one year on the fast-growing top of a black cherry tree. On average, a Tree Ring grows from two to four years."

Armatures

"It's hard to make a good ring without a good armature. The rings are not round and tend to flatten," notes Frank. "I also eliminate a lot of carving by using armatures." Around 2011, Frank began producing notched armatures on a homemade lathe, created from upcycled parts and powered by his electric hand drill. "Compression gave us some amazing creations, yet the goal was to consistently manufacture a wearable product." Even with the notches, some twigs still loosen. Even with great care, tightening the half-knots too often cracks the fibers, signaling the tree to make callous, which created funky shaped rings with weaknesses. Addressing both issues, Frank now mixes frankincense with quick-drying alcohol and puts drops on the twigs (both knotted and parallel) and has greatly lessened the loosening. A need to fill in missing ring sizes brought about the sizing of the armatures in 2008. "By comparing the armature size to the finished ring size, more control of sizing is being achieved," notes Frank. This also made it easier to find a particular size growing in the grove when needed.

Harvesting

Acquiring the skill to discern how full an inosculation or inclusion is without disturbing the bark has been a journey with time, patience, a lot of errors and many culls after removing the bark. Frank once estimated that 47% of the rings he ties fail. These losses can be attributed to many factors, among them are deer browse, insect damage, disappearing in the summer leaves and not being maintained, ties loosening, armatures falling out, tightening loosened

half-knots and cracking twig fibers, placement of the twig on the tree, etc. "With the continuity of relationship, the answer to every challenge has so far been revealed by the trees," Frank said.

Carving or brushing

Drilling out the armature and removing the bark displays the graft's fullness for the first time, allowing discernment on 'how best to proceed.' Frank works with the priorities of maintaining the strength of the grafted joinery, revealing the inherent beauty of the ring face and shoulders, and carving the band. Carving the inner band informs this focus further, including whether the Artisan Tree's ring can be brushed natural or the degree of carving needed. Using convivial tools (11), Frank carves or brushes the bark free from the ring face, shoulders and band. "Mostly I just try to follow what the ring needs to be carved into a durable ring. Some of my rings, I hardly do any carving at all. This created a new line of brushed natural Tree Rings." Between carving (12) sessions, unfinished rings are kept in small plastic bags to maintain the wood's moisture level.

> *"... having a vision and manifesting it in reality is nothing less than revolutionary. Pioneers are visionaries who take the first steps into new territory, unexplored country where the risks are great and the rewards are unknown."* – Richard Reames, Arborsmith, www.arborsmith.com

Finishing

For the final finishing process, Tree Rings are individually immersed in the hardest of natural waxes and oils. When heated in this blend of pure hypoallergenic carnauba wax and food-grade tung oil (from the drupe, which is the seed in the fruit), moisture bubbles out while the wax and oil penetrate into the ring's wood. Maintaining the proper temperatures can usually minimize any warping.

Inclusions & jigs

With freshwater pearls on hand, Frank began using the trees' emergent characteristics to hold them in the faces of the rings, a natural process technically called "inclusion." "I carve a little depression in the top of the ring and put in... mostly freshwater pearls... and I create a jig to hold the pearl. The natural tendency of the tree is to want to grow under anything it can grow under and push it out. Held well, the cells grow up around the pearl, making a most natural setting and a solid piece of ring!" shared Frank. The jigs consistently guided the trees' growth up and over the pearl edges, precluding any need for metal fasteners or glue. By 2008, the screw tips in the jigs were refined, including a slight padding.

Finished Tree Ring.

Maintenance

Maintenance is daily meditation in action (13). Being in tune with the physical time and space of trees requires attention. Winter requires less. "I have to be out looking... [to be there] when the twig is at the right point. Often there's only a small window of opportunity, of less than a week. If I'm not making armatures or jigs or tying a twig, I'm observing and checking the whole grove and maintaining the rings and ground covers on the prolifically growing edges." The Artisan Trees are pruned to be manageable at standing height. For both optimum growth and harvest, a large part of maintenance is the pruning of trees to keep the canopy back. Grove maintenance also includes diversifying the multifunctional guilds of medicinal herbs and ground covers.

"I end up doing enough rings on a small tree that I keep the tree small. It tends to bush out, producing more rings over the years. Sometimes they get away from me and I have to cut the tops down further. I don't know how long I can go on doing this with the trees. I suspect the answer is for as long as I want. I'm inspired by the evidence of bonsai, a system of radical pruning of the top and roots of a tree. There are bonsai trees lasting longer than normal trees."

Recordkeeping

While Frank realized the need for a certain amount of recordkeeping and precision, he was initially unable to engage fully with the plant world and keep detailed records as well. Initial notebook records were limited to ring numbers, direction of tie, and finish. By the fall of 2010, harvest dates appeared. By 2011, tying dates were noted. Later, abbreviations noting patterns (14) were included.

Right livelihood

The right-livelihood aspect of this eco-technology is not lost on Frank (15). The trees collaborate to produce while

they nourish the environment. There are no victims as with fallen trees and no slaves or wars as with gold or silver. Tree Rings have no need for steam to bend or fancy joinery that comes apart when immersed in water. The product is uniquely durable, strong, amazingly water-friendly and ethical. We aim to keep our wedding rings affordable. We even offer a strong alternative to our more expensive oak bands with our very durable, reasonably priced flowering dogwood (Cornus florida) Tree Rings. They take less time than most woods, and the twigs are very strong. All wedding rings are fully warranted.

Never imagining he'd be the only one grafting wooden rings on trees, Frank is still searching for others. "It's quite possible there are other people doing it, but I haven't been able to find any on the internet." He'd like to have other people doing this, and relishes the idea of sharing experiences. "A fellow carver would be fine, too," notes Frank, who grows more rings than he can carve.

As Team Wizard for Green Wood Wizard, Frank and I offer our collaborative zeal and patience in visioning a decentralized worker collaborative producing and marketing fine quality grafted wooden rings for eco-technology, wearable art, and right livelihood. The convivial (16) ramifications can be imagined.

"May the outstanding strength of self-grafted joinery and the twigs of your common flowering dogwood inspire you. Remember to care for trees and create multifunctional guilds à la permaculture for the well-being of all." Δ

Frank and Dawn are both permaculture advocates, as well as minimalists (of differing levels) enamored of connections. Dawn began sharing permaculture design through Dancing Green in 1993. Working with the trees draws her back to sharing the beauty of their work.

Notes

1. en.wikipedia.org › wiki › Tree_shaping
2. John Krubsack and the chair that grew: en.wikipedia.org/wiki/John_Krubsack; Axel Anderson and the Tree Circus: en.wikipedia.org/wiki/Gilroy_Gardens; Pooktre Shapers: pooktre.com/; Richard Reames of Arborsmith Studios: www.arborsmith.com; Chris Cattle of www.grown-furniture.co.uk; Gavin Munro of Full Grown: www.fullgrown.co.uk; Frank Hyldahl of www.etsy.com/shop/greenwoodwizard
3. Bio on www.etsy.com/shop/greenwoodwizard/about ...experiences in Frank's childhood. A horse shoe grown partly consumed by a tree. Conversations about how things worked. Learning of the harvesting of keels for ships from trees already growing in the shape needed. Pure "speculation on "people doing that on purpose and what other things could be done. My eventual thought was to grow a whole house that way." Frank introduced the concept of a living home in his 1987 Permaculture Design Course Presentation. He'd been researching for three years when he met Richard Reames in 2006. The encounter affirmed his evolving major life shift. The trees willingly embraced Frank, softening him as he became more present, more resilient; yet, for a long time, he was consumed by the trees. Life was 125% trees... studying biology, reading, researching on the computer, and hands-on experiments with the trees and their twigs. Life was trees. Once honed in focus on rings, observations turned into process adjustments (corks to hand-lathed armatures, wires, and tape to armatures and jigs).
4. Baylor, Byrd & Peter Parnall. *The Other Way to Listen.* Atheneum Books for Young Readers; Reprint edition (2014).
5. Frank's favorite willow is The Nearings' 'Cape Rosier,' once available from Fedco in Maine. His least favorite are the timber willows from Australia that "grow roots on the bark when wet."
6. The first two American chestnut rings we grew were not fully grafted, yet wearable for special occasions. We sent them to the American Chestnut Foundation.
7. "Forget everything you've ever experienced in wood rings—this feels actually alive. So alive... so resilient and strong… Far more precious than any unethical diamond on a stamped platinum band! A truly beautiful ring, with amazing craftsmanship and ethos." shared by Sarah, then in Cyprus.
8. www.etsy.com/shop/greenwoodwizard
9. www.facebook.com/pages/category/Jewelry-Watches/Green-Wood-Wizard-256267384450239/
10. You can see this cross band clearly on our Facebook page header.
11. Tools Frank uses: Carving (pocket knives, files made into knives), Drilling out armature (regular hand drill), Sanding (80-2000 grit, wrapped on sized wand for the inside), Brushing (adapting plastic brush handles and stiffening the brushes by cutting them short), Sizing (to .001 inch with a dial caliper and a ring sizer for standard jeweler sizing).
12. Carving time is consuming. Frank can grow more rings than one person has time to carve. If you are a carver

Continued on page 58.

Climate Crisis, Transition & Earth Repair

The North American Leadership Summit

Peter Bane and Sandy Cruz

August 19-23, 2020 • Loveland, Colorado

A NEW DECADE IMPENDS, and the warning signs have never flashed brighter. Governments are in disarray, and the planet is burning.

Permaculture arose in the 70s, contemporary with the emergence of a global environmental movement and awareness of the dangerous trajectory of industrial society. While our movement has made enormous strides in spreading knowledge of ecological systems and of design solutions, the problems of unchecked growth have multiplied over the past 40 years. We are at a point of inflection where action on a large scale is desperately needed to mitigate catastrophe.

The Permaculture Institute of North America (PINA) was founded in 2012 to promote professional development within our community. In its short history, PINA has attracted notable support, created programs for professional recognition and growth, enhanced credibility, and mobilized talent for earth repair and community empowerment. As Founding Board Members of PINA, we call on our sisters and brothers in the movement to join us in taking the next steps toward urgent action on the climate and community fronts.

A call to organize collective action

PINA is extending a heartfelt invitation to hundreds of beautiful teachers, community organizers, and leading edge thinkers; to those who have been quietly and tenaciously pursuing the hard work for many decades; to leading edge warriors in the face of the technological/petrochemical juggernaut currently holding sway over our planet; and to those who have loved the Earth, and have loved our compatriots as well as we have been able.

PINA will host a Leadership Summit in the foothills of the magnificent Colorado Rockies in late August of 2020. It will represent a coming together of teams, delegates, and activists, from regions and organizations across the continent, and from movements aligned with permaculture to forge strategies for collective action in the coming decade.

While more than 50,000 graduates of the PDC are scattered across North America, the depth of our effectiveness is hard to gauge. We hold important elements for addressing the challenges of environmental and social collapse, which is accelerating everywhere. Yet, we remain tragically disorganized. This must change NOW, or permaculture's brave and hopeful message will be swept away in the chaos to come.

A working summit

Unlike the international, continental, or regional conver-

gences that have gone before, the event we envision will be a gathering not of the curious, or even of the committed, but of the connected. We will strengthen and develop existing bonds and grapple with action issues before the event to lay a foundation at the Summit for our efforts toward regeneration through the years ahead. Those called to attend will be members of local guilds, teaching teams, community networks, or professional associations. We invite those involved in permaculture practice to animate their ties to others, and to register as groups. This Summit, in its themes of work and its modes of organization, will bring together veterans with younger people across generations, integrate social design with earth repair and climate action, and elicit focused efforts to empower permaculture as a continental community. We will cultivate and strengthen leadership, organize the planting of a million trees as a pilot for a much larger campaign to follow, develop effective messages and agree on their deployment, and create alliances that can influence public policy and private action toward ethical culture.

Key linked themes of the Summit and all the work that ensues from it are Mutual Aid—our ability to support each other's lives, even as we address the ecological and economic threats we face, Mentorship, and Community Empowerment.

We will develop working groups to meet during the winter, spring, and summer, whose deliberations will be collected, synthesized, and amplified during the Summit. These will include:

- Mutual Aid and Regional Hubs
- The Million Tree Challenge
- Water Harvesting and the Green New Deal
- Energy Transition
- Outreach to Governments

More details, including registration, costs, and how to engage can be found at the PINA website: pina.in. PINA welcomes thoughtful input to the organizing process. Contact the authors by email: ed@pina.in.

We call on the power of the Ancestors, and the wisdom of all those brave and hopeful organizers who have preceded us and included us, among the native peoples, within the bioregional and permaculture movements, and from all the urgent and creative political and economic campaigns for life, health, justice, and solidarity, to guide us toward the green world of peace and abundance that lives still within our beating hearts. Δ

Peter Bane is the Executive Director of PINA, former publisher of Permaculture Activist *magazine (now* Permaculture Design), *and the author of* The Permaculture Handbook: Garden Farming for Town and Country. *Sandy Cruz is a veteran leader of the permaculture movement in Colorado. They both hold professional permaculture diplomas in Education and Site Design.*

Permaculture Plant Profiles:

Let us introduce you to:

Anise Hyssop

Agastache foeniculum

Just The Facts

SAY: a-ga-STA-ke fe-NIK-u-lum

AKA: Anise Hyssop, Lavender Giant Hyssop

DESCRIPTION: Hardy, self-seeding herbaceous perennial, 3-4+' in height with lavender spike flower clusters blooming June through September with a rich anise smell and taste. Flowers high in sweet nectar and leaves, in volatile oils. Beloved of pollinators, birds (seeds) and herbalists.

HARDINESS: Zone 4—8

FAMILY: *Lamiaceae* (la-me-A-see-a) aka *Labiatae* (LA-be-at) or Mint Family

ORIGIN: Native to northern US and Canada

Why we love this plant:

If you love the flavor of sweet anise, meet your new best plant friend! This resilient plant grows in a wide range of conditions, and tolerates dry soils, drought and deer. It's erect branched stems and clumping form allows for specific placement and works well in naturalized or more formal gardens.

The softly scalloped, slightly fuzzy, anise-flavored leaves and flowers are delightful for nibbling, teas, flavoring (excellent in kombucha), potpourri and feeding pollinators. Honeybees, bumblebees, moths, butterflies and humming-birds mass around the tiny flowers arrayed in densely packed in spikes. One plant may produce up to 90,000 flowers!

Related Species

Agastache rupestris—Sunset Hyssop. Perennial to 2 - 3'. SW US to Mexico. Good in hot dry areas, Zone 5-9. Orange inch-long flowers with lavender calyces. Sweetly aromatic foliage. Similar flavor/insectary benefits.

Agastache urticifolia—Giant Hyssop. Perennial to 6'. West US, Zone 4. Violet to rose flowers, 2 - 6" spikes.

Hyssopus officinalis—Bee Plant. Same family, dissimilar species. Semi-woody, hardy aromatic perennial shrub, 1 - 2', with small, narrow, dark-green leaves. S.Europe. Zone 3. Blooms profusely. Dark blue 1/2" flowers in dense, narrow 5" spikes. Good bee plant and popular herb, used for tea, soups, potpourri, and medicinally against rheumatism and coughs.

Cultivation and Care

Prefers full sun, good garden soil, moist (but well-drained) to dry soils and, once established, handles drought and dry soils well.

Grows easily in good conditions.

Propagated readily by seed, transplant and cluster division, the plant spreads independently through self-seeding and light rhizomes but easy to control. Fine addition to guilds, holding its own in competition but not aggressive. Lovely backdrop or tall border. Naturalizes well.

Low susceptibility to most insects and diseases but if overly wet, watch for powdery mildew.

This article was produced by Gloria Flora, who regularly contributes to this section. She lives in the Pacific Northwest.

Central Rocky Mountain Permaculture Institute

Transitions

A CONVERSATION between the staff of *Permaculture Design* and CRMPI.

Central Rocky Mountain Permaculture Institute (CRMPI) is known worldwide as a beacon of permaculture practice and learning. In case any of our readers are not familiar with your work, can you briefly tell us a little about the history and work of the Institute?

The Central Rocky Mountain Permaculture Institute is a non-profit organization, educational facility, and permaculture demonstration site founded by Jerome Osentowski in 1987. Located in Basalt, Colorado, at an elevation of over 7,000 feet, we specialize in high altitude food forests and passive solar greenhouses that are able to grow edible plants ranging from temperate to Mediterranean, and even tropical species year-round. Utilizing Climate Battery Technology, we are able to store enough heat in the deep rich soil of our greenhouses to keep our amazingly diverse and productive ecosystem warm happy and thriving 365 days a year.

CRMPI's core mission is to empower individuals and communities to become healthy and resilient through the regenerative cultivation of abundant natural resources. Our outdoor food forest is one of the oldest in the country and in the world. It hosts an abundant variety of food-producing perennial plants—from exotic mulberry varieties and raspberries to endless apricots, apples, plums, pears, medicinal and culinary herbs, to beneficial insect attractors, and much more. We also host the world's longest, continuously running Permaculture Design Course. Through this course, we have educated over 3,000 students, interns, and volunteers from around the world. We are hosting our 33rd annual PDC this July 13th-26th.

As the site of one of the oldest food forests in North America, what are some key lessons people should understand about maintaining a food forest?

Observation is probably the most important step in creating and managing a healthy food forest. Taking the time initially to really get to know the land, and ask it what it needs to thrive, before we begin to impose our needs and designs upon it, is crucial. We should always strive to create a beneficial and symbiotic relationship with the land. Take time to research what species and varieties can be sourced locally, and especially what is already living and growing on the land. Make slow, thoughtful decisions, and always try to see the whole project within the larger picture, ecosystem, and timeline (50-100 years into the future).

Make sure to plan for succession. There will be times when certain plants/trees may need to be removed or cycled out to allow room for new guilds and ecosystems to develop, especially in response to the changing climate. Mistakes are a natural and essential part of the learning process. Through thoughtful design and thorough research, we can hopefully minimize damage and maximize learning from these mistakes. Later, we can apply that knowledge as the food forest continues to grow and evolve. It is very important and enjoyable to spend time in a food forest, talking to the plants, listening to them, and just being with the land. Over time, we will develop a strong relationship with, and intuitive sense of the food forest that a more scientific, intellectual approach can certainly complement, but never replace. If you feed and love your food forest, it will feed and love you!

Sunflowers line a path through the garden.

How has climate change affected your region? How has the site responded? What are you doing to prepare and respond?

Climate change has affected CRMPI in several ways. Probably the most notable, though not entirely climate change related, has been the presence of much fewer pollinator species on site. Over the last two to three years especially, we have noticed a drastic decline (50% less) in pollinator activity. We have been adapting to this by encouraging and creating habitats for alternative pollinators like night moths, butterflies, parasitic wasps, and even certain beetle species. We are also looking into designing our own small apiary. The other obvious effects include hotter, drier summer seasons; changes in animal behavior; and a generally more challenging, potentially less productive environment. We have addressed these issues both visibly by introducing even more hardy high-altitude varieties to the site, and continually observing to see how we can adapt our systems to the ever-changing climate. On a more invisible level, we address it by continuing to host our workshops and classes. We hope to educate and inspire as many people as possible towards creating a truly regenerative culture on our planet. Ultimately, we feel that a thriving, well-designed and maintained food forest, along with passive solar greenhouse technology, are great living examples of positive, practical, and effective ways to respond to the climate crisis. We aim to be a beacon of hope and knowledge in the coming decades as we all navigate this climate crisis together and use it as an opportunity to create even stronger networks and communities both locally and globally.

How are things transitioning at CRMPI? During the transition process, I understand that navigating the local permitting process has been challenging. Can you tell us a little about what you've learned that might be useful to others in similar situations?

CRMPI is currently transitioning in several ways at the same time. Mainly, we are working to help our founder, Jerome Osentowski, who is nearing 80 years of age, to transition into a fruitful retirement on-site. To achieve this, we are actively fundraising to facilitate our non-profit organization to be able to purchase the site from Jerome. This would allow him the financial freedom to pursue travel, educational, and leisure activities and be free from the responsibilities of running CRMPI. We are also working to train a new generation of farm managers and educators to carry the CRMPI legacy far into the future generations, who will hopefully do the same in turn. Finally, we are working to secure a special use permit, as well as a subdivision exemption, in order to ensure we can continue our educational programs on-site, as well as continue serving as a thriving and accessible permaculture demonstration center for the local and global community.

It is part of our duty as educators and Earth Healers to inform our local officials.

We are calling out to all past students, teachers, alumni, friends, family, and fellow permaculture enthusiasts to please give what you can and help CRMPI and Jerome make this vision a reality. Donations can be made through our website at: https://crmpi.org/about/donate/.

While the various permitting processes have certainly been challenging, we have learned many valuable lessons. Probably the most important, is to have patience and do your best to stay calm and grounded when things get frustrating. It is also important and helpful to realize that the people working at the various departments are there to help. They are just doing their best to meet the local codes as closely as possible, even though this can often cause problems for permaculturists and homesteaders. It is part of our duty as educators and Earth Healers to help educate and inform our local officials, in order to create the invisible structures necessary for permaculture practices to be widely accepted and used.

Nursery stock in one of the greenhouses.

In the forest garden. Thousands have learned here.

As we all grow older, our legacies are increasingly on our minds. What will happen to my site when I'm gone? Who will continue the work? I understand that you've spent a great deal of energy over the last several years preparing for the future of CRMPI. Can you tell us a little about your approach to transition?

Our approach to transition has been to keep in place the knowledge, wisdom, and history of CRMPI, while also encouraging evolution, accepting feedback, and again allowing and planning for succession, both in the physical food forest, and the invisible structures of CRMPI. This has meant scaling back or removing certain systems, ideas, beliefs, and visions, and scaling up or creating other new ones. Change is the only constant in our Universe, and it is always an opportunity to learn, adapt, and grow. If we are able to release our resistance and surrender to the ever-changing moment, magical and powerful things can occur!

What is your vision for the future of CRMPI? Your region?

Our vision for the future of CRMPI is to continue to serve as a leading-edge permaculture education center and demonstration site—especially in the crucial decades to come. We are also working with our partner and fellow permie, Michael Thompson, to create a larger and more connected educational network in the Roaring Fork Valley. It is a community that has an amazingly large variety of young permaculture designers, farmers, and regenerative agriculturalists. Our vision is to create a travelling permaculture "caravan" of sorts, that would host college students from around the country in a mobile unit of tiny houses and support vehicles, and allow them to have an immersive and diverse hands-on educational experience in regenerative food production and radical self-reliance as they tour, experience, and work on local farms and permaculture centers. CRMPI, in addition to continuing and expanding its own educational programs, would be able to grow and inspire even more people and communities by being part of such a network. Our hope and vision is that we can all work together to help make the largest impact possible towards the health and abundance of future generations of Mother Earth.

One of the most important questions our readers are going to have is, "How well do you think your model will translate to other similar sites?"

Over the past 30+ years, Jerome, Michael, and CRMPI have helped design and build many local passive solar greenhouses and food forest systems—all uniquely tailored to the specific needs and resources of the site and people. Most of these have been in high altitude regions like Colorado, where our designs help to extend the growing season and enable cultivation of a wider variety of crops from different hardiness zones. In warmer, wetter, or even tropical climates, a greenhouse might be less needed. They can still be very useful in almost any climate by providing passive heat on cold nights, and passive cooling by creating a thermosiphon during the day, as well as providing shelter for young plants and trees to be seeded and grown for the food forest or immediate use, salad greens, etc. While every site is infinitely unique in so many ways, and certainly the exact design of CRMPI might not be the best solution for each unique place, we feel that the core elements, principles, and practices of high altitude permaculture techniques that CRMPI has developed can be used to increase the vitality, productivity, and diversity of just about any place on Earth. *(Editor's note: See Jeff Caldwell's article on building a greenhouse based on these principles in issue #114, Retrofit).* Δ

All images via CRMPI.org.

Grafted Union continued from page 52.

and are interested in being part of a decentralized worker collective, we'd appreciate contact and visit.
13. Trungpa, Chögyam. *Meditation in Action.* Shambhala (1996).
14. Rounded Tops, Flat Tops, Flat Twist Tops, Flat Band, Wide Band, Spalted, Bag Cured, Bark On, Inclusion with Bark On, Inclusion, Super Natural, No Graft, Lightly Sanded, Harvested Dead, ...
15. www.youtube.com/user/GreenWoodWizard
16. Conviviality, as people's need to control the tools and processes of production that shape their lives. Ivan Illich, *Tools for Conviviality.* Marion Boyers (1973). en.wikipedia.org>wiki>Ivan_Illich

EVENTS

Permaculture Design Course
Online

Dates: Ongoing
Description: Our course is the classic, official 72-hour Permaculture Design Certificate Course (PDC) as taught by the founders of permaculture.

This course involves study modules supported by practical exercises, fieldwork, and videos.

Instructors: Dr. Alan Enzo, Jessica Enzo, Steven Cran, Steve Hart
Cost: $550
Contact: PermacultureEducation.com
info@PermacultureEducation.com

Permaculture Design Course
Online

Description: Oregon State University's online Permaculture Design course is a great way to build essential sustainable landscape design skills in a convenient online format. After ten weeks, you will complete a finished design with:

* One-on-one guidance from experts who will walk you through each assignment.

* Timely feedback on your individual project from your designated instructor. * Low student / teacher ratio to ensure individualized attention for you.

Also, since the program is entirely online, you can access our expert-led courses from the comfort of your own home.

Instructors: Andrew Millison and others
Contact:
pace.oregonstate.edu/permaculture

Permaculture Design Course
France

Dates: August 1-16
Location: Lamentargue, Maritime Alps, France
Description: Using a variety of learning techniques and strategies, this workshop will present permaculture in all of its applications. Class time will consist of traditional lectures, guest presentations, group discussions, games, exercises photo shows, and movies. We will focus on land systems with as much hands on work and examples as possible. Many discussions and examples will be explored of possible applications in 'Invisible Structures', those social, cultural, political, and economic structures that shape much of our world today. The course will not only teach permaculture, it will also model it by its structure and the environment we create together during the course. The curriculum for this course covers the core content expected in the PDC as well as Urban Permaculture and Community Scale Design, Toxins and Bio-remediation, Invisible Structures and Social Permaculture, Alternative Economics, Peak and Post Petroleum, Permaculture in the Majority World, Permaculture and Organizations

This course is taught in English only. French and Italian co-teacher will help with specific translation if needed.

Instructors: Rico Zook
Cost: 750 € / Meals and accommodation are included for 16 days of training. Meals are prepared by a cook onsite with local and organic food.
Contact: +33 (0)760 875 710
contact@permacultive.org
Find all informations and registrations on our website : www.permacultive.org/permaculturedesigncourse

Permaculture Design Course
Belize

Dates: March 2-14
Location: Maya Mountain Research Farm, San Pedro Columbia, Toledo District, Belize
Description: Through lecture, discussion, small groups, and site visits, participants will gain the tools to create sustainable, ecologically based homes, farms, businesses, and communities. Hands-on training is balanced by class time covering core concepts and design practice. The course covers the material of the standard PDC and meets the requirements of the Permaculture Institute of North America.

Tucked into the foothills of the Maya Mountains, two miles upriver from the village of San Pedro Columbia in southern Belize, Maya Mountain Research Farm is a working demonstration farm and registered NGO that promotes sustainable agriculture, appropriate technology, and food security using permaculture principles and applied biodiversity. With over 26 years of organic management and conversion from an abandoned citrus and cattle farm to a biologically diverse polyculture, MMRF is one of Central America's oldest permaculture farms. Students who attend this course get a chance to learn permaculture in a venue that is the product of decades worth of permaculture design work.

The facilitators of the course bring together a wealth of diverse experiences and knowledge to support your journey with permaculture design and practice. Rhonda Baird has taught more than 40 courses over North America; practices design within her region; and has helped to organize events and groups for more than 20 years related to community and ecosystem health. Alex Nikesch teaches permaculture design and forest gardening at Florida Gulf Coast University, organizes for the Southwest Florida Permaculture Guild, and does consulting and designing for homesteads and farms. Christopher Nesbitt has been the originator and implementer of the permaculture systems at MMRF since 1986 and has represented permaculture interests internationally and supported solar and other technical projects in villages throughout the region.

Instructors: Rhonda Baird, Christopher Nesbitt
Contact: Christopher Nesbitt
info@mmrfbz.org
mmrfbz.org

"Experience is the one thing you can't get for nothing."
- Oscar Wilde

Send Event and Calendar Listings for Issue #116
(May 2020)
Permaculture Works
by the March 1st deadline
events@permaculturedesignmagazine.com

Permaculture Design Course
Oregon

Dates: February 22-May 3
Location: Ashland, Oregon
Description: Held over 6 weekends, the Siskiyou Permaculture PDC introduces an array of solutions, tools, & strategies for moving into a home-centered, resilient way of living sustainably on the only planet we have. Participants will learn to apply regenerative permaculture principles and patterns to design an integrated homestead, energy and water systems, animals, gardens, appropriate technology, forestry, and healthy communities. You will gather practical skills and learn about whole systems design principles for living in ecological balance with the earth. We consider methods for creating persistence, resilience, and becoming a people of place with a culture of celebration.

Hazel aka Tom Ward has taught dozens of permaculture design courses, permaculture teachers' training, and advanced courses in Southern Oregon and Northern California over the last 37 years. Hazel holds 4 degrees from Mollison's permaculture institute and 2 degrees from PINA, advises local farms and has a social forestry project in the Little Applegate Valley demonstrating natural building, fuel hazard materials utilization, multiple products woods-crafting, wildlife enhancement, and desert forest water management.

Melanie Mindlin has worked with permaculture design, home design, group facilitation, land use planning, and intentional communities for over 25 years. She was the founder and designer of the Ashland Cohousing Community, is an avid gardener and community organizer, and has been teaching permaculture for over 10 years.

Karen Taylor has many years of experience as a permaculture practitioner and teacher, interior designer, ecological landscape designer, rainwater harvesting and greywater consultant, group facilitator, and photographer. She has worked extensively in drylands water systems, natural building, healthy home interior design, and group facilitation.

Instructors: Hazel aka Tom Ward, Melanie Mindlin, Karen Taylor.
Cost: $775, early registration until January 22nd: $675
Contact: siskiyoupermaculture@gmail.com

Permaculture Design Course
Missouri

Dates: One weekend/month Feb-July 2020
Location: St. Louis, MO
Description: This course is an exciting opportunity to learn Permaculture Design in a highly urban environment with like-minded individuals. St. Louis, like all cities, is full of potential, as well as amazing work happening right now, and we uncover what it looks like to create a sustainable, stable, and equitable city through group design projects, local and global showcases, and hands-on practice in established urban farms—all in conjunction with the paradigm-changing Permaculture Design Course curriculum with renowned Permaculture Institute instructorship. Ample opportunities to experience Permaculture in action are offered as part of this course from farmers' market production gardens, edible forest gardens, rainwater harvesting systems, urban soil building, placemaking installations, and community building. Class material is presented through discussion, slideshow, hands-on skill building, touring Permaculture sites, and interactive activities.

Participants receive an internationally recognized Permaculture Design Certificate from Permaculture Institute founded by Bill Mollison and Scott Pittman.

Instructors: Jason Gerhardt, Pandora Thomas, Molly Rockamann, Matt Lebon, Gibron Jones
Cost: $1,100 **Contact:** permaculture.org

Permaculture Service Day
California

Dates: First Sunday of every month
Location: Sivananda Yoga Farm, Grass Valley, CA
Description: Learn through hands-on volunteer work on the land and participate in a free workshop, open house, and tour of the Sivananda Yoga Farm in the beautiful foothills of the Sierra Nevada. Enjoy free yoga class, meditation, chanting, and two organic vegetarian meals.
Instructors: Colin Eldridge
Cost: FREE!
Contact: 530-272-9322
yogafarm.org
yogafarmregistration@sivananda.org

Permaculture Design Course
New Mexico

Dates: TBD 2020
Location: Northern New Mexico
Description: Join us to earn your Permaculture Design Course certificate, get introduced to a variety of practical farmsteading skills, immerse into the daily flow of land-based lifestyle, and learn Permaculture Design with stellar teachers in gorgeous Northern New Mexico.

Permaculture Institute has been teaching the PDC in Northern New Mexico for two decades. Additional educational opportunities are offered, including time spent with traditional farmsteading arts. Nightly movies and/or campfire circles and gatherings are held at the end of the day.

Course material is universal to every ecosystem. Participants receive an internationally recognized Permaculture Design Certificate from the Permaculture Institute.

Instructors: Scott Pittman, Jason Gerhardt, Leslie Buerk, and local guests.
Cost: $1,750
Contact: permaculture.org

Permaculture Design Course
Illinois

Dates: Aug. 1-2, 29-30; Sept. 19-20; Oct. 3-4, 17-18; Nov. 14-15; Dec. 5-6.
Location: Chicago, IL
Description: You're invited to join us for our next weekend design course in Chicagoland! Over seven weekends, we will share the standard curriculum in addition to a deep dive on social permaculture. Through readings, dynamic discussions, and hands-on activity, your design skill will move beyond foundations into practical work in your own life and collaborative projects. Former students often join in, and you're invited to be a part of the growing Chicago-land permaculture community.
Instructors: William Faith, Milton Dixon, Rhonda Baird
Contact: william@geniuslocipermaculture.com
glpdc.info

Permaculture Design Course
Online/Indiana

Dates: February 17-June 15
Location: Online with field days in Bloomington, IN or by arrangement
Description: Take the permaculture design course in a way that works for you! Through more than 15 years of teaching the permaculture design course and facilitating online learning, this PDC sets you up to thrive in place while building connections with people from all over. The course will cover the standard material of the PDC (acknowledged by PINA), as well as include additional material on sociocracy, project development, connection to the landscape, and community-building practices and projects. Students found in the past that the focus on personal implementation over the length of the course and the emphasis on practice supported their understanding and development as practitioners.

In person, mentored experiences are also a part of this course and support your learning, as well as one-on-one support throughout the course.
Instructors: Rhonda Baird, lead; guest instructors throughout; former student "reunion" and community
Cost: Sliding scale: $750-$1,150. Payment plans available.
Contact: rhonda@shelteringhills.net
shelteringhills.net

Permaculture Design Course
Western Massachusetts

Dates: Weekends, Spring 2020: April 3-5, May 1-4, June 5-8
Location: Shelburne Falls, MA
Description: A total of 3 weekends with Sowing Solutions Permaculture Design Certification Course in Western Massachusetts! Located in the Village of Shelburne Falls, where we will participate in design and installation for local village residents. Practice ecological design alongside leading designers and educators in the northeast; Gain your permaculture design certificate with Sowing Solutions who is celebrating over 13 years of permaculture education; Visit numerous demonstration sites such as Sirius EcoVIllage, Wildside Cottage & Gardens, and Hickory Gardens. Sliding scale and fundraising support is available.
Instructors: Kay Cafasso, Keith Zaltzberg, Llani Davidson, Walker Korby, Dave Dion and guests
Contact: www.PermacultureSeries.org
Note: a Fall 2020 Weekend Series is alternatively offered.

Networking in Rhode Island

Maggie Sheerin with Urban Greens Co-op Market has contacted us to see if anyone is interested in hosting workshops, classes or events at Urban Greens Co-Op Market in Providence.

Contact her via the website:

https://urbangreens.com

West Michigan Lakeshore Region

Permaculture Design Course

July 5-18, 2020

$1395
(discounts for early registration)

- Improve Home Comfort
- Learn Edible Landscaping
- Make Wise Energy Choices
- Understand Climate Impacts
- Explore the Natural World
- Practice Earth Repair
- Gain Allies and Nurture Community

See how good design can make a place for people to thrive.

Our PINA diplomate team offers you expert facilitation and experience leading more than 100 courses. Garden farm and household systems at Blue Sky Farm include sustained yield forestry, renewable energy, nursery, seed production, multifunctional hedgerows, livestock management, composting toilets, biochar production, greenhouses, polyculture orchards, and 4-season harvest.

Meals, camping, and instruction included. PINA-recognized curriculum. Regional and guest instructors. Satisfied graduates.

www.permaculturereactivist.net
pcactivist@mindspring.com

812-335-0383

Teacher Training for Children
Michigan

Dates: July 29-31
Location: Traverse City, MI
Description: Sharing permaculture with children is one of the most rewarding and fun ways to spread the ideas and skills of permaculture design. Children are natural designers, and permaculture is completely within their grasp. Join Penny and Rhonda, both permaculture teachers with years of experience in working with both adult and child learners for a fun and fulfilling course!

This training is for permaculture practitioners of all skill levels, those who get to be with children regularly and want to bring permaculture design into their work, forest school instructors, and parents who love permaculture.

Through hands-on work, facilitated discussion, and practice participants will find their own approach to working with children and a path forward for their projects. Along the way we will explore a range of opportunities working with children brings us for healthy communities, reclaiming creativity, and implementing permaculture.
Instructors: Penny Krebeihl, Rhonda Baird, and Kate Heiber-Cobb
Contact: penny.ok.art@gmail.com, rhonda@shelteringhills.net

Touch the Earth Workshop
Indiana

Dates: October
Location: Bloomington, IN
Description: This workshop facilitates a deeper connection with the Earth, attunes us to the moment we are in, and supports a deeper dive into whole self/whole system living. Through story-telling, creative work, and hands-on permaculture projects, we will co-create a rich experience. Expect to leave with an action plan, resources, a renewed sense of self, and a community of support!

Rhonda and Corbin draw on more than two decades of work in culture studies, deep ecology, community work, permaculture design and systems thinking, homesteading, gender studies, leadership, and survival skills.

Instructors: Rhonda Baird, Corbin Baird, and guests
Contact: rhonda@touch-the-earth.life
touch-the-earth.life

Permaculture Design Course
Vermont

Dates: 2020
Location: Vermont
Description: Utilizing the design studio and site resources of Whole Systems Design, LLC and the Whole Systems Design Research Farm, this course is a skills-based permaculture design training in Vermont. The course offers immersion in a decade-old permaculture site with a highly diverse and integrated built and biological infrastructure in place. The course offers a skill-focused, hands-on alternative to the highly academic permaculture design curriculum typically offered. The course is also particularly appropriate to design student and professionals as it's based at the home office grounds of the WSD landscape architecture studio.

Instructors: Ben Falk
Contact: 802-343-9490
design@wholesystemsdesign.com
wholesystemsdesign.com

Permaculture Design Course
Pennsylvania

Dates: February 15-May 9
Location: Hundred Fruit Farm, New Hope, PA
Description: Come join us for our annual Winter/Spring permaculture design course! The permaculture design course, or PDC, is an intensive 72-hour internationally recognized permaculture certification. It's designed to give participants the inspiration and knowledge they need to make a positive change in the world, needed now more than ever. It will give you the skills necessary to design your home/yard/landscape into an ecologically-resilient edible system, and for some, it could be the first stepping stone to a permaculture career in design, education, consulting, or regenerative farming.

This course will be offered as a weekend course designed for local residents who don't have time to take an intensive (and expensive) two-week PDC. This course will be mostly classroom-based but will also include hands-on components. It will go through the basics of permaculture design relating to different climates, energy, natural building, the global climate, social systems, and more.

The final part of the course will focus on co-creating a viable real-world design for a site that could include gardens, fruit trees, greywater systems, rainwater catchment, food forests, natural building projects, and more. Participants will have the opportunity to design their own site or a site affiliated with a project they are involved in as part of this final design project.

Instructors: Adam Dusen along with guests
Cost: $675 per person for registrations after Jan 1
Contact: hundredfruitfarm.com

Permaculture Design Course
Shenandoah Permaculture Institute & the University of Richmond
Virginia

Dates: February 21-23, March 7-8, 21-22, April 4-5
Location: Richmond, VA and surrounding area
Description: Join the Shenandoah Permaculture Institute in partnership with the University of Richmond this Spring for 9 days of hands-on, real-world, practical permaculture. The course will be taught, in permaculture fashion, by moving from patterns to details. We will learn foundations and core concepts first, drilling down into the details as we move along. Field trips, guest speakers, and farm tours help cement concepts and allow on-the-ground learning to take place in real time. We alternate between lectures, workshops, skill building, observational activities, solo work, and group activities. Typical days will see us both indoors and out, often at multiple locations. Course days typically run from 9AM - 6PM.

Instructors: Ryan Blosser, Trevor Piersol, Emilie Tweardy
Cost: Regular course fee is $1,100. Financing is available through the University of Richmond. Fee includes all course days and activities, heavy snacks, SPI T-shirt, plant materials, scobys, seed swap, and more!
Contact: 503-577-7618 (Emilie Tweardy)
shenperminstitute@gmail.com
http://www.shenandoahpermaculture.com/springpdc.html

North American Leadership Summit

Climate Crisis, Transition and Earth Repair
August 19-23
Loveland, Colorado

For information:
Permaculture Institute of North America: pina.in

We've got you!

Join the Calendar & Events Reminders List.

Send notice to:
events@permaculturedesignmagazine.com
(by March 1 for May issue)

Calendar

TBD

New Mexico. Permaculture Design Course. permaculture.org.
Missouri. Permaculture Design Course. permaculture.org.
Vermont. Permaculture Design Course. 802-343-9490**,** design@wholesystemsdesign.com**,** wholesystemsdesign.com.

February

February 15-May 9. Pennsylvania. PDC. hundredfruitfarm.com.
February 17-June 15. Online. Permaculture Design Course. rhonda@shelteringhills.net. shelteringhills.net.
February 21-23, Mar. 7-8, 21-22, April 4-5. Richmond, VA. Permaculture Design Course. shenperminstitute@gmail.com.
February 22-May 3. Oregon. PDC. siskiyoupermaculture@gmail.com.

March

March 2-14. BELIZE. Permaculture Design Course. Christopher Nesbitt, info@mmrfbz.org, mmrfbz.org

April

April 3-5, May 1-4, June 5-8. Village of Shelburne Falls, MA. Weekend series PDC. www.PermacultureSeries.org

May

May 3-5. Bloomington, Indiana. Touch the Earth Workshop. www.touch-the-earth.life.

July

July 5-18. Whitehall, Michigan. Permaculture Design Course. pcactivist@mindspring.com
July 29-31. Traverse City, Michigan. Teacher Training for Children's Permaculture. rhonda@shelteringhills.net.

August

August 1-16. FRANCE. Permaculture Design Course. contact@permacultive.org.
Aug. 1-2, 29-30; Sept. 19-20; Oct. 3-4, 17-18, Nov. 14-15; Dec. 5-6.. Chicago, IL. Permaculture Design Course. glpdc.info.
August 19-23. Loveland, Colorado. North American Leadership Summit. pina.in.

October

Bloomington, IN. Touch the Earth Workshop. rhonda@touch-the-earth.life.

Ongoing

Online. Permaculture Design Course. info@PermacultureEducation.com, PermacultureEducation.com.
Online. Permaculture Design Course. pace.oregonstate.edu/permaculture

LETTERBOX

If you ever live in a place with mold issues, here is something to consider.

Here is a note I typed to a biochar expert friend:

Hello David Yarrow,

I just saw an ad ("Use This 'Mold Magnet' to Purify Your Home") and had an aha moment. Maybe. They are touting the use of charcoal to absorb moldy indoor environments. God knows there are lots of houses with mold issues. Can biochar clean it up? or help? Not necessarily this product. Maybe just leaving biochar out around the house?

Your thoughts please?

Michael Pilarski

His reply:

Yes, a multitude of factors make this work. Mostly biochar is very porous due to microscopic plant pores; biochar is very lightweight because it is mostly empty inside. This hollow emptiness helps mitigate excess moisture.

Biochar is also very absorbent, including strong odors. It is used in poultry barns and litter for odor control and nutrient capture.

Another man markets 100,000s tons of chicken litter deodorized with charcoal dust. For best results for such purposes, fresh-made, bone-dry biochar from softwood chips baked at higher temperatures, longer time.

One strategy that has been tried and shows remarkable promise is to include biochar as ingredient in various building materials & structural substances. For example, 5% biochar added to plaster for added moisture and air control, lighter weight—which can contribute to mold control. There is good evidence that biochar's tetrahedral, honeycomb geometry seeds the structure of building materials, improving their strength and cohesive integrity.

My analogy to illuminate this quality of char is the difference between a soft lump of iron, and a sheet of structural steel is just a few % carbon, originally added as charcoal, later replaced with coal and coke.

For a green and peaceful planet,

David Yarrow
nutriculture.org

More on Jem Bendell + climate change!

Subscriber in Farmington, NM

Thank you for the space you hold for change to happen. It is a powerful portal.

Michael Judd

Thanks for confirming [shipment of my book order] and also thanks for the ongoing good work with the magazine! Our household is always excited when we get a new issue.

Subscriber in BC

I really enjoy the magazine. I hope you realize that this is a renewal. I'm not sure when the previous subscription runs out. It is a gift from my son and neither of us is sure of the expiry date, and neither or us has received a renewal request yet.

I love the issues & of course would like to see more emphasis on Northern gardens. I live in climate Zone 3a or 4 (It just changed). I have been giving public talks about growing in the North since a lot of permaculture seems to focus on warmer climates.

Keep up the great work,

Subscriber in Edmonton, AB

Thanks for your e-mail. Yes, we did flag your order as a renewal. The subscription expires with #118 (Nov. 2020).

Your thoughts on more articles appropriate for northern gardeners are appreciated. We have subscribers throughout Canada and in Alaska, and I suspect they would agree with you. I'll see what we can come up with for the next year's issues.

Publisher

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info@growpermaculture.com
727-495-6145
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The Daughters of Helen Nearing

Were you influenced by Helen and Scott Nearing? I'm planning a book to be titled *The Daughters of Helen Nearing.* It will be interviews with women gardeners, homesteaders, and/or farmers who were inspired by their book *Living the Good Life.* If you are that person, please contact me at dogwoodmike@gmail.com. I will get in touch and, if possible, conduct a phone interview. Thank you.

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