



# RAMP

Teacher's Guides Volume II

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## Contents:

Permaculture and the Arts

Wicca and Permaculture

Permaculture and Innovation

Permaculture in Space

Human-Nature Interaction (HNI)

Permaculture and AI

cBartering

## Permaculture and the Arts

### A Teacher's Guide

#### Definitions –

The arts are a very wide range of human practices of creative expression, storytelling and cultural participation. The arts are a vehicle through which human beings cultivate distinct social, cultural and individual identities, while transmitting values, impressions, judgments, ideas, visions, spiritual meanings, patterns of life and experiences across time and space.

Prominent examples of the arts include architecture, visual arts (including ceramics, drawing, filmmaking, painting, photography, and sculpting), literary arts (including fiction, drama, poetry, and prose), performing arts (including dance, music, and theatre), textiles and fashion, folk art and handicraft, oral storytelling, conceptual and installation art, criticism, and culinary arts. They can employ skill and imagination to produce objects, performances, convey insights and experiences, and construct new environments and spaces.

The arts can refer to common, popular or everyday practices as well as more sophisticated and systematic, or institutionalized ones. By definition, the arts themselves are open to being continually re-defined. [Wiki]

Permaculture is a set of ethics and design principles centered on whole systems thinking, simulating, or directly utilizing the patterns and resilient features (the capacity of an ecosystem to recover from change) observed in Nature. Permaculture systems - including 12 principles and zones - are now integrated into a growing number of fields from regenerative agriculture, rewilding, and community resilience. The Three Ethics of Permaculture are: 1. Care of the Earth, 2. Care of People, and 3. Returning surplus to the system. [Mollison]

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#### Questions –

1. Would you consider patterns in Nature art?
2. What is artistic about Permaculture?
3. Is creating a garden an artistic endeavor?
4. Have you heard a Permaculture-inspired story lately?
5. Do the three ethics of Permaculture play a role in the creative process?
6. Can resiliency be a creative force? How?
7. Have you experienced creative energy at a Permaculture Convergence or PDC? How so?
8. Are the arts connected to your spirituality as you practice Permaculture?

## Wicca and Permaculture

### A Teacher's Guide

#### Definitions -

'Wicca is a modern Pagan religion. Scholars of religion categorize it as both a new religious movement and as part of the occultist stream of Western esotericism. Wicca draws upon a diverse set of ancient pagan and 20th-century hermetic motifs for its theological structure and ritual practices. By adopting it for modern usage, Wiccans were both symbolically cementing their presumed connection to the ancient, pre-Christian past, and adopting a self-designation that would be less controversial than "Witchcraft".

Wicca has no central authority figure. Its traditional core beliefs, principles, and practices were originally outlined in the 1940s and 1950s by Gerald Gardner and an early High Priestess, Doreen Valiente. The early practices were disseminated through published books and in secret written and oral teachings passed along to their initiates. There are many variations on the core structure, and the religion grows and evolves over time. It is divided into a number of diverse lineages, sects and denominations, referred to as traditions, each with its own organizational structure and level of centralization.

Wiccan celebrations encompass both the cycles of the Moon, known as Esbats and commonly associated with the Goddess (female deity), and the cycles of the Sun, seasonally based festivals known as Sabbats and commonly associated with the Horned God (male deity). Wicca often involves the ritual practice of magic, though it is not always necessary. Wiccans believe that mediums can be contact the spirits of the deceased, a belief adopted from Spiritualism.' (Wiki)

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#### Questions –

Is there an inherent spiritual force in Permaculture?

What do Permaculturists “believe”?

Is Permaculture a moral practice?

What other spiritual influences do some Permaculturists bring to the practice, if any?

Is Nature the connective tissue between Wicca and Permaculture?

Considering the Permaculture Convergence, what rituals are often brought into Permaculture gatherings?

Could a Food Forest be a magical place? How?

Do you think that Wicca can support community resilience?

# Permaculture and Innovation

## A Teacher's Guide

### Definitions -

'Innovation is the practical implementation of ideas that result in the introduction of new goods or services or improvement in offering goods or services. Others have different definitions; a common element in the definitions is a focus on newness, improvement, and spread of ideas or technologies. Innovation often takes place through the development of more-effective products, processes, services, technologies, art works or business models that innovators make available to markets, governments and society.

Innovation is related to, but not the same as, invention, innovation is more apt to involve the practical implementation of an invention (i.e., new / improved ability) to make a meaningful impact in a market or society, and not all innovations require a new invention.'

[<https://en.wikipedia.org/wiki/Innovation>]

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### Questions –

1. Is Permaculture a good or a service?
2. Does Permaculture typically create, or service a market?
3. Is the Farmer's Market a place to innovate?
4. Does cBarter represent an innovation?
5. Would you describe Permaculture as an invention?
6. How do Permaculturists innovate? Whole systems thinking?
7. Does Nature innovate?
8. Does the PDC promote innovation for students and teachers?
9. Which of the \*Twelve Principles of Permaculture are innovations? Why?

## 10. Are the three Ethics of Permaculture inventions?

\*The Twelve Principles of Permaculture -

Observe and Interact

Catch and Store Energy

Obtain a Yield

Apply Self-Regulation and Feedback

Use and Value Renewables

Produce No Waste

Design from Patterns to Details

Integrate Don't Segregate

Use Small and Slow Solutions

Use and Value Diversity

Use Edges and Value the Marginal

Creatively Use and Respond to Change

## Permaculture in Space

### A Teacher's Guide

Prelude –

Factors related to growing plants in space -

Seedlings, water, sun and artificial light, soil, CO<sub>2</sub> + Oxygen, space (harvest storage, cold storage)

Human fertilizer, temperature control, lack gravity

\* \* \* \*

The process to produce water used by the character Watney in the film “The Martian” was accurate and is being used by NASA for a planned Martian rover. The radioisotope thermoelectric generator was also appropriately used for heat. When his rations begin to run low, Watney builds an improvised garden using Martian soil and the crew's feces as a fertilizer. However Martian soil has since been found to be toxic to both plant and animal life, although it is believed that microbial organisms have the potential to live on Mars.

Growing Plants in Space -

The first challenge in growing plants in space is how to get plants to grow without gravity. This runs into difficulties regarding the effects of gravity on root development, providing appropriate types of lighting, and other challenges. In particular, the nutrient supply to root as well as the nutrient biogeochemical cycles, and the microbiological interactions in soil-based substrates are particularly complex, but have been shown to make possible space farming in hypo - and micro - gravity.

Space Gardens -

The growth of plants in outer space has elicited much scientific interest. In the late 20th and early 21st century, plants were often taken into space in low Earth orbit to be grown in a weightless but pressurized controlled environment, sometimes called space gardens. In the context of human spaceflight, they can be consumed as food and/or provide a refreshing atmosphere. Plants can metabolize carbon dioxide in the air to produce valuable oxygen, and can help control cabin humidity. Growing plants in space may provide a psychological benefit to human spaceflight crews. Usually, the plants were part of studies or technical development to further develop space gardens or conduct science experiments. [wiki]

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Space Sprouting: A Permaculture Prototype -

An experimental permacultural seed sprouting prototype (W. Paul, 2021) includes a specialized biodegradable watering bag with a “Smart Skin membrane” - a form of “Natural Intelligence”. The nutrient-rich membrane “melts” over a pre-set period of time and greenhouse conditions and is filled with plant nutrient, weed destabilizer and water. Just enough water is utilized for supporting the initial seed sprouting cycle. The bag includes time sensitive “pores” for watering the seeds in space greenhouses. The prototype is envisioned to be an efficient, fast-tracking “sprout to field” technology and very sustainable.

A Bamboo support lattice forms a grid for precise watering support throughout the greenhouse. The sprouting process works in tandem with composted soil and reduces labor and growing costs as no human oversight is required once the system is set-up and running.

[ W. Paul, 2021]

Which of the Twelve Principles of Permaculture apply to permaculture in space? -

The Twelve Principles of Permaculture -

Observe and Interact.

Catch and Store Energy.

Obtain a Yield.

Apply Self-Regulation and Feedback.

Use and Value Renewables.

Produce No Waste.

Design from Patterns to Details.

Integrate Don't Segregate.

Use Small and Slow Solutions.

Use and Value Diversity.

Use Edges and Value the Marginal.

Creatively Use and Respond to Change.



# Human–Nature Interaction (HNI)

## A Teacher’s Guide

### Definitions –

‘Human–Nature Interaction (HNI) might be the individual organisms we encounter or the ecosystems that we experience, including visiting an urban green space or a national park, viewing trees through a window, smelling the scent of wildflowers, listening to bird song or being bitten by a mosquito. Human–Nature Interaction occurs when a person is present in the same physical space as nature or directly perceives a stimulus from nature.’

(<https://royalsocietypublishing.org/doi/10.1098/rspb.2019.1882>)

“Designing with Nature” is an empowering HNI concept from Permaculture - There is so much beauty, elegance and grace in the patterns of nature – so much inspiration for good design that works with nature and that creates wellbeing ... You can feel or sense when a design works – there is a sense of ease, of peace, of connection.

(<https://ourpermaculturelife.com/design-with-nature/>)

“Human-sustainability/resilience-nature interaction” - The principles of sustainability and resilience could be seen as connective tissue for HNI. (W. Paul, 2021)

Sustainability is the capacity for Earth's biosphere and human civilization to co-exist.

(<https://en.wikipedia.org/wiki/Sustainability>)

Resilience is the capacity of an ecosystem to recover from disturbance.

(<https://en.wikipedia.org/wiki/Resilience>)

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### Current Examples of HNI -

Using CAD for site plans for Permaculture

“Spirit of nature” extends HNI’s impact

Climate change – Human impact (CO<sub>2</sub>) on environment

Compost bin – local soil building

Spaceship blasting off of the launch pad (pollution loading)

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### Questions –

Is HNI another lens to study the interactions of mankind and nature?

What is the “data” of HNI?

Can HNI promote a nature-spirituality connection?

What experience(s) can come out of this interaction (via transformation or alchemy)?

Resilience! There is a lot of disturbance in nature today. Can HNI help?

Is mutualism (or co-existence) a foundation of HNI? Why or why not?

# Permaculture and Artificial Intelligence

## A Teacher's Guide

### Definitions –

‘Artificial intelligence (AI) is intelligence demonstrated by machines, as opposed to natural intelligence displayed by animals including humans. As machines become increasingly capable, tasks considered to require "intelligence" are often removed from the definition of AI, a phenomenon known as the AI effect. In the first decades of the 21st century, highly mathematical statistical machine learning has dominated the field, and this technique has proved highly successful, helping to solve many challenging problems throughout industry and academia.

The field was founded on the assumption that human intelligence "can be so precisely described that a machine can be made to simulate it". This raises philosophical arguments about the mind and the ethics of creating artificial beings endowed with human-like intelligence. These issues have been explored by myth, fiction, and philosophy since antiquity. Science fiction and futurology have also suggested that, with its enormous potential and power, AI may become an existential risk to humanity.

Machine learning (ML), a fundamental concept of AI research since the field's inception, is the study of computer algorithms that improve automatically through experience. There are thousands of successful AI applications used to solve problems for specific industries or institutions. A few examples are: energy storage, medical diagnosis, military logistics, or supply chain management.’ (Wiki)

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How could AI assist Permaculture? Algorithms?

Contour Calculation

Zones Demarcation

Calculating Surplus

Relationship(s) of Key Site Elements

Defining and Predicting Resilient Features

Modelling Nature's Systems

Crop Projections / Data

Specifying Site Plans and Garden Details

Assessing Social Values & Intangibles

Defining Diversity

Building a New Food Forest

## **cBartering**

### **A Teacher's Guide**

Prelude -

“The great advantage to bartering in a crisis is that you can trade directly for the actual value of items. You also have the power to create your barter goods with your own two hands rather than rely on a pay cheque. And when times are tough, this can be a great way to make ends meet.”

(<https://pipmagazine.com.au/connect/bartering-in-a-crisis-top-10-coveted-items/>)

cBartering -

cBarter is a hybrid, neighborhood-level, Transition tool that involves exchanging goods or services between two or more parties through the use of goods, DIY creations, money, a credit / debit card or cryptocurrency. In essence, cBartering is a local activity, that involves the exchange of one good or service by one party in return for another good or service from another party (equivalence) at an agreed upon value.

Not to exclude Permaculture, cBarter is Zone 0 and aligns with much of the movement's ethics. There is also much affinity to Permaculture's Principles in cBarter, including:

Observe and Interact.

Apply Self-Regulation and Feedback.

Integrate Don't Segregate.

Use and Value Diversity.

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At the local cBarter Coop, folks can trade, share, gift or buy expertise, food stuffs, seeds, books, etc.

Group trading (or buying) is encouraged, as is volunteering. The Coop's website includes ways / what to exchange, local expertise, rates / equivalences, and vendor recommendations. A cBarter Community Committee has oversight on activities of system.

A cBarter currency is envisioned.

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Regenerative Principles and Values for cBartering -

We put Nature, community and sustainability first.

Purpose-driven Decision Making - Make every decision in service of an inspirational purpose.

Conscious Leadership - Cultivate awareness with resiliency.

Transparency and Accountability - Update budget and deliverables throughout the project lifecycle.

Community Investment & Networking - Connecting people with the larger good.