Adaptive Strategies

What Permaculture has to Offer to Enable a More Resilient Future for Ourselves and our Children in a World of Changing Climates
How will the water cycle be affected

The water cycle exhibits many changes as the earth warms. Wet and dry areas respond differently.
Satellite View of Western Great Lakes Area in Dec 2014 Storms.
Building Collapse on the Tundra
How hot might it get?
A home on the Salisbury Plain, Dec 2013
Are there limits to what we do? Should there be?

**Figure 1 | Beyond the boundary.** The inner green shading represents the proposed safe operating space for nine planetary systems. The red wedges represent an estimate of the current position for each variable. The boundaries in three systems (rate of biodiversity loss, climate change and human interference with the nitrogen cycle), have already been exceeded.
EVERYTHING IS CONNECTED
OTRO MUNDO ES POSIBLE

UN MUNDO DONDE QUEBRAN TODOS LOS MUNDOS
"Learn how to see. Realize that everything connects to everything else."

Leonardo da Vinci
RADICAL
CIVILLY-DISOBEDIENT
SOLAR-POWERED
LAUNDRY DRYING
APPARATUS
Is there a way forward?

"PERMACULTURE" is a word that was originally coined in the mid seventies by two Australians, David Holmgren and Bill Mollison, to describe the design system pioneered as a response to what they, and many others globally, saw as serious challenges to the survival of all of us. Originally derived from the words 'PERMAnent agrICULTURE', permaculture has gone beyond it’s roots in looking at strategies to create sustainable food growing methods to become a worldwide movement encompassing all aspects of how we as human beings can live harmoniously in relation to our Earth and it’s finite resources- A PERManent CULTURE. Permaculture now probably has as many definitions as there are practitioners, but one that is particularly useful might be- "CREATING SUSTAINABLE HUMAN HABITATS BY FOLLOWING NATURE’S PATTERNS"
Whole Systems Design

Social

- Personal Skills in Community
  - Health & Wellness
  - Spiritual Growth
  - Communication
  - Shadow Work
  - Leadership
  - Autonomy

Culture

- Art, Ritual & Play
- Gathering & Celebration
- Nuturing Community
- Tradition & Culture Shifting
- Youth & Elders
- Story & Worldview

Political

- Group Process
- Decision Making
- Governance
- Conflict Resolution
- Participatory Design
- Local to Planetary Politics

Ecology

- Permaculture
- Watershed
- Ecosystems
- Bioregion > Biosphere

- Water
- Food
- Energy
- "Waste" Cycling
- Shelter
- Appropriate Tech

Economy

- Deep Wealth Design
- Currencies & Holotopicism
- Generating Value
- Ownership & Equity
- Resource Sharing
- Income Sharing

Integral Theory
- Pattern Language
- Collective Intelligence
- Education, Pedagogy & Peeragogy
- Eco Reintegration (Biomimicry)
- Permaculture Design
- Deep Wealth Design

Gifting & Generosity
- Collaborative Economy
- Capital & Resource Access
- Local to Global Economy
The Difference Between Organic Gardening and Permaculture

* Higher yields per product but fewer products
* Products ripen at same time
* pest control closely monitored
* mostly human labour

* Wider range of products including:
  food, fuel, recreation and habitat
* Use of garden to nurture home (deflect wind, give shade, filter air)
* Water catchment determines shape of garden
* locally sourced reused resources
* Integrated pest management
* Sharing harvest with working animals.
What is Permaculture?

Permaculture - is an approach to designing human settlements and agricultural systems that are modeled on the relationships found in natural ecologies. (Wikipedia)

Permaculture is sustainable land use design. This is based on ecological and biological principles, often using patterns that occur in nature to maximize effect and minimize work. Permaculture aims to create stable, productive systems that provide for human needs, harmoniously integrating the land with its inhabitants. The ecological processes of plants, animals, their nutrient cycles, climatic factors and weather cycles are all part of the picture. Inhabitants’ needs are provided for using proven technologies for food, energy, shelter and infrastructure. Elements in a system are viewed in relationship to other elements, where the outputs of one element become the inputs of another. Within a Permaculture system, work is minimized, "wastes" become resources, productivity and yields increase, and environments are restored. Permaculture principles can be applied to any environment, at any scale from dense urban settlements to individual homes, from farms to entire regions. (Wikipedia)
Permaculture Principles

Core principles for Ecological Design

• 1. Observe.
• 2. Connect. (use relative location)
• 3. Catch and store Energy and materials
• 4. Each element performs multiple functions
• 5. Each Function is supported by multiple elements
• 6. Make the least change for the greatest effect.
• 7. Use small scale intensive systems
• 8. Optimize edge
• 9. Collaborate with succession
• 10. Use biological and renewable resources

Principles based on attitudes

• 11. Turn problems into solutions
• 12. Get a yield
• 13. The biggest limit to abundance is creativity
• 14. Mistakes are tools for learning
Beyond Sustainable
We are at a critical moment in the history of our species. Climate change is a monumental opportunity to change course and move into a future that embraces life, a future bent on encouraging health, a future where clean air and clean water is available to all. In so many ways, a fundamental restructuring of how we cultivate our food is at the heart of this shift. Widespread regenerative organic agriculture will be built on supports that necessarily also support rural livelihoods, strengthen communities and restore health the world over. Regenerative organic agriculture is our best hope for creating a future we all want to live in, and a future our children will be happy to inherit.

Soil carbon sequestration through regenerative agriculture is a known, proven, technical, remedy to global warming: it gives humanity the necessary time to decarbonize. By investing in multiple, global farming system trials we can both provide the needed data to support widespread transition directly work towards that transition through incubating skills and providing a global support network, on the ground, for farmers to lead the evolution to regenerative systems.
And yet, there is hope right beneath our feet. There is a technology for massive planetary geo-engineering that is tried and tested and available for widespread dissemination right now. It costs little and is adaptable to local contexts the world over. It can be rolled out tomorrow providing multiple benefits beyond climate stabilization. The solution is farming. Not just business-as-usual industrial farming, but farming like the Earth matters. Farming like water and soil and land matter. Farming like clean air matters. Farming like human health, animal health and ecosystem health matters. Farming in a way that restores and even improves on soil’s natural ability to hold carbon. This kind of farming is called regenerative organic agriculture and it is the short-term solution to climate change we need to implement today. We don’t have to wait for technological wizardry: regenerative organic agriculture can substantially mitigate climate change, now.
A new Permaculture design site in the Missouri Ozarks
A long-term biodynamic desert trial in Egypt confirmed that soil carbon sequestration is greatest in the earlier years of transition to organic practices. In a first year plot 4.1 metric tons of carbon per hectare were sequestered, whereas the average over 30 years was 0.9 metric tons per hectare. These results suggest that soil carbon can be built quickly enough to result in a rapid drawdown of atmospheric CO$_2$ upon transition to regenerative agricultural systems. However, it is probable that soils have unique carbon saturation points, suggesting that soil carbon sequestration is a remedy that will allow time for implementation of additional long-term solutions to the climate predicament.
Changing farming practices to organic, regenerative and agroecological systems can increase soil organic carbon stocks, decrease greenhouse gas emissions,\textsuperscript{14} maintain yields,\textsuperscript{15,16} improve water retention and plant uptake,\textsuperscript{17} improve farm profitability,\textsuperscript{16} and revitalize traditional farming communities\textsuperscript{18} while ensuring biodiversity and resilience of ecosystem services.\textsuperscript{17,19} Regenerative organic agriculture is also integral to the climate solution.
What is biomimicry?
- From
  - bios, meaning “life” + mimesis, meaning “to imitate”
- Biomimicry = to imitate life
9 basic principles of biomimicry

1. Nature runs on sunlight
2. Nature uses only the energy it needs
3. Nature fits form to function
4. Nature recycles everything
5. Nature rewards cooperation
6. Nature banks on diversity
7. Nature demands local expertise
8. Nature curbs excesses from within
9. Nature taps the power of limits
1. CANOPY (LARGE FRUIT & NUT TREES)
2. SUB-CANOPY LAYER (DWARF FRUIT TREES)
3. SHRUB LAYER (CURRENTS & BERRIES)
4. HERBACEOUS (COMFREY, BEETS, HERBS)
5. RHIZOSPHERE (ROOT VEGETABLES)
6. SOIL SURFACE (GROUND COVER, STRAWBERRY)
7. VERTICAL LAYER (CLIMBERS, VINES)
The varied understory of a forest garden
Permaculture design being planted in Afghanistan
• Human society depends on healthy, functioning ecosystems
  - They provide goods and services we need to survive
• **Ecosystem services** = provided by the planet’s systems
  - Soil formation, water and air purification, pollination
  - Breakdown of some pollutants and waste
  - Quality of life issues (inspiration, spiritual renewal)
  - Nutrient cycling
Ecosystem Services

- Store water and regulate water flow
- Regulate climate
- Purify water
- Form soil
- Provide timber and other resources
- Purify air
- Cycle nutrients
- Provide recreation
- Provide food
- Control erosion
- Provide habitat
- Provide pest control
- Dampen impacts from disturbance
- Filter runoff and treat waste
- Pollinate plants
- Provide food
The Carbon Cycle
Wilson Home in Stelle, IL
Swales and Berms at Wilsons’ Site
The swale is a water harvesting ditch dug on even contour / elevation. Water does not flow in a swale because the trench basin is the exact same elevation, thus creating no erosion and encouraging the water to move passively, soaking directly into the soil to feed gardens, forests, or regenerate entire acreages and groundwater aquifers.

The soil’s wicking property pulls water further up the sloped trench walls. The swale trench can be filled with water-permeable mediums such as gravel or wood mulch, then used as a walking path.

This method of watering encourages a drought resistant garden by storing water and also encouraging deeper root growth.
Digging a Swale on Contour
June

Two months later everything has filled in.
Abundance
A diversity of species enables a multitude of species relationships.
Rainwater Collection: Wild Rice Pond
First Year Permaculture Inspired Garden
Children are great imitators so give them something great to imitate.
The Picking Crew
Resources
INTEGRATED FOREST GARDENING

The Complete Guide to POLY Cultures and PLANT GUILDS in Permaculture Systems

WAYNE WEISEMAN, DANIEL HALSEY, AND BRYCE RUDDOCK
We do these things for those who will follow. That they too may have an abundant and abiding future.