Kasarinlan: Philippine Journal of Third World Studies 2011 26 (1–2): 422-434

Permaculture as Alternative Agriculture

BERT PEETERS

ABSTRACT. Lack of food sovereignty has been one of the Philippines' perennial problems. Due to inadequacy of food supply, the needs or demands of the people could not be met, and the problem leads to the poverty of the nation and the malnutrition of its people. Many researches have been done by the Philippine government to identify solutions to this problem. In this study, the concept of permaculture is discussed as a means to solving the problem of food sovereignty in the Philippines. The study describes an existing pemaculture-development site in Cabiao, Nueva Ecija, called the Cabiokid Foundation. This site applies permaculture principles in all areas and nurtures natural ways to solve a wide range of problems, including lack of food sovereignty, to prevent malnutrition and poverty.

KEYWORDS. permaculture · rural development · sustainable agriculture · Nueva Ecija

Introduction

Today, the earth's overall environment has deteriorated, and ecosystems are stretched almost beyond human repair. The environment is changing at an unprecedented rate, and results allow for little adjustments for the nonliving and living things on it. One cause of this is the corporate-capitalist-driven development fueling an ever-accelerating chain of events that are spiraling out of control. Since humans are trying desperately to be technological in all areas of life and get more income in terms of monetary values, it is now common to use genetically modified organisms (GMOs) and to cheat nature with the use of chemical applications (clear examples of this are thirty-day-old chickens or genetically modified corns that we buy at supermarkets). Oftentimes, we tend to believe that this is the only way possible to achieve true development and to solve human problems such as lack of food supply, which implies a nation's true face of poverty.

We also experience disasters all around us, with countries on every continent reporting extreme levels of occurrences of natural phenomena.

These events are quickly grouped as the results of climate change, although little initiatives have been taken to bring to us the need for change. Our world has been thoroughly analyzed, inventions have been made, and we are on the verge of discovering a big bang particle that may have started life on earth. Still, we understand very little of the natural environment and the dynamics of our world. We continue to throw garbage; prevent nature from flourishing, creating unsustainable developments; and dump fertile lands into the sea—all for short-term financial profits. This is truly puzzling since we have been talking about climate and other environmental changes since the 1950s.

Yet, all these phenomena are caused by human activities like monocropping farm systems, deforestation, and mechanization of the agricultural production, which have led to massive deforestation; pollution of the land, air, and water; and erosion of topsoil or its loss thereof. Ironically, we all agree that human health and well-being highly depends on a healthy ecosystem. In this study, the concept of permaculture is discussed as a means to solving the problem of food sovereignty in the Philippines. The study describes an existing permaculture-development site in Cabiao, Nueva Ecija, called the Cabiokid Foundation. This site applies permaculture principles in every areas and nurtures natural ways to solve a wide range of problems, including lack of food sovereignty, to prevent malnutrition and poverty.

What Is Permaculture?

Permaculture is a design system that is guided by the principles of Nature. This concept is basically about designing and creating sustainable human habitats featuring houses, livelihood opportunities, a healthy environment, and natural wealth. Within such perspective, there is a strong bias toward considering the surrounding environment as the prime provider and learning base. Working within such space, it is possible to shape better, interdependent relationships and ultimately improve these resources, creating a habitat that has multiple links and creates more energy than it needs to sustain itself.

Permaculture is focused not on the individual elements themselves, but rather on the relationships created among them by the way designers place them in the environment. To illustrate with an example: When designers plant a tree, it is not just about planting seedling in the soil; they have to think how the seedling will soon evolve

in a well-prepared process that considers all relations and connections with the surrounding elements. The first thing that designers will consider will be themselves. Because as future stewards of the seedling, the designers must consider the benefits that kind of tree could give them. So they should ask themselves these questions: are we after its fruits, flowers, wood, fragrance, aesthetics, or all of the above? To make it simple, the designers must have a mind-set for the future of the land, so they must consider every little detail of the land they are developing because relationships between every tree, plant, and creature in the land are of utmost importance. Next to consider will be the place. After years of growth, the seedling will have become a massive, wide, or tall tree. On the other hand, the tree will only grow well if some conditions are fulfilled, depending on the tree species. In addition, the designers may have their own reservations as to where to plant it (for example, overhead power lines, nearby water sources, in soil with particular qualities, or nearby other houses). Location in terms of wind and sun patterns should also be considered above anything else because in the near future the designers may like to have their house shaded throughout the day. In essence the tree will provide, if placed in the right location, the best possible habitat for the designers. From this example, one can see how permaculture treats nature as a guide in designing a sustainable habitat wherein the biosphere acts as its library and the ecosystems its teachers. This synergy is guided by mimicking guilds and patterns in nature since nature is a large ensemble of cooperation among living and nonliving things that sustains and ensures the continuation of life on earth. Since permaculture is more focused on the relationships between individual elements, it has become a cross-disciplinary science combining various branches of knowledge from natural systems known to us.

When designing a community, society, or habitat, natural designs can be most attractive in wild areas where nature harbors new species and where new relationships are continuously being born. Wilderness is a key to how nature on earth has sustained itself over time. We continue to discover new species in wild areas or in places where nature gets a free hand in the path of evolution. Evolution is nature's way of designing new species and generating order from chaos. By letting several areas go wild within a certain area, we invite nature to work for us and attract all kinds of species. We may not control the process and it may take some time, but it will be exploratory and highly exciting to find out what grows or lives in such sites. Plant mutations will be very

common in wilderness areas. Sometimes it may be a variegated subspecies of a common plant or weed, a bonsai version of a commonly known bush or tree, or it may create habitat to attract biodiversity (prey and predators) on-site, which will aid us in the balance and maintenance of the system on-site. In developing these ideas, permaculture gives us a new perspective of the natural world and offers concrete answers for interactions with our cultivated world.

Permaculture design is a proactive and creative response to the need to change our world for the betterment of the nonliving and living things on it. Therefore, permaculture will only make sense if we start implementing it in the human sphere and apply it to our fields of interaction with other living and nonliving things. Permaculture can be applied in the built environment because it is a good framework for inventing tools and for defining sustainable technologies. The best tools are natural tools or limited tools. Even animals learn how to use simple tools or manipulate nature to get things done. From a permaculture point of view, the goal is to use as little energy as possible to get things done.

In growing crops, we use as little energy as possible before eating them. Instead of baking, frying, or cooking, we learn how to chop raw vegetables, making a combination of flavors suited to different palettes, drying leaves for tea and having fruits and vegetables to snack on in between meals. We may react differently to the idea of permaculture for it may transform human culture and educational programs and turn our health and well-being systems into something new. Permaculture also outlines a revolutionary form of land reform whereby land tenure and governance are by, for, and with the people. And lastly, permaculture seeks to maintain our wilderness and chaos, because evolution is the main factor to ensure diversity and long-term survival on earth.

Permaculture is energy conscious and tries to reduce entropy in any given design. This roots out losses over time and prevents pollution from happening. Permaculture is also guided by laws of nature. These laws form a set of principles that can be used in designing sustainable habitats. Distilled from multiple disciplines—ecology, energy conservation, landscape design, and environmental science—these principles are inherent in any permaculture design, in any climate, and at any scale.

In a nutshell, permaculture is a discipline that provides feasible and commonsensical alternatives in developing sustainable communities and societies abiding by natural principles. First and foremost it is a

design system for efficient resource management—being focused on maximizing already-existing resources. With permaculture being driven by natural cycles, its operational system will likewise follow biological evolutionary principles since permaculture is a design system that mimics natural systems and taps into nature's knowledge for inspiration, information, and guidance.

Principles of Permaculture

Since permaculture is a wide concept and is applicable in every aspect of our life, two main rules differentiate permaculture from other sustainable development frameworks. First, it is careful and particular about energy. This means that the less energy we need and use, the more we can share with other living things, which results in more abundant surroundings and greater biodiversity. Second, it uses natural principles as main tools in creating sustainable projects. In addition, the following principles guide the application of permaculture design:

1) *Relative location–everything is connected*. Permaculture creates a connection between different things or elements. The designer sets up working relationships between each element: the needs of one element are filled by the yields of another element. To achieve this, it is important that the designer discovers the basic characteristics of an element, its needs, and its products.

2) *Each element performs multiple functions*. Each element in a permaculture system should be chosen and placed in such a way that it performs as many functions as possible. For instance, a pond can be used for irrigation, watering livestock, aquatic crop, and fire control. A dam wall functions as a road, firebreak, and a bamboo production area.

3) *Each function is supported by many elements*. Important basic needs such as food, water, energy, and fire protection should be served in two or more ways. A careful permaculture farm design, for example, will include both annual and perennial pasture and fodder trees, the cuttings of which are fed to domestic stock or whose leaves, pods, or branches are allowed to be eaten by the livestock for short periods.

4) *Efficient Energy Planning*. The key to efficient energy planning (which is also efficient economic planning) is the zone and sector arrangement of plants, animal ranges, and structures. The only modifiers are local factors such as market, access, slope, climate, and special soil conditions.

   Zone planning means placing elements according to how much they are used or how frequently they need to be serviced. Sector planning, on the other hand, deals with the wild energies: the elements of sun, light, wind, rain, wildfire, and water flow. Appropriate design components are carefully positioned to harness all incoming energies to its advantage. In creating zones, the starting point is a center of activity, usually the house, the barn, the plant nursery business, or, on a larger scale, an entire village. This central area is then named Zone 0. The rule of thumb is to develop the area nearest to the center of activity, get it under control, and then expand to the edges. Cabiokid offers an example of zone planning

5) *Using biological resources*. In a permaculture system, biological resources (plants and animals) are used wherever possible to save energy and to do work on the farm. Plants and animals are used to provide fuel, fertilizer, tillage, insect control, weed control, nutrient recycling, habitat enhancement, soil aeration, fire control, erosion control, etc. For example, green manure and leguminous trees are used instead of nitrogen fertilizer. Short herbs and chicken are used instead of lawn mowers; biological insect control rather than chemical pesticides; animals such as pigs and chickens instead of rotary hoes; composted biomass over herbicides and artificial fertilizers. Building up on-site biological resources is a long-term investment that requires careful planning and management. However, it is the key strategy for recycling energy and developing sustainable systems.

6) *Energy cycling*. Permaculture systems seek to stop the flow of nutrient and energy off the site and instead turn

them into cycles so that they can be maximized. For instance, kitchen wastes are recycled to compost; animal manures are directed to biogas production or to the soil; green manure is directly turned into the earth; leaves around trees are raked to serve as mulch. On a regional scale, sewage is treated to produce fertilizer to be used on farmlands in the communities.

7) *Small-scale intensive systems*. Since nature is built on small-scale intensive systems, permaculture systems are tuned for hand-tools (scythe, hand mower, pruning shears, axe, and wheelbarrow) on a small site, and modest motor-driven tools (hand tractor, mower) on larger sites. Small-scale intensive systems mean that much of the land can be used efficiently and thoroughly, while the site is under control.

8) *Natural plant succession and stacking*. Natural ecosystems develop and change over time and give rise to a succession of different species of plants and animals. Each stage creates the right conditions for the next stages. In permaculture we maximize these insights to our advantage and try to fast-track natural systems into doing what they do best. Pioneer plants may fix nitrogen, loosen up heavy soils, reduce salt in soils, stabilize deep slopes, absorb excess moisture, and provide shelter. As they colonize new habitats, they make it easier for other species to follow on by modifying the environment to a more favorable state.

9) *Polyculture and the diversity of species*. Permaculture advocates the use of a diverse mix of species over a monoculture system. Although the yield of a monoculture will probably be greater for a particular crop than the yield of any species in a permaculture system, the *sum of yields* in mixed systems will be larger and more prepared for interactions with other species or for naturally occurring events like floods, storms, or droughts.

10) *Increase "edge" within a system*. Permaculture banks on the idea that productivity increases at the edge or

boundary between two ecosystems (land/water; forest/grassland; estuary/ocean; cropland/orchard) because the resources from both systems can be used. In addition, the edge often has species unique to itself. An edge is an interface between two mediums. It is the surface between water and air; the zone around a soil particle to which water bonds; the shoreline between land and water; the area between forest and grassland. Wherever species, climate, soils, slope, or any natural conditions or artificial boundaries meet, there are edges.

11) *Attitude*. All actions taken by living things determine their chances for survival within the larger environment. In the discussion on zones, Zone 0 is often left out. Accepting the permaculture principles as a guide begins with the individual. It is the attitude we adapt that will eventually determine the skills and success of using permaculture on a daily basis and that will give the highest return on our energy spent in the shortest possible time.

These principles should be the basic foundation of any designer of permaculture to promote a sustainable development without harming the natural relationships of the present environment.

Permaculture Patterns

Natural patterns that can be observed around us are the basis for any successful design for sustainable development. As knowledge increases through observation of such patterns, the degree of success of any design that is being based on it is expected to succeed as well. To better understand what we mean by natural patterns, observe the flow of water, feel the draft of cool air, observe the habits of animals, look at the growth of a tree. These are the natural patterns of nature humans should not intervene with. Natural patterns can be viewed as nature's encyclopedia for permaculture designers because these are the building blocks of any natural system. Most of the natural systems have been tested over time and have become near perfect. They survived the times by having perfected a shape or form to ensure a healthy flow of energy in and between components. Imagine the use of stones in a landscape.

They not only add beauty due to their irregular patterns but also allow different plants, animals, and bacteria to live near or on it: all elements add to the beauty and, more important, to the efficiency and stability of the rock ecosystem. The pattern of the stone can be combined with a curve pattern of different stones together, extending the beauty of it and yet generating other benefits like creating an erosion barrier for soil, an additional edge for species to thrive in, and a demarcation between several ecosystems.

Natural patterns are also one of the most difficult things a human mind can grasp. Just try to imagine: how can water flow this or that way, or how can the wind blow where it wants to? These questions are hard to answer, and possible explanations to these are hard to understand. But nature has its own ways in its own time, and interrupting its ways can be truly damaging and dangerous to humans. On the other hand, mimicking such systems and their patterns will ensure success and productivity in human-designed permaculture systems.

From molecules to greater designs, we all recognize the fact that nature is a well-organized system that carefully releases energy and even finds ways to improve its quality over time. By observing patterns we may better understand the building blocks of life so these can be applied to our designs with the help of the principles discussed above.

Permaculture Characteristics

In a well-designed permaculture system, the following characteristics will be observed:

(a) *Diversity* (nutrients, species, space). Diversity increases in terms of varied species, diverse relationships, and higher occupancy of species within a certain space.

(b) *Yield* (type, size, quantity, quality). The harvest of products is diverse and offers food throughout the year.

(c) *Complexity* (natural world, knowledge). As more energy is stored, the more complex the organization becomes. (Complexity refers to the varied and manifold relationships formed within a "permacultured" system.)

(d) *Stability* (harmony, from competition to cooperation). The stability in a permaculture system offers a better functional organization of the system, ensures economic

productivity, and provides long-term sustainability with maximum yields.

(e) *Energy* (reduced entropy, no pollution). A permaculture system uses only the amount of energy that can be productively absorbed by the system.

If we carefully analyze these key concepts, then we should realize that they are present in any natural ecosystem even without human interference. Natural ecosystems are typically driven toward sustainability and the increased storage of energy. In permaculture, the key is to become positively biased toward natural systems such that we can understand the inner workings and mechanics of such systems and apply these to our designs for a sustainable development.

Permaculture Action

One of the amazing aspects of permaculture is that generating plans is easy and cheap. There are no restrictions on fantasy or creativity. The contribution of a permaculture design on food sovereignty starts at home. When we all become consciously involved in the process of producing and ensuring abundant food nearby, problems on malnutrition caused by the unavailability of food will probably lessen.

To ensure an abundance of food, forests are needed to generate the energy needed for its relative high input and mineral extraction. Growing community forests is an important step toward creating the necessary biomass, air, and water quality for a sustainable food production. These planned forests will instill a sense of community, ensuring that food production is not just left to the individual alone. Community forests are the key factor in balancing our climate, while providing the right microclimate for food production.

In the support of growing food and setting up permaculture systems, resources that are taken for granted like water and soil need to be available. How do we do this? We can dig swales and trenches, and create edges in the landscape that may fuel condensation. Even the smallest droplets of water will aid in the productivity of the landscape. For the larger application of permaculture principles, we can construct well placed rainwater harvesters so as to simplify the plumbing and supply of water to the consumers. Water, for instance, is one of the precious life-giving resources on earth, which can provide abundant

and productive outputs when properly cared for. Within a permaculture approach, such resources are carefully protected. When clean water is received, clean water should flow out as well. This resource is continuously being cycled to ensure a high-quality energy support system.

Food is grown in soil. We all love to play with dirt even as a child. What we do not know is that playing with it reconnects us to the earth and its powers to sustain life. Permaculture is very biased toward building healthy soil as a growing medium for all types of resources. The proper recycling of resources provides the necessary inputs for reviving the soil and for improving natural bodies of water. We should abolish septic tanks and set up compost toilets that will turn human waste into a useful and scarce resource. Adding dry carbon material to human wastes will generate high-quality soil that can be used for gardening. The more we learn how to feed our bodies with healthy and organically grown foods, the healthier our finished products will be. It is a cycle that will fuel change over time.

A very special approach within permaculture is the need to increase wilderness. Wilderness serves as the laboratory of our natural world where species thrive and new relationships are born. Wilderness is, in the first place, the creation of habitat so that a healthy balance among species may occur. No matter how small the area or terrain, permaculture will always recommend keeping a certain area wild and off-limits to human beings. Such areas will assist us in the birth of new crop species and essential support systems to grow healthy food in the future.

A Concrete Example

Having discussed the concept of permaculture we may have asked ourselves if this approach is feasible enough or whether this concept has been used already. Cabiokid Foundations can illustrate a success story.

Cabiokid[1] started experimenting with permaculture since 2001 and has expanded its expertise over varied fields and disciplines. The foundation has created its own food abundance area of six hectares, while being surrounded by vast fields of monocropped rice paddies and fish ponds. The Cabiokid experiment has its origins in the frustration of its members with development work and NGOs in general. While looking for something really sustainable and environment friendly, they realized that change could only come from within. Over time, Cabiokid has proven that real and lasting alternatives are possible and

that these have to be realized by the members themselves and not for them. Permaculture is a story of people actively engaging themselves in transforming their current reality into a sustainable and flourishing one. Currently about fifteen people eat and live from the farm's resources. Cabiokid generates fuel, energy, and food from its six-hectare area. The site devotes large areas for crop growing, supplying conscious consumers. Cabiokid also has abundant space for wetland wilderness and forest lands. Several livelihood opportunities come with the growth of biodiversity on the premises, like honey production, meat processing, and beads production.

Conclusion

By now, it will have become clear that permaculture provides a commonsensical approach to sustainable development, one that is very different from our idea of the term in the past. Also, permaculture can help us see how much further we can go into understanding our environment. Permaculture does not offer a magical solution or quick fix; instead, it makes us see the solutions through the problems we are facing. It is about designing: permaculture challenges people to participate in the design of their own life-giving environment. In this process, participation becomes a key issue involving the ownership of the action undertaken. This process makes people responsible and accountable for the impact of their action. The connectivity and the connections forged together with the individual designs can stimulate a multilevel cooperation among different stakeholders, eventually leading to a more complex but stable system. Permaculture offers a simple and creative approach to a worldview that will be capable of turning our earth into a home once more.

Getting involved in and excited about food production will generate a greater awareness of nature's operational systems and will keep a healthy alertness among involved human individuals. We confront food issues daily, and it is our prime responsibility to the natural world to help it sustain our basic needs, such as food. The sooner we start, the more profound the impact will be. With the existence of a plan and the assurance of a harvest at the end, everyone will want to participate in food production. Remember, permaculture reconnects individuals and their communities with the environment and partially returns the control of producing quality and healthy food in the hands of the consumers.❁

Note

1. Cabiokid Foundation is a permaculture development site in Nueva Ecija, Luzon, Philippines (see www.cabiokid.org).

Bert Peeters is a permaculture designer and teacher at Cabiokid Foundation, a permaculture development site in Nueva Ecija, Luzon, Philippines.