

# ECO-RESTORATIVE DESIGN

Applying Agrarian Earth Science towards the Re-Greening America.

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Eco-restorative design makes use of buildings and their environs to help replenish Earth's ecosystems. Our environmental dilemma sets the stage for this idea. Our plan to action focuses on the use of Agrarian Earth Sciences to help restore ecological balance. Our underlying theme is to reeducate and redirect perceptions about western culture's relationship to the Earth. To put this new thinking into action, we will entertain the opportunity to win America's enthusiastic support towards implementing a national green revolution – "Re-Greening America".

In today's world, deepening concerns about global warming and peak oil, among many other related issues, find us rethinking how best to design our future homes and communities. Since the dawn of the western world's infatuation with technology, we have irrepressibly drawn ourselves towards the day when we must find fresh alternatives to current uses of technology. Some might even say that day is past due.

It is time to take our current focus beyond the limits of sustainable and green building design. We must call into question how it is possible to redress environmental damage in a timely way, and in ways that are perhaps new to us. Are we not called to go beyond current status quo thinking in the interest of enhancing and restoring the earth's capacity to support life? If we continue to pursue "net zero" energy consumption at the current rate of progress, we will not achieve a carbon neutral global consumption pattern before 40% of existing life forms on the planet become extinct! Somewhere between now and 2050, a tipping point will have been reached whereby Earth's biosphere will likely not function in a way that can predictably continue to support current human populations.

Given the potential danger such challenges present, we are faced with considering fundamental changes in our perceptions about designing buildings and their environs. People are increasingly aware of saving energy and practicing water conservation in their homes. Yet despite this encouraging shift, our current sustainable construction design mindset continues to compromise America's immediate need to *reverse* the ongoing decline of Earth's ecosystems. How we think about and humanely regard the hidden world of life that struggles to exist around buildings stands before us as a clear opportunity to adopt a new departure from current policy and thinking. This and other ideas can inspire needed changes in how we see the world around us, thus giving us renewed hope to effectively alter the world's ecological dilemma in time.

Let us contrast current thinking with how buildings interact with their surrounding biological micro-ecosystems. In today's world we see building "green" as a process whereby responsible building design constitutes an effort to *minimize* environmental damage in order to sustain altered ecosystems. Such thinking finds us agreeing to build in ways that at best maintain altered natural ecosystems around our houses and places of business. But buildings inherently compromise their surrounding habitat when they are constructed. The challenge for sustainable design sees us falling short of extending an indigenous ecosystem's capacity to sustain life beyond pre-existing inherent values.

How do we pursue this fundamental shift of perception? Would not envisioning buildings as *net contributors* to our global ecosystem's health be that very fundamental change in thinking we seek to find? Instead of seeing houses and buildings as having an extractive environmental impact, why not replace that old picture with fresh concepts that see them actually contributing to the health and regeneration of Earth's biosphere?

There is an untapped science which can be employed to help us accomplish this idea. If we are willing to define and adopt a science-based dynamic involving buildings and soils interacting in a balanced way, we will take an important step towards the evolution of sustainable policy thinking. If we were to adopt use of established Agrarian Based Science, we would see cities and individual houses transformed into potentially healthy contributors to their surrounding natural ecosystems! High-tech solutions such as solar panels and alternative fuels are important pieces to the eco-restorative puzzle. But the chief dynamic that differentiates “eco-restorative design” from “sustainable design” is the enrichment of the Earth’s natural processes through the application of Agrarian Earth Science. Agrarian Earth Science is about the study, application, and integration of natural ecosystems in ways that are co-beneficial to humans and non-humans.

Various forms of Agrarian Based Science have been practiced for thousands of years throughout the world. Perhaps the best known contemporary example of this ancient science is “permaculture” which applies the use of agrarian technology to create human systems that mimic natural systems. Today people are learning to apply permaculture in many locations throughout America and the world. Through the application of permaculture and other similar disciplines, people are learning how to shape man-made environments in ways that interact synergistically with the natural world. Implementation of Agrarian Earth Science projects is economically viable in cases where funding resources are limited. Because application of Agrarian Based Science is both simple and more easily funded, it is well suited for use by economically disadvantaged people. It encourages application of circular economics whereby resources will circulate more fully within local production systems. In the future, when people see such benefits accrue for themselves and their environment, powerful opportunities will become apparent to our local communitarians as well as many communities throughout the world.

There are several essential tools to be used when applying agrarian earth technologies. The first has to do with soil improvement in concert with rainwater management. These two factors constitute the foundation upon which eco-restorative design rests. The second tool has everything to do with reeducation. We must also look to implementation – bringing these ideas to the marketplace and putting them into action in a timely way.

The first of the two essential building blocks in the eco-restorative design repertoire is the conservation and management of rainwater. What can intelligent water management do for us? The careful conservation of water is something we all are recognizing as fundamentally important now, and even more so in the future. Water being the foundation to life, defines where life can and cannot occur. This precious resource comes in contact with people everywhere. It flows in concentrations from streets and rooftops. It is a universally available resource continually being redirected each time it rains on our cities and villages. Eco-restorative design intelligently redirects stored rainwater flows in ways which enhance biodiversity. It promotes biodiversity thereby creating new and more varied life density populations right in our very own back yards.

Current water management technologies can optimize this bio-diversification process by maintaining optimum moisture levels in soil. In combination with centuries-old cistern technology being used worldwide today, we have the means to feasibly store water in large enough quantities to effectively distribute water flows to both urban and rural gardens throughout each growing season. To render the storage of thousands of gallons of water economically feasible, it is possible to install multi-functional water containment vessels that do more than simply store water. For example, use of innovative technology such as concrete/foundation cisterns can structurally support buildings at the same time they are holding rainwater!

Using these ideas, we can envision buildings serving as water harvesters and thermal energy storage systems. If we distribute stored rainwater intelligently, we create growing mediums around which life is rendered more abundant. Western culture is reawakening to how essential all life forms are – even the tiniest of organisms populating the Earth's soils surrounding us. Our attention must lovingly shift to growing fresh multitudes of organisms dwelling in and around every building having a yard or roof top garden, each freshly supplied with rainwater just when it is needed. In the east, China is undertaking new research using existing building roof tops to grow plants “aeroponically”. Optimizing underutilized space comes to the forefront here. It is an opportunity found throughout all urban and commercially zoned areas – literally millions of acres of roof tops are potentially available in our cities. Here we see combining the collection of rainwater and organic crop production promising to improve local economic distribution and food consumption by optimizing the use of urban land and buildings as agrarian resources needed to “Re- Green” our cities and towns.

Are these ideas related to farming? Yes. This “Re-Greening” process includes selection of native plants and retrofitting plant mediums that organically produce more bountiful resources for both people, and organisms. Application of agrarian science over time achieves the objectives of enriching soil quality while abandoning the use of petroleum derived chemicals. Enriched soils invariably provide habitat for a broader range of life forms, thus enhancing biodiversity. For example, “permaculture” design guidelines include advantageous use of native deciduous and evergreen trees. A broad range of trees properly selected and oriented amongst buildings can dramatically improve soil's retention of water, and the right mix of evergreen and deciduous plantings shade and protect our homes. Ultimately, appropriate use of plantings around buildings can significantly reduce our nation's use of energy to heat and cool buildings.

Now we come to perhaps the underlying key to a brighter future: how we perceive our relationship with the world around us. The humane respect we give the Earth will ultimately shape our future and determine our capacity to help restore Her ecosystems.

We begin by understanding Western culture perceptions about nature Herself. This issue lives at the root source of our current environmental dilemma. Our dependency on technology has given us time to slip away from what many indigenous cultures still believe is the sanctity of the Earth Herself. Continuing to regard the Earth as an object whose value is measured by bottom line accounting and maximization of extractive processes is antithetical to sustainability practices. Our intention to benefit, first and foremost, humankind clouds our willingness to once again see the Earth as an entity possessing certain inalienable rights. Might we, as has been the case for our ancestors, again be alive to the fact that all life is precious? Would not the world be transformed if we humans adopt an equitable interest in all our fellow space ship Earth passengers, rather than a preemptive one?

If we are to fundamentally alter the environmental direction we are headed down, might we not draw upon the wisdom of past cultures as well as those espoused by the international Earth Charter adopted in the year 2000? (Refer to accompanying “Preamble to the international Earth Charter”). Consider for a moment the pristine lands of North America first settled by Europeans five hundred years ago, and contrast stories of that erstwhile bounty with today’s environmental degradation. To which past or present culture would we give the best Earth Stewardship Award? Indigenous peoples saw our world as something sacred. We have much to learn from them. We must reawaken to this past legacy by seeing our business of making life on earth worthwhile not just for our children, but for all life, as they did.

There is a third key for success that is indispensable. How do we implement eco-restoration ideas on a big enough scale to create a meaningful and timely shift? How do we conjure enough “Re-Greening” advocates who will take these ideas to their homes and communities, and put eco-restorative design to work? True, each one of us can begin by first demonstrating how to create more vibrant living systems outside our very own windows. And as small cadres of people succeed with their own reeducation and eco-restorative projects, they will demonstrate how it is possible to manifest revolutionary changes in thinking. With these initial successes, we set the stage for a establishing a new national goal. We set the stage for eventually involving millions of people in “Re-Greening America”, and ultimately all our human communities on Earth.

Why not look to ourselves, and in particular our new generation of young adults, to set these demonstration projects into motion? Through the implementation of a national plan, we can give them the organizational means to form cadres of “Green Corps Stewards”! Like the Peace Corps started by President John F. Kennedy in 1961, we can create a new “Green Corps” national organization dedicated to implementing “Re - Greening America”. Imagine educating and training tens of thousands of youths to take on the soil and rainwater management of hundreds of thousands of homes and businesses in America, and in communities throughout the world.

Back in the 1980's the Australian Bill Mollison, co-founded the agrarian science he identified as permaculture. He believed that by rapidly training individuals in a core set of design principles, those individuals could design their own environments and build increasingly self-sufficient human settlements. His vision could serve to guide the purpose and process of “Re-Greening America”. Great individual empowerment and social change would manifest with this idea for many thousands of people.

Furthermore, students able to apply Agrarian Earth Sciences can be trained to provide our communities with “Living Systems Management Services” with an emphasis on serving economically limited households and businesses who do not have the time, resources, or enough knowhow to implement “permaculture” installations and subsequent maintenance procedures. Through the widespread impetus of publicly funded programs, people in need throughout America can then participate in America’s new green revolution. The process would involve assigning “Green Corps Stewards” to first evaluate participating homes and businesses. Their resulting application of eco-restorative principles would see Living System installations benefiting all those being served – both human and non-human alike. Interested people of all generations in our communities could employ themselves by designing, installing, and then managing permaculture inspired “Living Systems” throughout America. Such Living System installations would enhance biodiversification, water flows, soil building, as well as enhance water and energy conservation goals.

Once we commence the establishment of new “Re-Greening America” bridgeheads in our cities, suburbs, and even farming communities, people will then have a chance to witness firsthand the power of eco-restorative design. People will witness an emerging generation of people dedicated to restoring the Earth. Imagine the “Green Corps” movement bringing new jobs and giving disenfranchised generations fresh opportunity to feel both engaged and important to their promising future, the future of their country, and our planet.

Now we have before us a new story. It is a story about enriching the Earth's very ground we stand on. It is a story about bringing new water management techniques to the soil. It is a story about creating habitat that optimizes the thermal performance of buildings. And it is a story about engaging tens of thousands of successor generation people in shaping their future destiny, particularly in established urban and suburban areas throughout America.

It is for us to apply Agrarian Earth Science resources which are readily at hand.

It is for us to establish new polices that support restitution of the sanctity of the Earth.

It is for us to see these ideas implemented by those who stand to reap the greatest benefit, our successor generations. America's commitment to these goals would bring about energy and resource use patterns which mimic and restore the Earth's natural systems. The holistic application of these technologies will add a new dimension to building design now known by a few as "Eco-restorative design".

Written by Tim Watson, Earth Steward and Eco-Restorative Architect

### **Preamble to the international Earth Charter**

We stand at a critical moment in Earth's history, **a time when humanity must choose its future**. As the world becomes increasingly interdependent and fragile, the future at once holds great peril and great promise. To move forward we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community with a common destiny. We must join together to bring forth a sustainable global society founded on **respect for nature**, universal human rights, economic justice, and a culture of peace. Towards this end, it is imperative that we, the peoples of Earth, **declare our responsibility to one another, to the greater community of life, and to future generations**.