The Etiquette of Necessity

George Tukel

In gratitude to my friends, Freeman House and David Simpson,
for showing the way as watershed workers.

Thanks

Mikhail Horowitz, Jeffrey Davis, Amy Hillick and
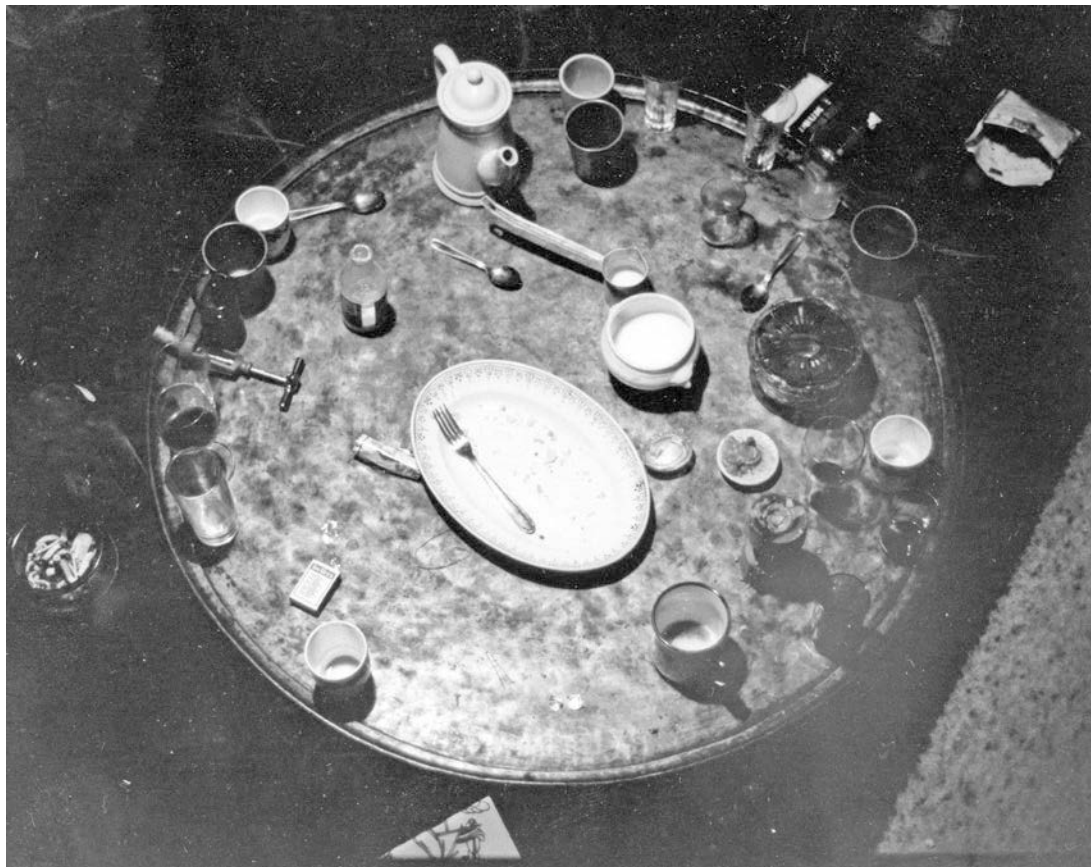Allen Bogarad for their friendship and sound advice.

The Mattole Restoration Council and Salmon
Support Group for their hospitality.

Sam Dillehay for his graphic and design support.

Bill Arnold for the front and back cover photographs.

Gary Allen for the section drawing.
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Photographs and maps by George Tukel unless otherwise
noted.

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The Vernacular Life

*Bioregions, the Commons and
Community Prosperity*

Reinhabitory Practices

George Tukel

March 2018

The work of the world is common as mud.
Botched, it smears the hands, crumbles to dust.
But the thing worth doing well done
Has a shape that satisfies, clean and evident.
Greek amphoras for wine or oil,
Hopi vases that held corn, are put in museums
But you know they were made to be used.
The pitcher cries for water to carry
And a person for work that is real.

From *To Be of Use* by Marge Piercy

The Vernacular Life

Too many lives discover themselves in landscapes overrun and worn out by insatiable development, mindless consumption and the punishments of injustice. Our time is being dominated by a treacherous greed not witnessed before, with a corresponding foundering of trust and mutual aid among community members, if "community" remains a realistic word to describe what still binds us together.

Yet the same tired debate remains a choice between ridiculed state and market ideologies (even as the shift of money and power to the wealthy accelerates). Isolated and powerless citizens look on from the sidelines wondering what this debate has to do with them: why are their adult children moving back in with them and, with little savings, how can they expect to have a self-respecting life? By faithfully playing according to the rules, they have suffered humiliation after humiliation, losing a "for someone to win, someone must lose" economic contest they could never fairly compete within from the beginning. For many vulnerable and steadfast citizens, it is becoming clear that both liberal and conservative idealizations of a western-style consumer economy are not two competing strategies for a better life. In actuality, they are two sides of the same institutional coin best understood as globalization.

Globalization diminishes complex human intentions and choices by reducing them to a "me first" decision-making inside the zero-sum game. The result encourages a social impotence in which fewer and fewer people can derive meaningful satisfaction from making something that is both sanctioned and needed by the rest of the community. Globalization deprives, those affected by it, of their freedom and power to act more autonomously and to live creatively.

The condition when competence, confidence, and self-reliance are ruined by globalization can be called modernized poverty (the term that Ivan Illich uses to identify the maladies when families and communities can no longer fend for themselves).

Modernized poverty, overlaps with, but is different from the more familiar poverty driven by racism and income inequality. Modernized poverty, more paradoxical and harder to lock down, is a personal and cultural condition of dysfunction and dependency and is shared by many, not just those racial or economic groups working from the outside in. Modernized poverty exists when the ability to meet basic needs—housing, food, energy, bodily well-being—is no longer under the purview and control of daily efforts, local knowledge, and autonomous communities. Being dependent for the necessities of life on unresponsive institutions or amorphous corporations, when the skills to provide for yourself and loved ones have atrophied, can be terrifying. Worse still, this condition suffocates hospitality and neighborliness. Within the isolation of radical dependency, the morally cruel characteristic of modernized poverty is the pursuit of financial security that will be attained only by a privileged few. Consider the high-end gated community where feeling safe comes from believing that you can be buffered from the poor and homeless and a world seen as dangerous and uncontrollable.

From this perspective, modernized poverty is a voracious form of social control as self-reliance is eroded by economic growth. Modernized poverty can blackmail families into dead-end lifestyles making it possible for populist demagogues to manipulate them with simplistic ideologies and racially-based agendas. Greed, envy and prejudice can be seen as the cultural lures for dependency. It is modernized poverty, though, that is the malaise that hinders people from taking bolder steps towards positive alternatives. Modernized poverty discourages facing directly the root causes of destitution and extreme weather—racism and living in the real world of energy and resource limits. It sabotages local means of provision by deflecting daily requirements out of the realm of necessity and towards consumerism.

How can we shift from a globlaized worldview of "more and even more" to one of limits and balance? An Etiquette of Necessity can become the turning point for reinvigorating the dependent individual into one conversant with the perquisites of place-based cultures that resist modernized poverty and its injustices. What are trustworthy cornerstones for an

Etiquette of Necessity to build upon?

Cooperative Arrangements and Reciprocity. Cooperative arrangements rest on reciprocities that are mutually beneficial while blending with local ecosystems. This reciprocity is restorative in the widest sense possible: the world is alive and flourishing yet susceptible to decay and in need of constant revitalization. Cooperative arrangements address the real needs of food, energy and other areas of human provision while reviving the earth community.

Place Identity and Common Property. Place identity is a respectful association with the wider life-community encouraged by an understanding and appreciation of wildness. Most importantly, it can underlie traditions and duties that render necessary social and ecological obligations desirable. Place identity finds a necessary expression in the safeguarding and use of common property, for example farmland. Without assured common property, long lasting efforts at community-based means of sustenance can become tiring attempts at having to constantly swim against the current.

Resilience and Autonomy. Both families and communities are susceptible to the subtle step-by-step forming of dependencies that result when communities can no longer provide for themselves. When self-rule and restraint is balanced with self-reliance and resiliency, the enabling benefits of autonomy come into focus. Decentralized, prosperous and democratic communities are those which best resist manipulation. The civilized behavior of independent farming families helping each other, as workers and neighbors, illuminate these possibilities.

Small Scale and Simplicity. The fog engine of globalization ("it's too complicated for you to understand", "it's too big to fail") obscures the viability of realistic land-based alternatives. The machine dreams of fewer and bigger farms, hi-tech solutions to everyday circumstances and corporate consolidations are examples of intimidating instruments that undermine local effort. There are other choices to be made. The village

(and the urban village, or neighborhood), nearby smaller scaled farms and supportive regional networks are durable social foundations. They are reliable references points for reminding ourselves of human scale and choices for placed-based and convivial tools.

As other cultures have abundantly shown, necessity is the occasion for the celebration and rewards of cooperative effort and place-based rules for self-governance. In dry and arid environments, scarce and precious water for irrigating crops and feeding livestock is shared fairly under the watchful eye of local users. Regional fishing grounds are not exhausted because catches are limited by self-imposed and respected rules imbedded in ecological realities. Worker owned cooperatives share the risks and benefits of "cræfting" essential products in a "maker" local economy.

The vernacular life embodies an Etiquette of Necessity and is an alternative to market fundamentalism and modernized poverty. The vernacular life emphasizes self-reliance, community and fairness as the foundations of prosperity. The vernacular life can begin a transition from industrial society, based on ever-expanding growth and fossil-fuels, to traditions and forms of exchange that leave a light footprint on the biosphere. Ultimately, the importance of the vernacular life lies in how everyday placed-located values make a decent and dignified life more possible by joining equity and ecology.

How can we begin to express a concrete and useful sense of the vernacular life? Ivan Illich writes:

> Vernacular comes from an Indo-Germanic root that implies 'rootedness' and 'abode.' *Vernaculum* as a Latin word was used for whatever was homebred, homespun, homegrown, homemade, as opposed to what was obtained in formal exchange.… Sustenance derived from reciprocity patterns imbedded in every aspect of life, as distinguished from sustenance that comes from market exchanges.…

Vernacular undertakings are not unpaid.…formalized activities, but denotes autonomous, non-market-related actions through which people satisfy everyday needs – the actions that by their own true nature escape bureaucratic control, satisfying needs to which, in the very process, they give specific shape.

We need a simple adjective to name those acts of competence, lust, or concern that we want to defend from measurement or manipulation.…The term must be broad enough to fit the preparation of food and the shaping of language, childbirth and recreation, without implying either a privatized activity akin to the housework of modern women, a hobby or an irrational and primitive procedure.[1]

Amos Rapoport, in his *House Form and Culture*, shines an instructive light on the qualities of vernacular building practices:

A lack of theoretical or aesthetic pretensions; working with the site and micro-climate; respect for other people…. and the total environment, man-made as well as natural; and working with an idiom that exhibits variations within a given order.

Although a vernacular always has limitations in the range of expression possible, at the same time it can fit many different situations and create a place at each.

Another characteristic of the vernacular is its additive quality, its unspecialized, open-ended nature, so different from the closed, final form typical of most high-style design. It is this quality which enables vernacular buildings to accept changes and additions which would visually and conceptually destroy a high-style design.[2]

Illich and Rapoport illustrate a vernacular "mind's eye" to meeting basic needs that is striking: the lack of affectation; improvising and creatively adjusting to unexpected conditions; beauty and comfort attained without "stylistic interests"; and trust and community cooperation reinforced in daily work solidifying local customs and livelihoods.

How can we broaden our understanding of the vernacular? By graduating to a vocabulary that helps make sense of the tensions between self-reliance and a commodity-intensive society.

Rather than falling back on monetized values and stale ideologies, let's begin from different starting points: the actual places we live in and potentials for a better life. There are diverse and trustworthy bridges to resilient and place-based communities. To illustrate this vernacular possibility, let's look at two everyday experiences that deeply influence how we act towards each other and the world in general. The first, in both obvious and subtle ways, is the shape and feel of our shared built world (what can be called the subject of community design). Hand in hand with community design are the tools that we use to mold our physical and social environments. And which, in turn, mold us—often in complex ways that we understand only after they have become entrenched in our lives and, for many, indispensable. Here, we are in the far reaching arena of technology with cars and smart phones as vivid examples.

Returning to the inviting possibilities of a vernacular vocabulary, what terms can be articulated that can bring a vernacular and place-located perspective to community design and modern tools? Two are offered here: right proportions and appropriate technology.

Drawing on the work of Leopold Kohr, right proportions is an alternative to the "bigger is better" calculus employed by many industrial institutions, whether it be the consolidation of corporations or shopping malls. Students of Kohr often focus on his perceptions of how "bigness" can sabotage local efforts at self-reliance, obscuring the possibilities of local mutual aid, small businesses and appropriate technology. As important

as this is, it can divert attention from a deeper aspect of Kohr's work: each social environment, with its unique ecological setting, has a corresponding set of natural scales. And when our community designs exceed the capacities of these natural scales, for example transportation infrastructures, we have exceeding levels of dysfunction (as when we waste hours in traffic jams traveling to and from work).

Kohr's first principle is that there can be a harmony between families and public organizations (for example, those providing electricity) and the natural order of scales they reside within. And this harmony rests on the appropriateness of a relationship for living in a certain place. Right proportions then becomes a natural scale appropriate to a specific place.

A right proportion is a foundation of human scale and an antidote to the cravings of administrative and technical overreach. Right proportionality, often found working together with common sense, can be an elusive friend. It is behind such satisfying utterances as "that fits well," "that always wanted to belong there," "it's comfortable around here," or "it just wanted to turn out that way." In our day, right proportions has a lot to do with "humanizing" size, given the current obsessions with "the bigger, the better" approach to building design and planning. But right proportions is more than bringing "size" down to earth; it is also about the shape of community and, more importantly, how shape and size influence each other—not only in the built world, but in the social spaces that surround and define individual buildings. Right proportions stems from the learned design sensibility that results in what Lewis Mumford, in his study of cities, called "balance" and "wholeness."

Many of us have difficulty imagining right proportions because of what can only be called profit-driven priorities rationalized as aesthetic standards. These priorities have often shattered local perceptions about how right proportions can come to life in our common world. Still, almost everyone has experienced a sense of unease that comes from being in many modern buildings and environments. This stands in vivid contrast to the feelings of belonging and enrichment that are often felt in the beautiful buildings, villages, and neighborhoods of traditional or preindustrial societies. It is about getting the proportions right, and this remains a vibrant memory and possibility.[3]

Kohr fashioned his notion of proportionality around what was doable and proper to place-specific form and size. When coupled to local and practical technologies, satisfying personal and social relationships often resulted. This is why right proportions are the framework and promise for appropriate technology.

The relatively recent tools that have emerged and changed our cultural values and lives—most prominent are automobiles, television, smart phones and the fossil fuel driven generation of electricity—have done so without careful consideration to their social, ecological and long term impacts. The major factor as to which technologies remain and grow (or disappear) is not their usefulness in encouraging personal and community autonomy. Rather, it is, most often, their marketability and how small and large corporations can reap the greatest benefit from the manipulation or sale of them.

Technologies are not neutral. Cars, for example, have altered our physical landscapes, social lives and local and planetary ecologies in complex ways (and it is only recently that their value has been challenged). Still, had there been a rigorous and ongoing debate about the usefulness of cars that began when they first appeared, pivotal questions could have been asked exposing both their obvious and counter-intuitive influences. Does the huge financial investment in a car based infrastructure justify its overall benefits? Is car dependent suburban sprawl the community design we want to encourage? Do we want to remake streets—the hub of so much community vitality and intercourse—into thoroughfares for automobiles? Is the environmental pollution, and its health risks, worth the convenience of cars? Do we want oil to dominate global political relationships that invite further warfare into the world? The automobile is a present reminder of the consequences of unexamined and ever-expanding tools that breach cultural and ecological thresholds diminishing our common life.

How can we encourage a community forum to discuss the viability of appropriate technologies? We can begin by setting an intention that has the moral authority and practicality of E.F. Schumacher's "small is beautiful" approach to technology use: the subordination of tools to human purposes requires that technology is scaled to right proportions and is a means to personal and communal ends. From this vantage point, appropriate technology is a remedy for modernized poverty while helping to craft more beautiful places and bountiful bioregions to live in.

With this intention for guidance, we can work from three areas of public choice to help align appropriate technology with the vernacular life.

The technical choice. In its most elementary and popular form, this is a choice between oversized, centralized machines and softer, smaller tools—ones that are under the control of the user. It is important to remember, though, that the art of local decision-making about technological choices is more about directing community affairs towards the smallest human scale in a vernacular setting. Schumacher was not doctrinaire about everything being small and local—that is an ideologically limited vision of possibilities requiring an abstract world. What he provides is a trustworthy reference point: the tensions between decision-making and consequence, production and consumption, are kept as visible and short as usefully possible (building a robust regional network for growing and distributing nutritious food exemplifies this).

The political choice. Political choices are usually defined by the degree to which the market is allowed to address central issues, on a left to right continuum. In helping to fortify the vernacular domain, we can advocate for the local definition of means and ends, based on values and shared experience, to counterbalance overly centralized decisions and remote technical assessments. Creating community prosperity that is rooted in the ecologically sound governance of environmental resources and opportunities for worker-owned cooperatives are examples of this effort.

The ethical choice. The heart of embedding appropriate technology in the vernacular life could very well rest on two elementary divides: heteronomy versus autonomy and 'having" versus "doing" (to use Erich Fromm's phrasing). This central question of human satisfaction can be expressed in myriad ways: substituting consumer goods with personal action; the choosing of fulfilling relationships, instead of affluence, for a respectable and gracious life; and supplanting modernized poverty with the native capacities of people—learning, friendship, and dwelling.

Wendell Berry has translated these three areas of public choice into personal standards for judging technological innovations. They have served him well and are worthwhile examples of how the nuances of appropriate technology can be thought through:

> 1. The new tool should be cheaper than the one it replaces.
> 2. It should be at least as small in scale as the one it replaces.
> 3. It should do work that is clearly and demonstrably better than the one it replaces.
> 4. It should use less energy than the one it replaces.
> 5. If possible, it should use some form of solar energy, such as that of the body.
> 6. It should be repairable by a person of ordinary intelligence, provided that he or she has the necessary tools.
> 7. It should be purchasable and repairable as near to home as possible.
> 8. It should come from a small, privately owned shop or store that will take it back for maintenance and repair.
> 9. It should not replace or disrupt anything good that already exists, and this includes family and community relationships.[4]

Energy-intensive industrial technologies are the major cause of environmental damage and social disruption. And these technologies include the fossil fueled based generation of energy to construct the buildings and communities we live and work in and to heat and cool them. In a world of extreme weather, alternatives to these technologies, and the design practices that utilize them, are attaining greater relevance.

Many families, companies and governmental organizations are making the choice to use the Green Building Council's Rating System, known as "Leadership in Energy and Environmental Design" (LEED). LEED is a point system for "grading" buildings as to their level of "greenness" (and has the same general value as "sustainable community indicators"). LEED provides quantifiable actions against which to measure and manage progress towards a more environmentally healthy future. The danger is that the measurements for judging the degree of greenness and sustainability will supplant original perceptions of right proportions. It is not surprising when LEED driven designs (given its administrative tendencies) results in when LEED driven designs (given its administrative tendencies) results in boring, out-of-place buildings and social settings.

LEED draws our attention to critical concerns: Reduce water use. Minimize energy loss through building surfaces. Make sure you have highly efficient heating equipment and utilize renewable energy. Use local and recycled building materials and get rid of what's left over in a responsible manner. It's easy to see, though, how this can become an engineering exercise in product selection so you can gain points on your checklist for a higher green grade. It's important to locate certification systems, like LEED, in a context that stresses human scale and autonomy and deemphasizes their use as professional orthodoxies, where environmental management is the goal.

What can locate LEED in the vernacular domain is the role it would be expected to play. We are headed towards the vernacular when technology helps families and communities to become more self-reliant, within ecological limits and trustworthy customs. Even more so, when the protocols of distant technicians are replaced by local knowledge and control.

From a vernacular perspective, the most responsible ecological proposals are ones that surround the intentions and tools of LEED-like efforts with right proportions. Right proportions and appropriate technology are foundations around which prosperous communities can be re-imagined, then designed and built. Especially so, when we deinstitutionalize

personal and social initiatives so other possibilities become feasible.

This is not only about respecting our common sense to resist being manipulated by false promises of short-term financial gain. A long-lasting importance of right proportions is in the type of community dialogue required to design whole and balanced towns and cities that are also, from everyday vantage points, convivial and just. Right proportions rely on displacing strict economic approaches of growth with what is inviting, fair and beautiful. In accomplishing this, it confidently strives toward a vernacular vocabulary for local self-reliance.

The vernacular life can proceed along two parallel and complementary paths: freedom from modernized poverty and prosperity without the blind worship of affluence. This shift in cultural orientation, away from globalization, opens up wide vistas of possibility. A relevant one, for the here and now, is how place-identity, regional economies and natural systems can become the heart of a rejuvenated localism, grounded in the satisfactions of community vitality.

Bioregions, the Commons and Community Prosperity

A defining step in reclaiming control over vernacular choices is to establish the geographic locations of human communities in relation to natural communities and processes, and this can be accomplished by using the concept of a bioregion. A bioregion is a distinct area where the conditions that influence life are similar, and these, in turn, influence human occupancy. When boundaries are based on natural characteristics, decision making is rooted in specific places not arbitrary administrative units. A reliable starting point for mapping bioregional boundaries is watershed tiers. This is the progression of watersheds from local ecosystems through river valleys to eventually include the complex of living systems throughout a bioregion. Bioregions have a trustworthy natural organization to build upon offering the human scale for alternatives that have a social and ecological basis to them.

The decisive importance of bioregionalism is to create cultural values based on a fundamental premise: human beings exist within nature as part of a natural order. Bioregionalism strives to understand both a place and adaptive ideas about living in that place by infusing ecological intelligence into decentralized community decision making.

There are many ways to apply the bioregional intent, but its foundations have remained constant and sturdy. Many would begin with this statement by Aldo Leopold, from his *Sand County Almanac*: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise." The practical consequences of this enduring wisdom are to enlarge our sense of community to include water (and watersheds), plants, animals and soil and to assume a worth to them beyond an instrumental value for humans.

Leopold's land ethic serves as a starting point for Thomas Berry's articulation of the "earth community," within which the human is embedded and is the source of celebration, creative inspiration and sustenance. As with the earth community, bioregional culture begins with the understanding that human beings have accepted their interdependent relationship with the biosphere and intend to pursue inspired and proper ways to live within it.

Reinhabitation, the bioregional project of living-in-place, has matured incrementally and surely over the past 40 years, as it has tested and refined close-to-the-ground practices and customs in cities, suburbia, out into the countryside and beyond. Ray Dasmann and Peter Berg write, "Living-in-place means following the necessities and pleasures of life as they are uniquely presented by a particular site, and evolving ways to ensure long-term occupancy of that site ..... Simply stated, it involves applying for membership in a biotic community and ceasing to be its exploiter."[4]

Central to reinhabitation are biocentric values which help articulate frameworks for implanting land use and other critical community choices into local and regional ecosystems. And a pivotal framework is bioregional worth—shared values for regenerating life-places.

Reinhabitation is proactive by injecting bioregional worth into daily household activities such as keeping warm in the winter and having local, nutritious food to eat. When community-wide land-use choices and decisions, including energy and material use, are located in the complex of human and nonhuman life, bioregional worth is showing its essential face.

Socially, bioregional worth can be seen at work as place-located cultures articulate the ecological limits within which human activities need to take place. In contrast to globalization, families and communities can reclaim their rights to fashion unique and original forms of lifestyle in self-limiting modes of prosperity.

Bioregional worth can also be found in decentralized economies, wedded to the bioregion, not independent systems of market exchange operating "out there" somewhere. The key to a vigorous bioregional economy is the ability to replace imports with locally-owned commerce and production. (Too often overlooked, bioregional sufficiency also reduces the financial rewards, for those energy and resource exporting bioregions, to despoil

their landscapes and jeopardize their health.)

The bioregion provides the natural boundaries for identifying what the native energetic and resource base is, its ecologically-based capacities. This is a necessary first step for understanding how a bioregion can transition towards stability and sufficiency. In many bioregions, such a transition is already underway reducing extra-regional energy imports with conservation and renewable sources of energy. The reinhabitory use, though, of renewable sources of energy is not to replace fossil fuels in an industrial economy but to make more practical alternatives to that economy. In the time of extreme weather and ensuing community displacement, this becomes paramount.

In this context, Doug Aberly writes that bioregional economies flourish when:

> • Human agency is reintegrated with ecological processes, especially through careful understanding of carrying capacity, preservation and restoration of native diversity and ecosystem health;
> • the goal of economic activity is to achieve the highest possible level of cooperative self-reliance;
> • and reliance on locally manufactured and maintained appropriate technology, devised through an ongoing program of ecological design research, is favored.[6]

Bioregional economies would have difficult footing unless it was anchored in a central and necessary evolution: the attitudes and activities of market fundamentalism, and the cultural stereotypes of the self-interested economic actor, need to yield to the wider concept of "ecologics". The orientation and motivation of ecologics would be toward bioregional self-reliance and maintenance of natural life-system continuities rather than consumerism and affluence. The exchange of goods and services and the use of materials and energy would be understood and evaluated in the context of ongoing natural processes and community needs which serve the stability of the bioregion and human well-being.

Bioregional flesh and blood are the age-old commons. Paralleling how bioregions can be understood, the commons are the physical resources we depend upon for sustenance and the community governance of them.

Many only recognize the commons through advertising campaigns drawing upon strong but oblique associations. Driving south on the New York Thruway, you pass the exit for the Woodbury Commons, a large shopping mall. Nearby, is an outsized multifamily rental housing complex called the Vineland Commons. These are not commons but their allurement draw from a powerful collective memory of the *call* to the commons.

The authentic *call* to the commons, and their recovery, stands on different historical ground and navigates along a different cultural trajectory. It begins with the understanding that the commons are not unmanaged, open-access natural resources (for example, fishing grounds) but, truer to form, common property resources (distinguished by being neither private property nor public lands). Common property resources have a long history of sustained yield, given local control, mutual trust and reciprocity. This draws upon bioregionally derived guidance to take and give back to the commons, including democratically chosen limits to the fair use of them (as Elinor Ostram writes in her *Governing the Commons* and Fikret Berkes documents in his *Common Property Resources*).

The long-term legacy of the enclosure of the commons (the conversion of common property to private use) is a stark and fundamental one: local self-reliance was transformed into the purchase of goods and services; self-sufficient families and communities became consumers; and respect for local ecologies was replaced with the environment as the raw supplies for production. The shift in cultural values, necessary for transforming the commons to private productive resources, is the more trenchant basis to ecological degradation. As the commons disappear, so do possibilities for vernacular lifestyles and livelihoods, to be governed by local norms, customs and traditions.

Economic development is the world of endless expansion and consumption. If we want realistic boundaries on the marketplace and centralized administrative controls, we can move away from them to the commons and return to place-based community building. By doing so, communities can live more fair and fruitful lives while assuring that the regenerative vigor of the commons is not overwhelmed.

Bioregions and the commons can become the foundations for community prosperity. This can begin with protecting and taking back land and resources from privatization and market forces (based on rights established by the users of the commons themselves).

This leads to a central question: how can we return usefulness, as bioregional worth, to the environment rather than degrading it? This is presently being done by commoners of many persuasions.

Streets were once a central stage for community education, entertainment, and decision making because of how safe and inviting they were: a social commons where those of different backgrounds mingled, learned, traded and found common cause. Streets, as commons, have been largely flooded and displaced by cars and traffic. Commoners, though, are challenging the priorities of traffic engineers and redesigning streets into protected areas—places of "public peace", to use Jane Jacobs' term.

Other commoners are on the lookout for properties (sometimes abandoned, vacant or rundown) to put them to better use for food growing, parks, or affordable housing. Community Land Trusts can fortify these urban and rural properties against private speculation while being operated by, and responsible to, local communities.

The Schumacher Center for New Economics, an early and current catalyst for Community Land Trusts, describes them as not-for-profit organizations with membership open to any resident of the bioregion where it is located. The purpose of a CLT is to create a democratic institution to hold land and to retain the use-value of the land for the benefit of the community. The daily activities of a CLT provide affordable access to land for housing, farming, small businesses and civic projects. This is achieved when a significant portion of the land in an area is held by a CLT that can own and manage land for a multiplicity of uses within a bioregion. As the Schumacher Center emphasizes, the CLT is not merely a method of holding land in common; it is a way for the community to hold land for the "common good."

Community Land Trusts, individually and collectively, can provide the organization, expanding from the local to the bioregional, to encourage common sense forms of reinhabitory self-reliance. Vibrant examples of successful community land trusts abound. The Evergreen Land Trust Association provides affordable and cooperative housing, preserves farmland, and undertakes ecologically-based forestry in the Puget Sound bioregion of Washington State. The Dudley Street Neighborhood Initiative is in the Roxbury neighborhood of Boston. As a community-based planning and development group, it has been the catalyst for building and rehabilitating over 500 living spaces. Complementing its affordable housing efforts are parks and urban agriculture.

Expanding out from the neighborhood and town to the entire bioregion, the commons can also take the form of a region-wide network of wildlands that can inform uncompromising sustainability and the restoration of natural systems. The basic building block of bioregional vitality and resilience can be larger core areas of wildness, the protected place where natural diversity survives. Relatively undeveloped corridors, as water and land linkages between core areas, are a key to the long-term health of the bioregion. These ecological connections encourage biodiversity within the cores, now no longer isolated, to flourish while allowing wildlife to travel along their migratory routes with less stress.

Building a bioregion-wide infrastructure of core and corridor wildlands opens a dialogue between the nonhuman world and communities that want to bypass the poverty and ecological ruin of industrialization. This dialogue could guide human land use and invigorate wildness, because

the principles of biodiversity help lay the groundwork for ecological sustainability. The emphasis on sustainability reduces the shock to wild systems. Natural systems, in turn, point the way for restoration, and restoration completes the full circle by enhancing biological richness.

The underlying value of reinhabitation, by way of recovering the commons, is how the Etiquette of Necessity can influence everyday choices that effect material and social survival. It is hardest to resist actions based on extreme self-interest when hardship is on the line, yet what the Etiquette of Necessity offers is just that—knowing that cooperation, trust, and security, based on the cold facts of reality, are the best opportunities for individual and community well-being.

Reinhabitation begins with daily acts of giving and receiving, while providing nourishment, as basic needs are met. It is also a long-term commitment to regenerating the ecological resiliency of life-places. These two endeavors—nourishment and regeneration—need to be integrated for the earth community to thrive.

How this can be accomplished is explored next under Reinhabitory Practices.

Reinhabitory Practices

Day to day, bioregionalists tend to constantly study the physical and biological characteristics of their home turf, debating how watersheds, landforms, soils, geological qualities, native plants and animals, climate, and weather form boundaries from one bioregion to another while deeply influencing their own. This is not an academic exercise, but a way to craft personal and community practices to a life-place. This effort at creating a conscious vernacular culture is reinhabitation, the bioregional project of living-in-place.

It is not unusual to hear reinhabitants try to verbalize subtle qualities of light, the feel of seasonal air, or the sensuous surround that marks a place as much as its more physical features. Often, talk turns to how human beings are one species among many. And how a multispecies perspective can be lived out in a nonexploitative and practical manner, within a heavily industrialized setting, often driven by a need for commodities and the cash to buy them.

Can we ascribe a deeper intent to reinhabitation? In the words of Peter Berg and Ray Dasmann, two of the original authors of bioregionalism:

> Reinhabitation means learning to live-in-place in an area that has been disrupted and injured through past exploitation. It involves becoming native to a place through becoming aware of the particular ecological relationships that operate within and around it. It means understanding activities and evolving social behavior that will enrich the life of that place, restore its life-supporting systems, and establish an ecologically and socially sustainable pattern of existence within it. Simply stated, it involves becoming fully alive in and with a place.[7]

Reinhabitory values and culture, so rooted in place and the basic necessities of life, are a clear alternative to global monoculture and the aggressive narcissism and corporate reach that propels it. Distinct peoples, and their unique characters, are reduced to bland versions of themselves to better propagate globalization as consumers. Extraordinary physical places gradually become remarkably similar as vernacular and historic architecture gives way to suburban and mall-styled development. There is an elementary choice to be made: a global economy versus regionally self-reliant economies, carefully and conservatively producing and consuming for their own population's needs.

Bioregional lifestyles are also an alternative to environmentalism, which is most often a defensive action against the brutalities of industrial society. This is especially so in preserving important natural areas and keeping water and air safe for humans. Reinhabitation protects the environment from the harmful effects of industrialization while looking beyond it to cultural values and lifestyles that don't require administrative regulations to safeguard the earth community.

Freeman House has offered a "commons sense" approach to what reinhabitants are called to act upon as they strive to be more effective as place-based communities. On one side of the equation is the need to re-store natural regeneration—encouraging the resiliency and adaptability of our native landscapes. This is the work of ecological restoration. On the other side is meeting basic human needs within bioregional resource and energetic limits and the demands of a low carbon future. This is the work of an ecological sustainability. Watershed workers need to be active on both sides of that equation gracefully reminding each other that life-place renewal cannot happen in the absence of appropriate human behavior toward nature.[8] A quote from Kat Anderson clarifies this: "Native peoples judicious use of nature illustrates an important, self-reinforcing dynamic: tempered, sustainable use of natural resources demands responsibility, responsibility generates respect for nature, and respect for nature is a basis for sustainable use."[9]

The diverse projects that follow strive to express this intention as Reinhabitory Practices. They share an underlying purpose: how innovation, ecological literacy, and hard work can revive natural systems while locating place-identity and means of provision within them.

The projects are arranged into two groups following House's advice. The first is "Ecological Restoration." Ecological restoration renews and maintains ecosystem health by repairing damage caused by humans to indigenous ecosystems. We see how this is undertaken by watershed organizations, in more remote Northern California, to address the painful results of industrial logging on a river system and the salmon which once thrived there.

Turning to the much different suburban and urban settings, the daylighting of once-buried streams can expand the possibilities for weaving together the ecological benefits and allurement of running water to the betterment of our built world. From the perspective of reinhabitation, the restoration of native landscapes points us in the direction of ecological adaptation—a kinship that humans can make with landscapes they are a part of so the human and the nonhuman are fused into one understanding of community.

We then return to Northern California to see how map-making can help visualize region-wide biodiversity preserves as commons. Commons, as protected natural diversity, are not meant to be off-limits to people or independent of their needs. Instead, these commons can offer instructions that natural systems can make to the earth community so both can flourish.

The second group of reinhabitory practices is "Climax Sustainability." A coherent regional design pattern can be found in a mature climax ecosystem: the progression of vegetation, though natural succession, to climax (characterized by species diversity, high biomass, energy efficiency, and stability). Climax sustainability, named after this trustworthy ecological process, endeavors to de-link from associations with growth and development and re-link to vernacular approaches that meet basic needs within the ecological specifics of bioregions. Achieving this, climax sustainability better resists being co-opted and manipulated as a sweet-smelling marketing ploy. Climax sustainability offers both method and metaphor for wise use and low-energy communities and is a

foundation of bioregional prosperity.

An essential part of climax sustainability can be called "Adaptive Infrastructures." Adaptive infrastructures can be understood as building upon natural systems to satisfy the infrastructure needs of our communities. We often take for granted the infrastructure of the places we live—the lights turn on, the garbage goes away—that makes it possible to have lives, for most of us, that are not dictated by critical day-to-day concerns (like having clean water to drink). The seemingly mundane tasks of infrastructure construction and repair hold realistic possibilities for embedding communities, steadily and incrementally, into the bioregion. From this vantage point, every improvement to the infrastructure becomes an opportunity for towns and cities to be more convivial, healthier, and beautiful places to live (while, in many instances, saving needed monies). To illustrate these possibilities, we see how a smaller city can clean up industrially polluted waters and lands, creating a nature preserve in the process, while helping with sewage treatment. From there, it is on to the neighborhoods, in larger cities, for a window into the promise of green infrastructure: as street art, as stormwater manager, or as essential participant in biodiversity conservation. Next is the reorientation of electric utility companies, now with a bioregional mission. Utility companies can build upon better community design—for existing energy technologies and grid management choices—and anchor them in a reinhabitory framework.

Climax sustainability can move in important directions while engaging everyday concerns in an innovative manner. An encouraging development has been the burst of intelligence and effort to make residential buildings more energy efficient with conservation and renewable energy technologies. Net zero energy homes are a good example of this. They are air-tight, well insulated, and have high performing heating, cooling, and ventilation equipment. Also equipped with on-site electric and hot water heating solar panels, they produce as much renewable energy as they consume, leaving the residents with net zero energy bills and a lower carbon footprint. Net zero energy buildings, though, achieve their high

energy performance by buffering (or even barricading) themselves from the surrounding weather and environment. A different approach, with the same goals, is bioclimatic design. By resourcefully engaging microclimates and local environments, with housing form and construction practices, bioclimatic buildings are energy efficient. They accomplish this, though, more with ecological design than with equipment and standardized building technologies. Bioclimatic buildings invite reinhabitants to dwell.

Neighborhoods can offer this same invitation. It takes a distinctive style of foresight, though, to move gracefully between the neighborhood and the bioregion, one that allows for communities to integrate right proportions. Neighborhoods can flourish as urban villages when cars no longer dominate the streetscape and when social interactions and shared local knowledge enhance community vitality. "The Eros of Cities" explore these possibilities.

The last of the reinhabitory practices, "Making a Living," draws connections between the value of meaningful work, appropriate technology, and reinhabitation. Designing and building farming equipment for small scale organic farms is offered as an example of these connections.

Reinhabitory practices support the transition to common living within the earth community. The works of planning, design and engineering (and their administration) are the biggest and strongest shapers of daily "taken-for granted" modern experiences. Reinhabitory practices help shift the felt and built world we share towards use, fertility and beauty. These practices are effective because of their anchorage: the social values of an Etiquette of Necessity; the human scale of right proportions and appropriate technology; and a respect for and immersion in natural systems.

Even though the different reinhabitory practices described here are clearly related by their biocentric orientation and living-in-place attitude, they do not aspire to be a comprehensive utopian framework.

In a complex modern industrial society, there is not any unique Archimedean point from which society-wide changes can be programmed and pursued. In fact, this would violate an underlying tenet of bioregionalism: different regions have different geographies, ecologies, and cultures that are the foundations for reinhabitation. The well-being of life-places will change greatly from the Sonoran desert to the Eastern forests.

One of the cornerstones of bioregionalism is the scale of natural organization that it builds upon. This scale encourages decentralized cultural and economic alternatives to be grounded in shared and trustworthy experiences rather than ideological abstractions. From this vantage point, it would irresponsible to advocate for large-scale, state-sponsored plans for diverse communities, and self-defeating. In poignant terms, James Scott, in his *Seeing Like a State*, has uncovered reasons why society-wide plans fail, on their own terms, and have often resulted in wide-spread and needless suffering.

Realistically, long-lasting, bottom-up, and place-based changes result when significant numbers of people pursue different priorities anchored in associated cultural values. They then extend them into larger or smaller arenas of life and society, establishing new lifestyles and relationships (despite the obstacles that are often erected in front of them).

Reinhabitory practices are better thought of as inspired possibilities that have been thought through and tested. Once this exacting and necessary work is done, they can be offered as practical knowledge (or, better put, living-in-place know-how) that advances community well-being (whether endorsed by the state or not).

An insight by Paul Goodman succinctly expresses this intention: "A free society cannot be the substitution of a 'new order' for the old order; it is the extension of spheres of free action until they make up most of the social life."

Ecological Restoration

The Restoration of the Lower Mattole River and its Salmon Spawning Grounds

Beginning with the perception that populations of native salmon were diminishing at an alarming rate, reinhabitants of the lower Mattole River (the part of that river basin that interacts directly with the Pacific Ocean in Northern California) have taken concrete steps to regenerate salmon spawning grounds by helping to restore a river severely damaged by sedimentation.

Why is sedimentation a culprit? Because when silt washes into the Mattole, it displaces the clean gravel in the riverbed, altering the amount of oxygen in the water and the river's temperature. The result? Salmon eggs suffocate before they can hatch.

Where does the sedimentation come from? For the most part, from the clear cutting of forests and the roads built to move out the fallen timber. Trees and understory vegetation hold soil in place, especially on steep slopes, so in their absence, when the long and strong winter rains come, extensive soil erosion results with silt finding its way into the river.

The Riparian Desert Near to the Mouth of the Mattole River

The longer term result of the silt buildup? Extensive gravel bars that, after growing and joining with each other, make up what is locally called a riparian desert. Using the word "desert" is not hyperbole, because the absence of soil and the hot, dry conditions that sedimentation brings with it make restoration efforts more complicated and formidable.

As with much environmental damage, the causes are often discernible and linear. For example, a fairly direct line can be drawn from the clear cutting of forests to the fouling of the salmon spawning grounds. The restoration of the river environment so salmon can flourish, though, entails getting inside and intimate with ecological process which is complex and circular, subtle and often counter intuitive to industrial eyes.

Where do we begin engaging local natural process so it is translatable into practical restoration activities? Freeman House offers useful advice:

> Build on the resiliency of natural systems to heal themselves. For example, if sedimentation from the clear cutting of forests and road building are fouling rivers and spoiling salmon spawning grounds, then systemically work to reduce potential sediment sources so that the waters could, over time, flush their beds clean.

> Find the points at which nature's resiliency can be augmented. Consider creating stable riparian areas adjacent to rivers cleansing themselves.[10]

Restoring Riparian Edges

These basics were translated into the Lower Mattole River Riparian Enhancement Project as designed and undertaken by the Mattole Restoration Council. In the words of the Council, the goal of this project was to "enhance riparian and floodplain habitat for fish and wildlife species in the Lower Mattole River and Estuary by: increasing riparian edge habitat; increasing bank stability; decreasing sediment inputs; providing in-stream salmonid habitat; increasing riparian shade; and increasing large wood inputs."

You can get a sense of the level of effort and commitment demanded to reach this goal by understanding the more concrete project elements. Plant 22,500 riparian plants (propagated at the Council's Native Plant Nursery with seed collected from nearby sites) on 100 acres of sedimented floodplain and tend for five years to help create riparian edges. Build 13,000 running feet of livestock fencing so riparian plantings are not damaged. Plant 16,000 willow cuttings, 10 to 20 feet in length, in 16,000 feet of dug trenches to provide structure and moisture fortifying the riparian edges.

Mattole Restoration Council

Salmon Habitat Restoration

For the fishing runs of the Lower Mattole River to gradually recover, the spawning habitat had to come more alive. Cool shaded water with oxygen provided by large woody debris was cabled into place to instill complexity in waterways that had been simplified by flooding.

What insights can be garnered from the restoration experiences in the Mattole River Basin (as discussed with Freeman House and David Simpson based on their work there as watershed workers)?

> Look beyond environmental protectionist attitudes to a "we are embedded in ecology" sensibility. Build upon "Don't foul your own nest" awareness.

> Priuses and solar panels, green building as well as demonstrations and letters to Congress will remain part of good biospheric citizenship. But these activities and acquisitions will not be enough by themselves to lead us in the direction we need to go, which is toward a human culture guided by the restraints and opportunities of their local ecosystems.

> The conceptual language of bioregionalism and reinhabitation finds its anchorage in community based restoration projects and local efforts to meet basic needs with earth-oriented cultures and practices.

> Ecological restoration can be a community art form that stimulates the imagination for other possibilities.

Restoration, as cultural practice and technic, shares much with good organic farming. Outside and in the circle of life, restoration work rests on careful observation and unfolds best when natural diversity flourishes while human needs are satisfied.

In the end, perhaps, what restorationists will have really accomplished will be more elementary. They will have returned to local culture a trust in the understanding of natural systems for cohesion and reciprocity. When that day comes, a change will have occurred. Our understanding of community will have deepened into shared local knowledge and traditions of living in places now beautiful enough to feed both belly and soul.

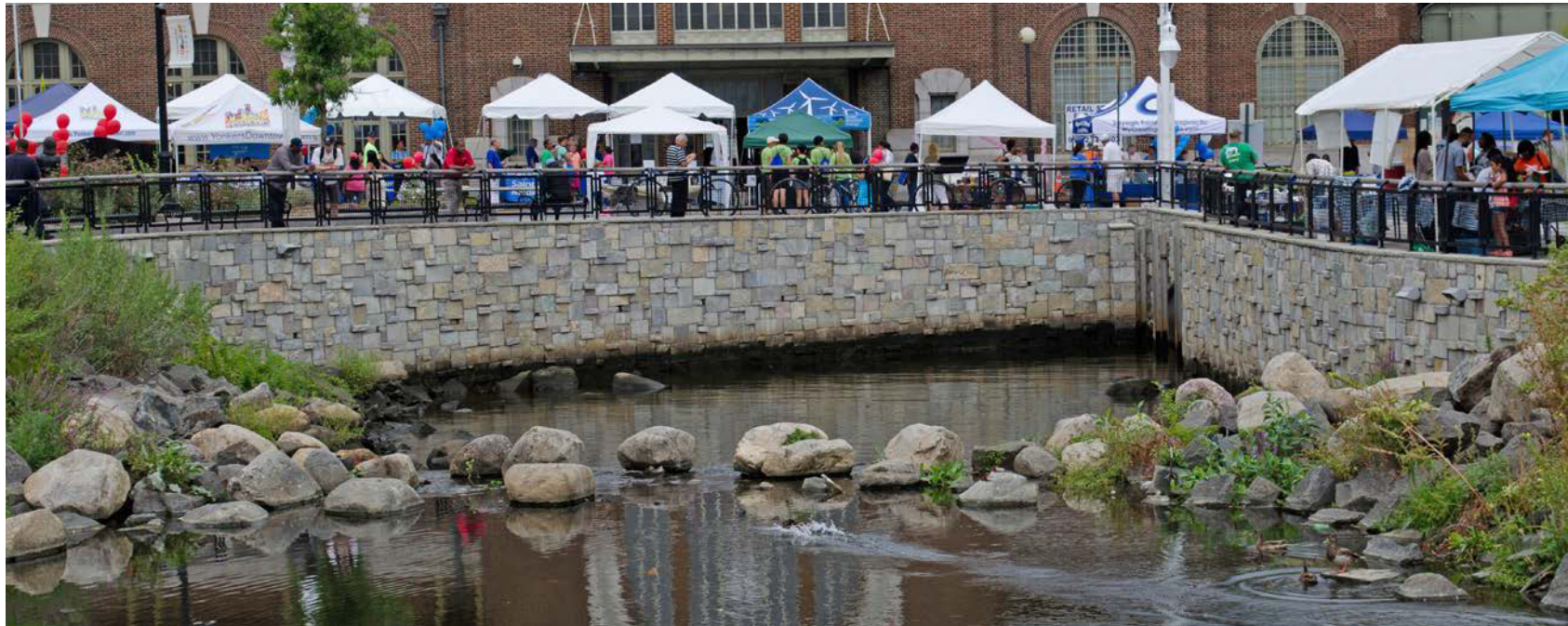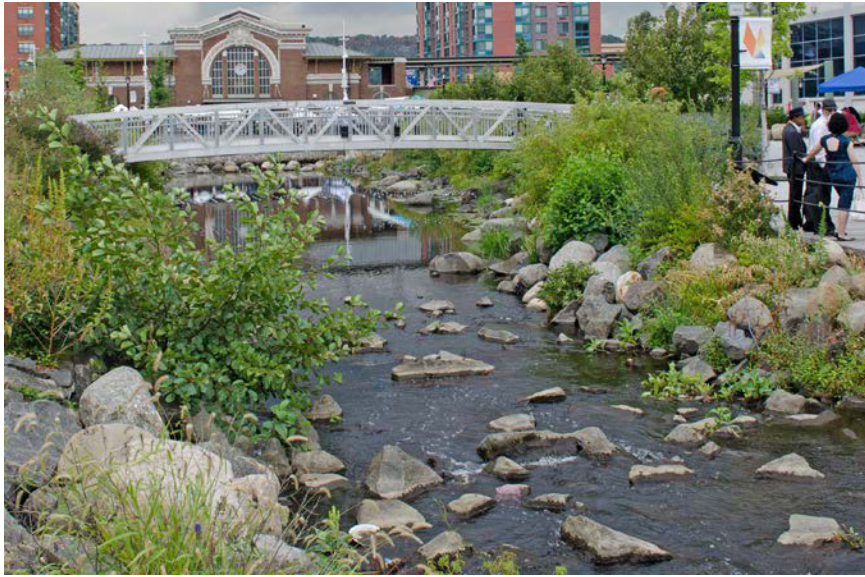## The Daylighting and Restoration of the Saw Mill River

The Saw Mill River is a tributary of the Hudson River, part of which flows through Yonkers, a city that directly borders the Bronx, just north of Manhattan. As with Yonkers, the history of cities has much to do with how flowing waters are controlled. Inside most urban environments, the current approach is to bury the smaller natural water network believing that is the best way to manage it as a potential hazard. The result is that this network is a ghost in the lives of most city people even though it is what makes life possible. That's why the daylighting of streams and creeks—their release from underground pipes and culverts to the surface—should be viewed as realistic opportunities especially when underground channels need replacement or repair.

In December 2010, Yonkers completed its first daylighting phase of the Saw Mill River by resurfacing it from underneath a parking lot in its downtown district. Daylighting strives to recreate natural stream ecology, usually with historic hydrologic conditions, that are joined, with native vegetation, to adjacent riparian corridors and habitat.

As part of its overall design, the daylighting includes, along with the stream restoration, the creation of aquatic habitat for migratory fish. In this case, American eel, white perch, and herring, which passage through rock structures called "riffles" and fish ladders.

Daylighting is a fine example of a Green City project. It combines the restoration of natural landscapes and habitat conservation areas with a green infrastructure program that can help with stormwater run-off and the improvement of water quality. The neighborhood becomes a more beautiful place to live and work benefiting nearby businesses (while generating jobs, especially for the lucky ones who tend to the maintenance of the daylighted river). From the essential perspective of living-in-place, daylighting can help foster the elementary association with, and sanctification of, the hydrological cycle as an everyday experience.

The Daylighting and Restoration of Padden Creek

Padden Creek meanders through a low-density suburban community in the Washington State city of Bellingham. Hidden from view in a tunnel, since the 1890's, more than a mile of upstream Padden Creek has sinec been daylighted and stream-beds and banks restored. This is good news for the Chinook and Coho (along with other of varieties of salmon and trout species) that migrate through the Creek. With restored habitat (that includes woody debris in clean and cool water with plenty of oxygen) salmon are rejuvenated along their far-flung travels.

The foundation of the creek restoration is largely based on native plantings with obvious benefits to the human community: water quality improves, flooding risks are reduced and, from a pedestrian bridge, there's a chance to see and ponder fish life.

Daylighting works to the advantage of watershed life in ways that are easily discernible. My basement doesn't flood any-more during long and strong rains. Families can gauge their vegetable growing and house repairs with the return of the salmon.

Beyond ones local purview, daylighting can contribute to biodiversity conservation at the bioregional scale. Healthy streams and riparian areas are a key element to what is often called a "core and corridor" conservation network. A valuable lesson from landscape ecology is the conservation value of large "core" areas of relatively undisturbed vegetated landscape that are connected by smaller patches of local nature and river or stream corridors. This is a trustworthy spatial arrangement that can guide the integration of local and bioregional efforts at biodiversity conservation.

The Daylighting and Restoration of Thornton Creek

The watershed area of Thornton Creek in Seattle (12 square miles) is the largest in the city.   An important section of the Creek was buried under the parking lot for the Northgate Mall and used for urban runoff. When a larger piece of the Mall area, including the parking lot, became available for redevelopment, years passed before the City, local activists and developers came to a hard earned consensus as to its overall design.

What makes the daylighting of this section of Thornton Creek unique? It is well integrated into the design of a higher density mixed use neighborhood and built for walking and public transportation and to LEED Silver standards.

Largely completed in 2009, the Creek restoration addresses the basics: in-stream and riparian habitat improvements while also helping to maintain water quality and control flooding.

As befitting a transit oriented project, there are pedestrian connections to the surrounding residences and stores as well as to a regional transit hub. These walking choices often take one along Thornton Creek where there are overlook areas, public art and educational signage.

Blurring the edges of traditional neighborhood design and alive nature, especially running water, conjures up, not only a healthier environment, but a more fully realized human community.

The Commons as Preserves of Natural Diversity

The impoverishment of the earth community, as habitats fracture and species vanish, makes the preservation of biodiversity imperative, in and of itself. From a reinhabitory perspective, addressing this tragedy can also become an opportunity for realizing a lasting vision: wild bioregional land patterns, with human settlements residing within them. This can be accomplished by commons that align climax sustainability and landscape restoration with the preservation of natural diversity. Undertaken by, who Aldo Leopold called, "plain citizens of the land". But where to start?

One answer can be found in the integration of two possibilities. The first rests on supplanting the single species method of conservation by the landscape approach which is more thorough at protecting natural systems. This accents the value of conservation biology that teaches the need for the expansion and connection of wild habitat. Landscape and restoration ecology point the way to spatial configurations that reconnect fragmented patterns of the land: core areas of high biodiversity joined by corridors of land and water.
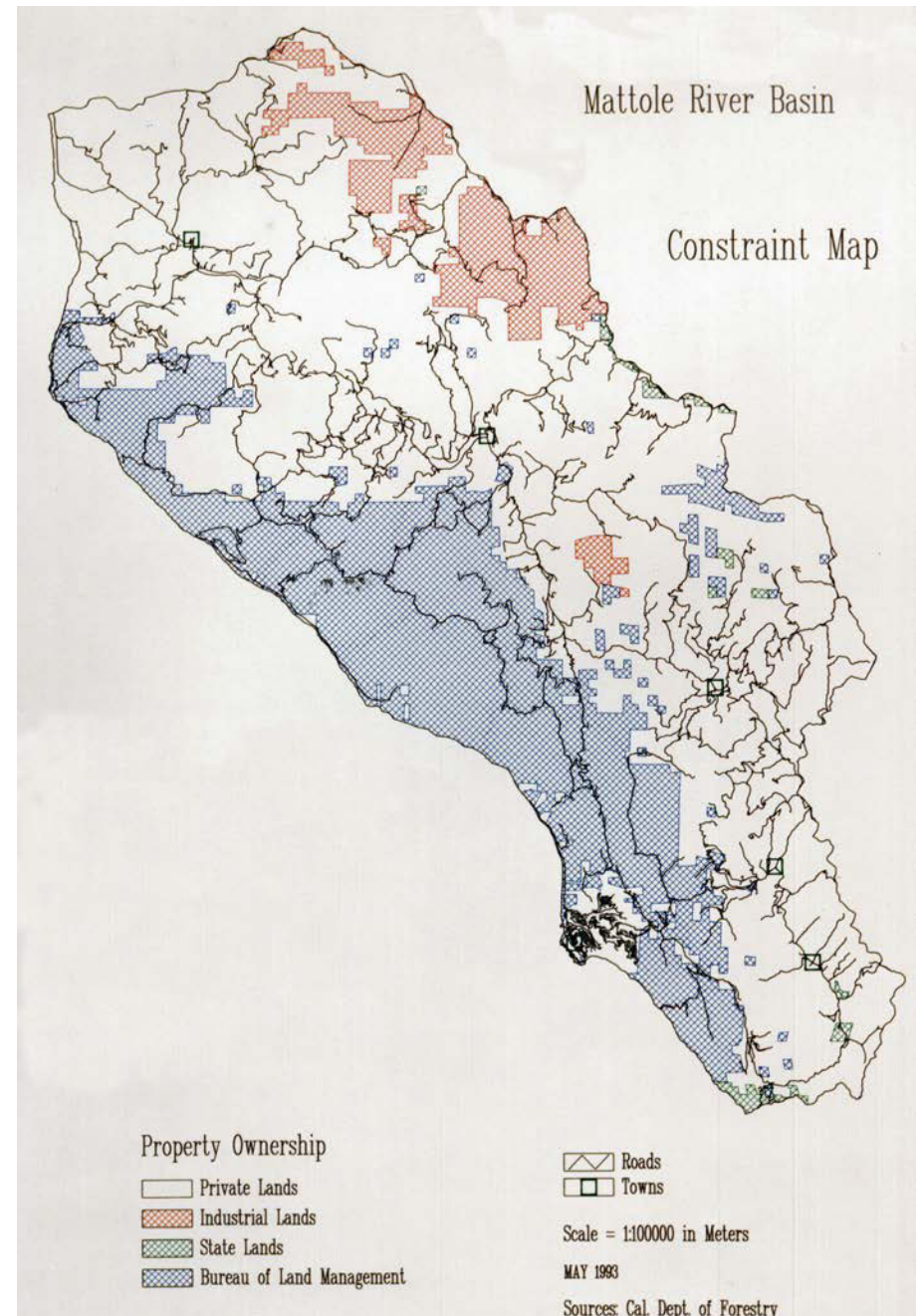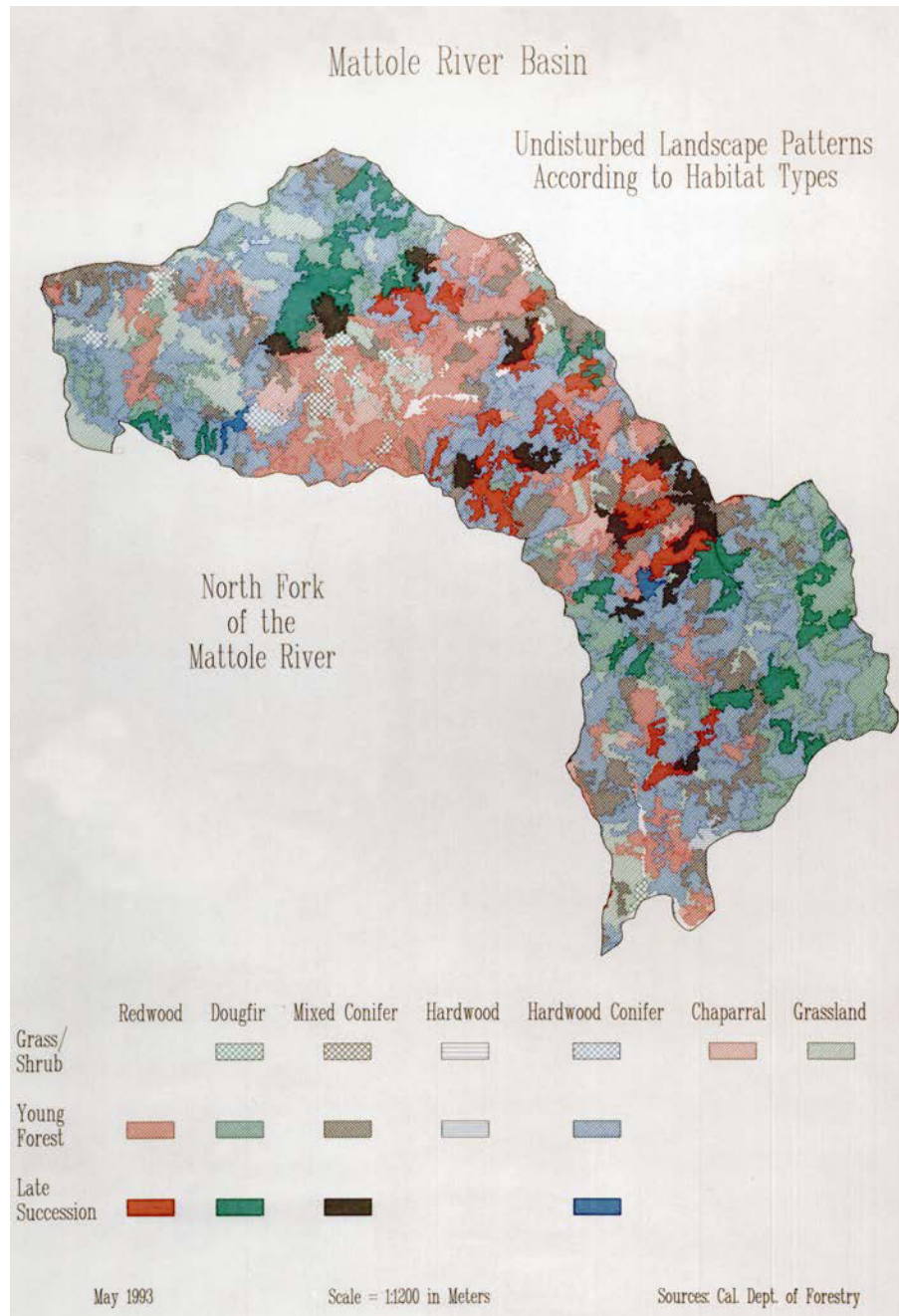
Cores and corridors of natural diversity need to be protected from the stresses of industrial development with buffer zones. Buffer zones can also provide the areas where a fuller understanding of restoration and climax sustainability can be discussed and tested (invigorated by proximity to robust ecological settings).
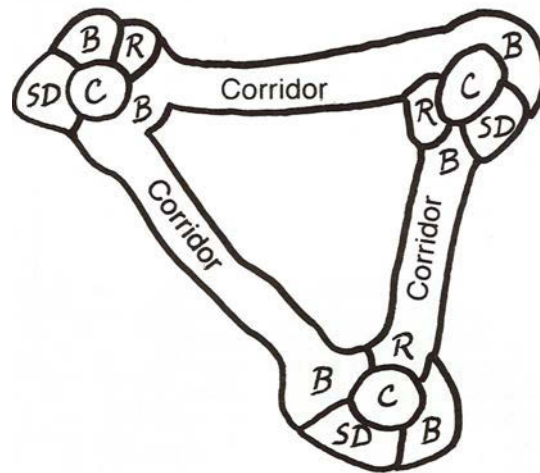
C = Core Area
B = Buffer Area
R = Restoration Demonstration Area
SD = Research into Climax Sustainability

The result? We begin to articulate a readily understandable framework for making landscapes more alive with biodiversity while marrying wildness to large and small human settlements.

The second possibility is map-making as place-building. As our native landscapes have become more fragmented, so have our perceptions of them. Maps can be a tool and talisman for remembering as we relocate ourselves in our natural surroundings.   We can also use maps to the tell the story of bioregions reinvigorated by commons of natural diversity. For time immemorial, maps have been used to chart new directions across known and mysterious terrains. Map-making can

Mattole River Basin

Undisturbed Landscape Patterns
According to Habitat Types

North Fork
of the
Mattole River

	Redwood	Dougfir	Mixed Conifer	Hardwood	Hardwood Conifer	Chaparral	Grassland
Grass/Shrub							
Young Forest							
Late Succession							

May 1993

Scale = 1:1200 in Meters

Sources: Cal. Dept. of Forestry

Mattole River Basin

Constraint Map

Property Ownership

Private Lands
Industrial Lands
State Lands
Bureau of Land Management

Roads
Towns

Scale = 1:100000 in Meters

MAY 1993

Sources: Cal. Dept. of Forestry

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make visible core and corridor preserves of biodiversity, reanimating native landscape patterns that have become abstractions to many.

In the Mattole River Valley, maps were used to help design a core and corridor biodiversity preserve. The major goals of the preserve (drawn from the Wildlands Project of the Cenozoic Society) were to: represent native ecosystems (and their early to late successional stages); maintain populations of native species; and maintain ecological interactions (whether they be between species or changes in ecosystems—for example, natural succession and fire).
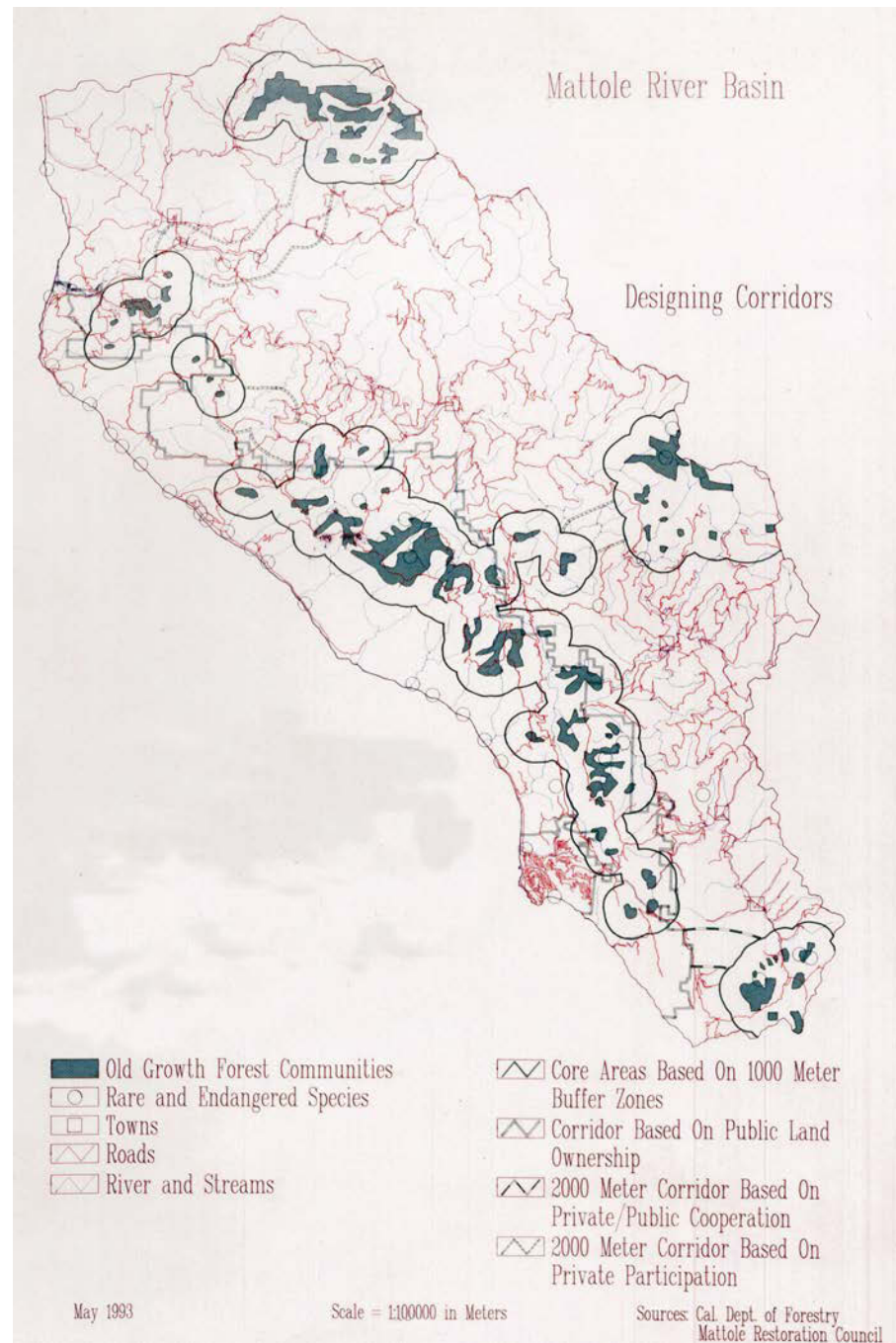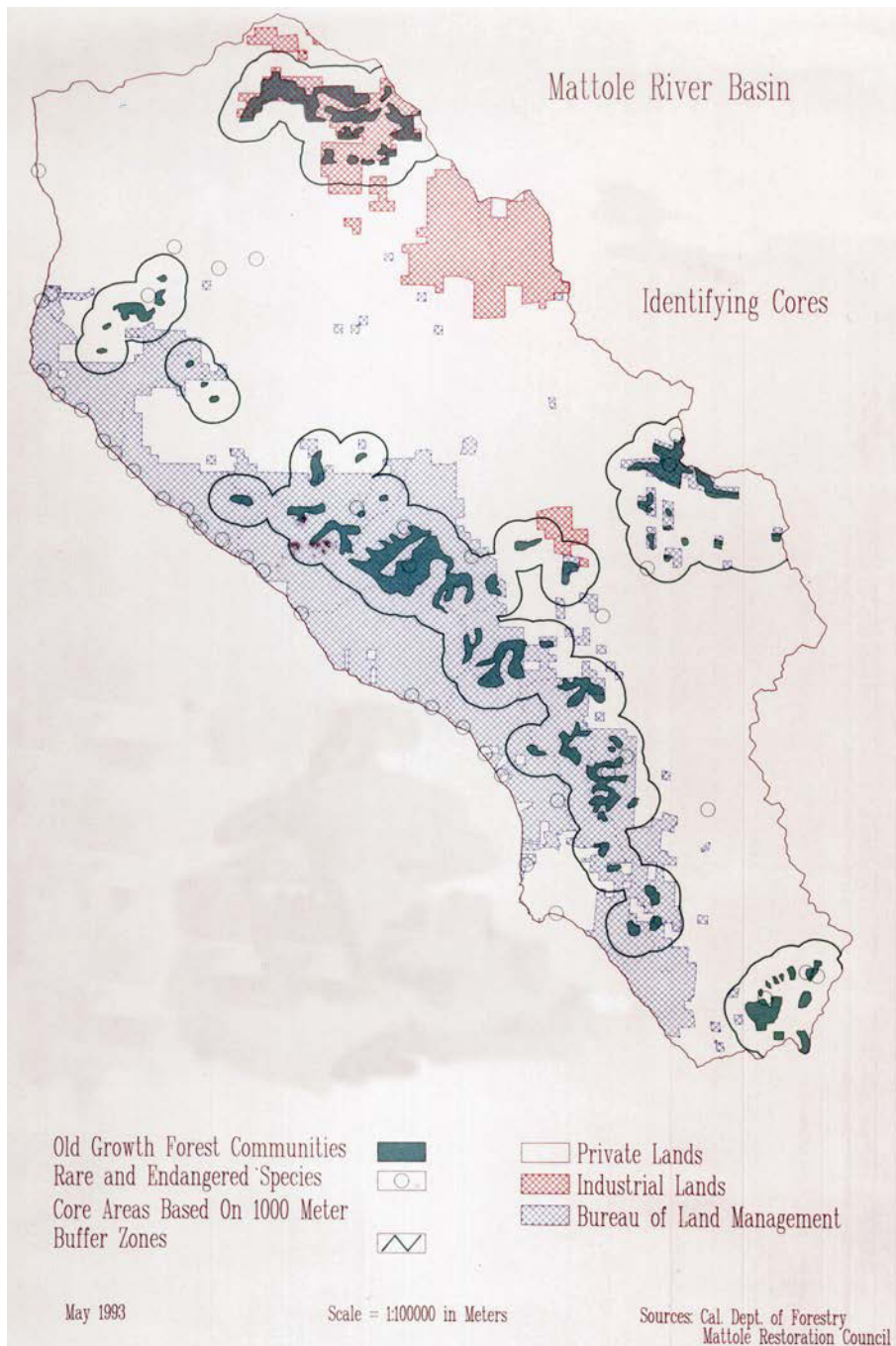
The maps presented here are for an early and preliminary design. They were chosen because they illustrate the straight-forward and trustworthy steps that go into this style of grassroots planning effort. First, you create the context of natural and built landscape features that the preserve design will need to make sense of. *Undisturbed Landscape Patterns* offers guidance as to the total acreage and shape of the preserve system at an appropriate scale of native landscape mosaics. A *Constraint Map* shows key aspects of the existing landscape (for example, human settlements, roadless areas and property ownership) and is especially important to corridor locations.

Identifying Cores shows the larger centers of remaining regional biodiversity, as late successional communities (in this case, old growth forest) and rare and endangered species, and the buffer zones to protect them.

Often, after buffering, the initial outline of the core and corridor network becomes more visible because of the proximity of buffered areas to each other. In *Designing Corridors*, we see how core areas are connected while considering the habitats of rare and endangered species, intact patches of native landscapes (or corridor nodes), riparian linkages and roadless areas.

With this first outline of preserve design, a refinement process can begin. Any inaccuracies, omissions and other mistakes can be corrected based on local knowledge of watershed conditions. This creates a foundation of mutually understood and respected information necessary for community planning. Also, the size and shape of core and corridor boundaries can be changed to include choices and experiences of community members. For example, detailed land use and ownership maps can be overlaid on to the core and corridor design. This can reveal landowners who are predisposed to accepting the ecological roles that corridors play in biodiversity planning—all key elements of the core and corridor design process.

Reinhabitants can translate a wild place-identity into cores and corridors where native ecosystems thrive; research into how climax sustainability can integrate natural succession and human needs; and restoration areas where methods to renew damaged landscapes are better understood and demonstrated. The result? A practical vision for preserving biodiversity while guiding living-in-place know-how.

Mattole River Basin

Identifying Cores

Old Growth Forest Communities
Rare and Endangered Species
Core Areas Based On 1000 Meter
Buffer Zones

Private Lands
Industrial Lands
Bureau of Land Management

May 1993   Scale = 1:100000 in Meters   Sources: Cal. Dept. of Forestry
Mattole Restoration Council

Mattole River Basin

Designing Corridors

Old Growth Forest Communities
Rare and Endangered Species
Towns
Roads
River and Streams

Core Areas Based On 1000 Meter
Buffer Zones
Corridor Based On Public Land
Ownership
2000 Meter Corridor Based On
Private/Public Cooperation
2000 Meter Corridor Based On
Private Participation

May 1993   Scale = 1:100000 in Meters   Sources: Cal. Dept. of Forestry
Mattole Restoration Council

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Climax Sustainability

Brownfield Restoration and Sewage Treatment in Arcata, Northern California

The City of Arcata's approach to sewage treatment straddles the worlds of landscape restoration and urban climax sustainability. Derelict and abandoned areas near Humboldt Bay were restored to a number of secondary waste treatment wetlands and water quality enhancement marshes.

After primary waste treatment, wastes are routed through the wetlands and marshes further cleansing them before entering Humboldt Bay. The wetlands and marshes, while providing additional sewage treatment, also create wildlife habitats and walking trails (appropriately named the Arcata Marsh and Wildlife Sanctuary).

Construction of the entire project was substantially completed in 1986. Refinements continue though, based on experience, as to the better design of the ecological side of the waste treatment process. This learning process, now taking place over decades, guides a holistic approach to meeting Arcata's basic need for water treatment. Why not include landscape restoration and habitat conservation directly into our thinking about infrastructure building and repair? Especially when it turns out to be more energy efficient and fiscally prudent while encouraging placed-based associations with the natural surround.

Interestingly enough, the lines dividing the physical Arcata Wastewater Treatment Plant and the biological Arcata Marsh and Wildlife Sanctuary are fading, yielding not only clean water but a design process that integrates the human with the ecological in practical terms.

Green Infrastructure: Swales on Yale Street

Green infrastructure has become a viable alternative to conventional hard infrastructure stormwater management. It accomplishes this with a basic premise: imitate local hydrology and aquatic ecosystems rather than reordering them. How? By employing an equally elementary and trustworthy approach: reduce paved over areas and then allow rainwater to enter soils slowly, as it normally would.

Seattle Public Utilities is investing in green infrastructure to increase the overall health of Lake Union, and, downstream, to Puget Sound by reducing the many pollutants that enter them via stormwater (the usual suspects range from motor oil to pesticides to heavy metals).

Their attention is on the Capitol Hill neighborhood in Seattle where yearly, not thousands but, millions of gallons of stormwater collect and then travel off the impervious surfaces of sidewalks and streets into Lake Union. Seattle Public Utilities will be putting to good use a time tested and trustworthy low-impact development approach called a biofilitration swale. The Capital Hill design calls for vegetated swales which are about 270 feet long and 13 feet wide. They will slow down run-off from the impervious surfaces so pollutants can settle out rather than be carried to Lake Union.

What separates this effort from others like it is its scale. This is a neighborhood wide effort that acts upon the stormwater from about 435 acres of Capitol Hill streets and sidewalks.

Green Infrastructure: Ballard Corners Park

Green infrastructure is a suite of ecologically grounded landscape choices that address stormwater management. It is also often used to describe an interconnected open space system, from the local to the bioregional, which includes parks, urban forests and public and private green spaces laced together with vegetated and riparian corridors. The benefits of this "core and corridor" approach to open space planning extend to the entire life community: biodiversity conservation; flood hazard reduction; cleaner water and air and peace and quiet.

Local neighborhood parks can help with stormwater management while adding to the vitality of bioregional open space networks. Ballard Corners Park, in Seattle, demonstrates how well this double service is performed.

A street side green space illustrates this. It serves as a "rain garden" (more formally known as a bio-retention area) which slows down storm water so it can be soil filtered and cleansed before entering underlying groundwater. The improvement to local water quality has a same radiating effect to the watershed and bioregion: in this case to Salmon Bay and Puget Sound.

The rain garden also softens the roadway activity and noise so the interior Park area is more quiet and private. Children can play without being distracted by traffic. Native plants and fruit and nut trees can better thrive and community gardens have an appropriate setting for their cultivation.
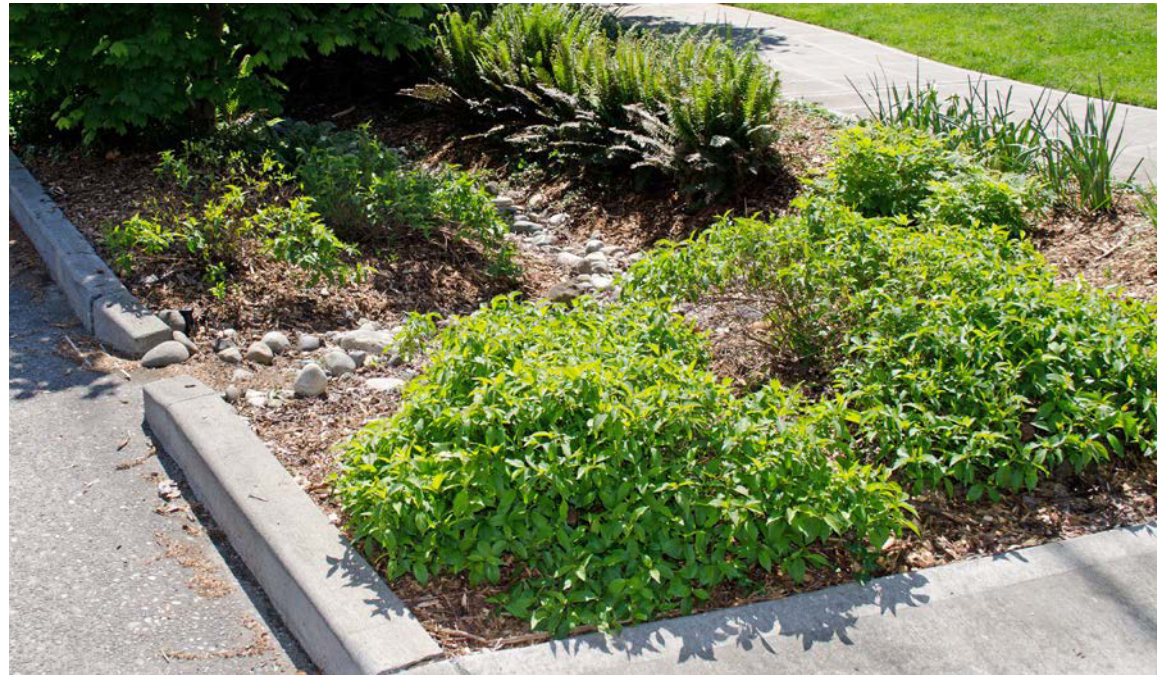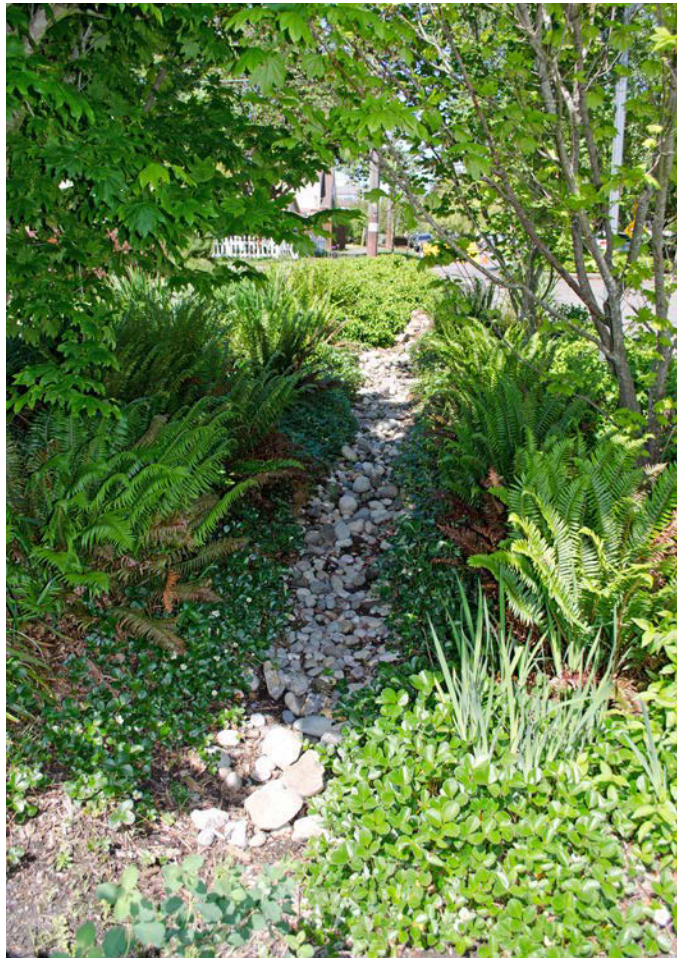
Green Infrastructure: Belltown's Vine Street

Public street art can also serve as green infrastructure. That is the promise of the visionary work of "Growing Vine Street", the name of an art project and neighborhood organization in Seattle, Washington.

Vine Street neighbors describe their work in the following way:

> The goal from the earliest time has been to turn the entire length of Vine Street into a street park—a parade of art and nature.

> One of the principal design features of the Growing Vine Street project involves capturing the local runoff and allowing the water to follow the course of the natural watershed. Since urban runoff contains a variety of pollutants, some filtering is mandatory before this water is released into local streams, rivers, lakes, and bays. Growing Vine Street proposes to treat stormwater through biofiltration, the science of filtering water-borne pollutants with plants and other organisms. Growing Vine Street thus becomes a test project for urban neighborhoods, demonstrating the double benefit of reclaiming problem storm runoff while also creating a desirable, living green space.

Some principles that guide the Vine Street design process:

- Nature should serve as an analogy.
- The green street is a laboratory for urban rejuvenation.
- Green streets are not just green in color. They are green politically, ecologically, and socially.
- The green street is an environmental model for bringing our neighborhood into balance with ecological concerns.
- It provides a laboratory that explores the dynamic tension between natural and man-made elements, creating a mix and experimenting with a seamless blending of the two.
- Gives open space and green space priority over parking.
- Contrast with the built environment by creating as many opportunities for greenery as possible and minimizing paving and hardscape.
- Find ways to embrace our weather: When it rains, it pours, it spins, it spits, it gets mossy. Embrace storm water by integrating it into the landscape in an ecological useful manner (i.e., biofiltration, irrigation for gardening, and landscaping).
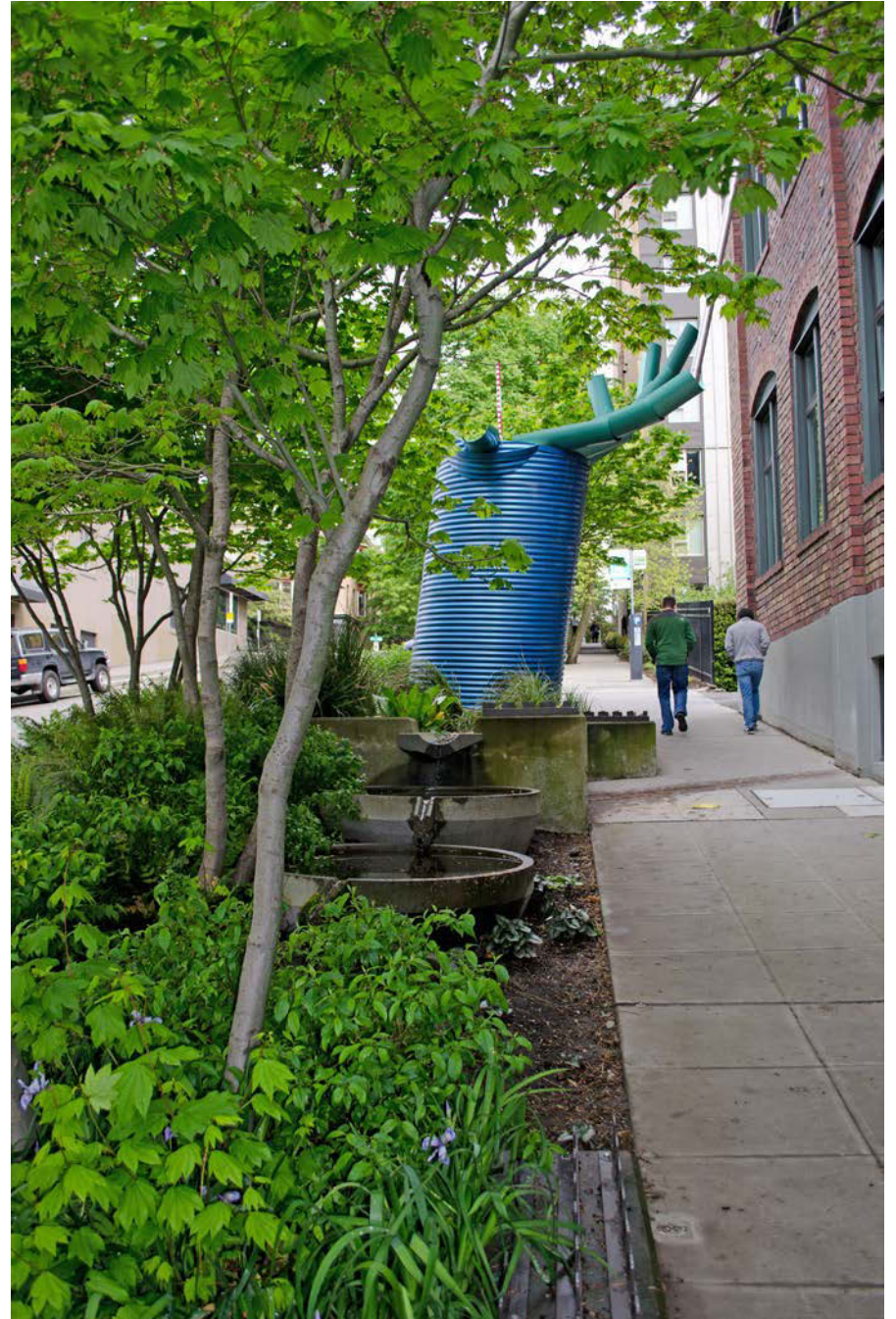
Bioregional Utilities for the Generation of Electricity

Historically, the logic of growth employed by most utility companies has resulted in remote, large-scale, capital intensive electrical generation coupled to large service districts. The natural resource base of many communities has been and continues to be taxed, if not destroyed, by the exporting of "fuels" to distant locations and the importing of toxic by-products that result from the energy conversion processes. Coal mining, hydraulic fracturing and nuclear power are the clearest examples.

This industrial mode for supplying power, with its technological and financial capabilities is reinforced, socially, due to the public perception of utility companies as the only organizations capable of supplying energy at present levels. The availability of electricity has created a pattern of energy use and waste indicative of a people that consumes heavily without regard to long-term effects and flexibility.
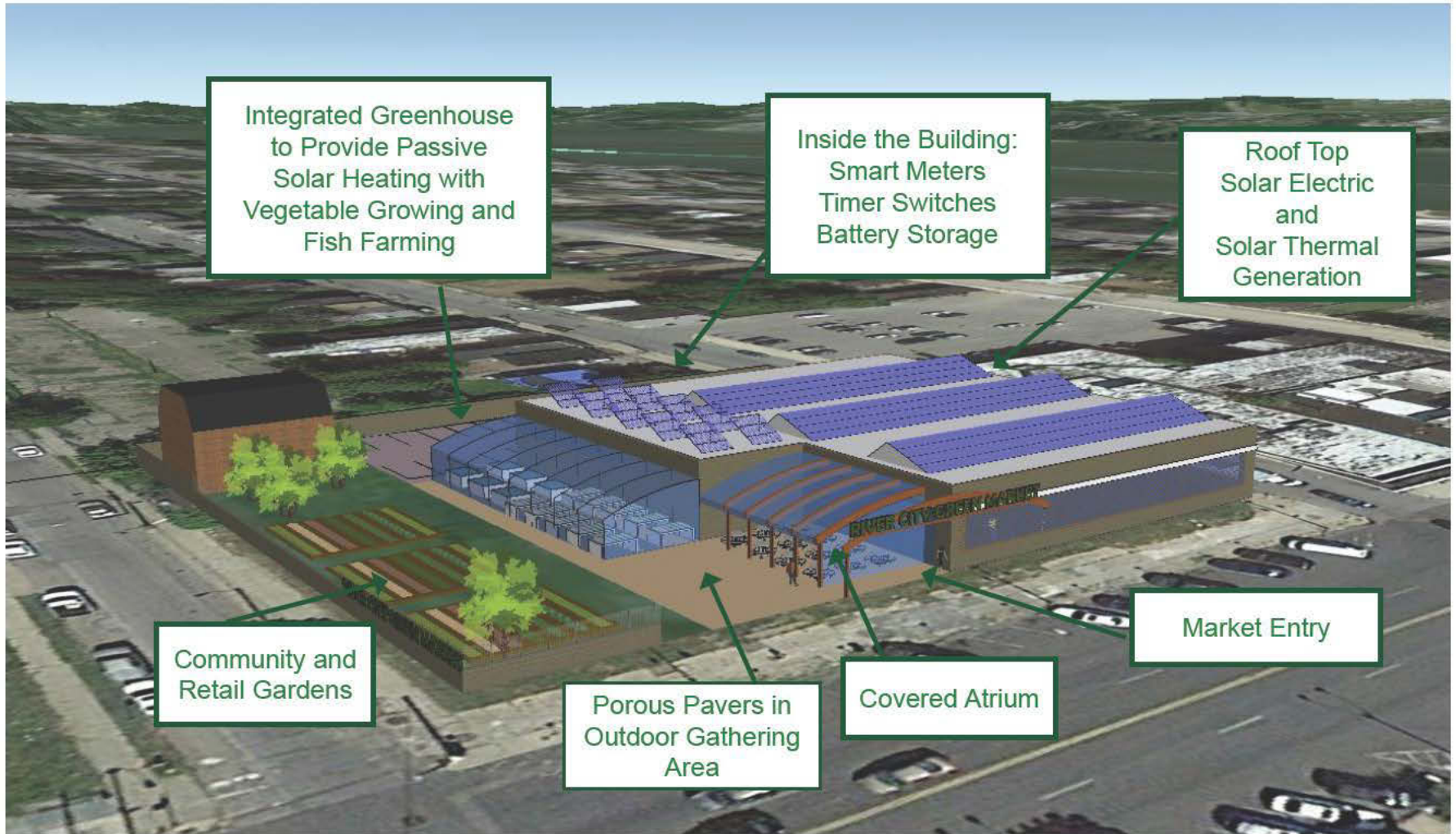
Contrast this with the possibilities of a bioregional utility: an organization responsible for supplying power for necessary sevices while maintaining the bioregion through a soft and distributed supply system embodied in reinhabitory practices. Scaled to local ecosystems and direct observation and reaction by local inhabitants, a bioregional utility is the attempt to satisfy certain basic human requirements, lighting and refrigeration for example, while safeguarding the health of local watersheds and their populations in the delivery of services to the human community.

A new social contract is needed between communities and suppliers and managers of energy. Under the current contract, public utilities are assured a rate of profit in return for a guaranteed level of service. Implicit to this understanding and institutional arrangement is the acceptance of the marketplace as the mediator between consumer and supplier.

A shift is necessary from the present agreement to one involving a bioregional utility, on one hand, and many generators and consumers of electricity, on the other. As the caretaker of the wider community, the bioregional utility would attempt to balance human service requirements with the well-being of the life-place. This shift does not mean that the important questions of cost effectiveness are ignored or forgotten. Rather, they are understood within a different context: bioregional worth supplanting marketplace priorities.

Examples of the practical effects of this institutional change could be tying the scale of the utility to watershed condtions—for example, Smart Buildings and Microgrids designed for neighborhoods or villages—and in redefining the role of the utility company within the community. No longer a simple generator and distributor, the utility would now assume the important social responsibility for an energy efficient and reliable network linking a large number of decentralized power producers to a large number of consumers.

The Green Market as Smart Building

Integrated Greenhouse to Provide Passive Solar Heating with Vegetable Growing and Fish Farming

Inside the Building: Smart Meters Timer Switches Battery Storage

Roof Top Solar Electric and Solar Thermal Generation

Community and Retail Gardens

Porous Pavers in Outdoor Gathering Area

Covered Atrium

Market Entry

The Green Market can be a standalone public market that provides a building and home for small farms, farm to table operations and related cottage industries including regional artisans to sell their wares with an emphasis on offering and celebrating nutritious food.

Complementing the essential community roles of the public market, it can also be designed and built as a Smart Building.

A Smart Building can be understood as a distributed renewable energy system that is designed to conserve, best use and generate electricity and can be a home, commercial or industrial building. Smart Buildings, when taken together, can be the foundation for a local MicroGrid that benefits the owners and wider community.

What, then, would be some essential goals of the bioregional utility?

- Community prosperity with a low energy focus that complements local ecosystems and the bioregion.
- To decrease or minimize extra-regional energy imports.
- To support local inhabitants in the supply of electricity to the general community.
- An appropriate technology approach to the choices of electrical supply and infrastructure.

Changing the existing situation will mean the elaboration of strategies so the design and delivery of electricity becomes interwoven with energy democracy: the decentralized conditions that allow the alignment of power generation with smaller scale generation and local ownership.

This essential possibility is already underway. Homes, designed to be convivial and energy conserving, can also become (along with commercial and industrial buildings) small-scaled power plants contributing, with other neighbors, to satisfying community-wide electrical needs (with technologies like photovoltaic systems and battery storage).

Efforts at the neighborhood or village scale translate into shared community generation facilities like solar farms. Simple and proven approaches to supporting energy democracy extend from sensible financing choices, for installing renewable sources of energy, to simplifying the steps for solar energy related building permits.

Underlying these diverse activities is a common intention: replace blind consumption of electricity with the inclusion of power generation and electrical use as reinhabitory practices.

Whether a bioregional utility exists as an organization or an ensemble of activities and institutional niches, it will eliminate the present diseconomies of scale which are in the self-interest of the investor-owned utility's rate of profit. They will be replaced by the benefits which are in the interest of a bioregional utility: preservation of a life-place; support for reinhabitation; a power delivery system which is anchored in solar income and reliable service; and amenable to various pathways for inventive undertakings.

A Green City MicroGrid

Smart Microgrids, like centralized grids, generate and distribute electricity but do so at a more local level. As an alternative to centralized fossil fuel based electricity generation, Smart Microgrids can enable the use and integration of renewable energy with a simplified connection and management process.

Localization can encourage communities to more consciously define their energy needs and goals (for example, reliability and carbon emission reduction) and builds upon a diversification of distributed energy sources and conservation while shifting control to the community. An example of this would be a smaller municipality or larger neighborhood operating its own Smart Microgrid to encourage the use of renewable sources of energy.

The "Small is Beautiful" Benefits of Green City Microgrids:

- Creates livelihoods and keeps money circulating in the community.
- Reduces air pollution that damages human health and the global climate.
- Smaller projects are easier to plan for and finance and less complicated to build.
- Dramatically reduces costs of upgrading electrical infrastructure while lowering transmission and distribution costs.
- Reliability and management improves by having the grid segmented into smaller microgrids.

Bioclimatic Housing Design

Most individuals, within industrial society, are generally viewed as energy consumers and understand their relationship to energy usage through the payment of bills. A reinhabitory relationship to energy, on the other hand, would involve individuals just as thoroughly but from a radically different perspective. Each person could become a participant in energy production and use forming links to both the social community and the natural community of which it is part. No one owns a bioregion, in the sense of property, but everyone has a personal stake in its well-being. There are clear indications that people are moving in this direction, not only by installing solar electric systems, but also matching housing designs to microclimates with passive solar energy applications (often combined, in ingenious ways, with heat and food producing sunspaces).

Every bioregion has its unique blend of sunlight, wind and biomass to meet the requirements of space and hot water heating and can be understood as its solar income. Applying solar income to meeting these needs, though, is different than engineering renewable sources of energy to replace fossil fuels. The genius loci of solar income is well expressed in the "Bioclimatic" approach to design. The underlying assumptions to bioclimatic design are fundamental but often ignored by design professionals (who are more focused on their signature buildings). It begins with the primary human adaptation to climate, the most elementary condition of a place, and is found, after food, in its housing forms and materials. Vernacular housing intelligence not only kept families warm but made use of local materials in simple, ingenious and beautiful structures. In the northeast, Native Americans built and sited "Long Houses", which exhibit the housing shape and east–west orientation most appropriate to energy conservation and solar gain. The same intelligence can be found in houses built by the early American settlers. The Saltbox, with its short northern wall and roof line, deflected wind and lowered heat loss while opening up to southern solar gain.

A design of a bioclimatic building engages the energy cycles around it. Heating, cooling and ventilation complements the sun's movement through the day and seasons while considering exposure to wind and weather. Bioclimatic buildings are allied with natural succession because human uses and technologies yield net energy flows from low-energy sources.

Construction would be of local materials and affordable. Bioclimatic buildings encourage integration of alive spaces into it—food producing greenhouses, for example. Equipment choices would be sorted out according to embodied and life-cycle costs, not just by purchase price. Important functions of bioclimatic design, such as waste removal, are tied to the regenerative patterns and specifics of the micro-environment and local ecologies. By integrating native and traditional housing forms, bioclimatic dwellings can be a bridge to and an enactment of a reinhabitory culture.

New Mexico Solar Energy Association
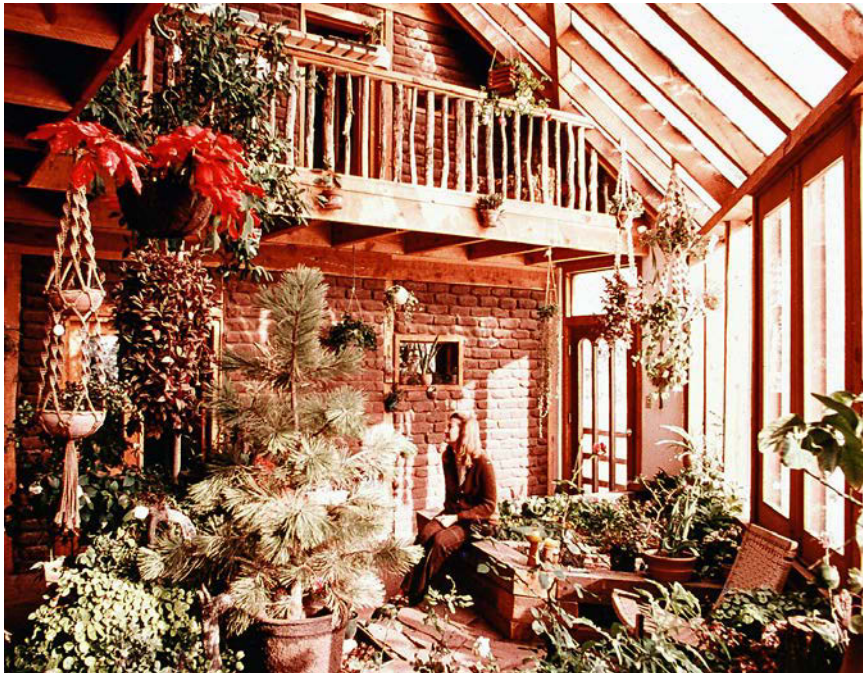
New Mexico Solar Energy Association

How does this pole frame house embody bioclimatic design and intent?

Site location and the shape of the house are conservation measures themselves, allowing the northern winds to pass over the roof rather than buffet it. A strong southern orientation invites sunlight into its interior. Advances in pole frame construction assure a structurally sound building while providing deep roof, floor and wall recesses framed out with local green 1x lumber. This simultaneously allows for high insulation values and timber conservation. Heating is a combination of conservation efforts, direct gain sunlight through the windows, a solar greenhouse (with thermal mass) and a centrally located masonry woodstove. The greenhouse provides the setting in which to grow food while collecting and radiating heat to the interior of the house. A site built solar domestic hot water heating system is incorporated into the roof of the greenhouse and a low-cost windmill helps with electrical generation.   A septic tank system, with water conserving fixtures, handles wastes. Plumbing is back-to-back to conserve materials and hot water. Appliances are energy efficient.

This pole frame house recalls the lines and relaxed formalness of the Long House and Salt Box and suggests that human acts can connect earth and sky through construction, habitation and aging.

The Eros of Cities

How can we breathe street life into urban design so city ways remain hospitable, tender and grounded in everyday basics and not in the sanitized spaces built for recreational buying? Innovative acts of imagination to realize urban living-in-place—the marriage of vibrant neighborhood life and bioregional ecology—can be called the "Eros of Cities". Eros is most familiar as the ancient Greek god of love but its more modern phrasing can be as an underlying instinct towards life with aspirations for preservation and union (and a hedge against envy and domination). The culture enhancing Eros reinvigorates community well-being (with its connotations of intimacy) by affirming commitments to neighborliness, real places and the felt specifics of bioregions. And how their fates are interlocked.

Neighborhoods are the basic social experience and physical building block. Let's put them back in the center of city life and allow Eros to speak in myriad ways as cradle of culture and human drama. Alive neighborhoods do not happen by chance or accident. They result from the accumulated social and design wisdom, of distinct cultures, over long periods of time, ever evolving and refining itself into local knowledge. Shared local knowledge, by its nature time-tested and practical, allows for the maturation and protection of neighborhoods knowing that collective effort will result in a coherent and organic whole. This is the foundation for urban restoration and climax sustainability.

Eros understands that those who build cities should be city lovers. How could it be otherwise? What opens up when city builders are guided by the Eros of Cities and not narcissism and greed? That's the space that Lewis Mumford was trying to fill when he talked about how ecological thinking could influence architecture and planning to reinforce balance and wholeness in cities and their ties to bioregions. Ecological thinking is not only about our place in the natural world. As importantly, it is locating community decision-making in the complex of reinhabitory and biological interrelationships that is its appropriate context.

While Mumford never really specifically defines organic planning as an orderly methodology, the results he is looking for are: the cultural diversity and vitality of the city combined with the best of what we associate with village life—social intimacy, stability, and mutual aid.

Mumford would be on the side of many contemporary practitioners of Smart Growth and Transit Oriented Development (TOD). This is especially so when the emphasis is on local and regional alternatives to car dependent development. Let's try to put ourselves in Mumford's shoes and be presumptuous enough to offer an example of what could embody his intentions.

We are living in the beginning years of global warming and extreme weather. The shift away from the fossil fuel based generation of electricity is imperative. As climate change looms, most would agree that the energy infrastructure of a city is its most important one: the unavailability of electricity, over time, erodes all other aspects of city living.

An energy infrastructure that is reliable, resilient and responsive to change is necessary for services we, too often, take for granted—clean water is a good example. An ecologically sound infrastructure, though, does make not city living the life affirming experience it can be. That comes from day-to-day interactions—whether on the street, with friends, at work or through the arts—which need to be supported in as many social and creative ways as possible.

How can we align Eros based neighborhood and ecological commitments that furthers urban sustainability? One practical alternative is to integrate Smart Growth, TOD and Smart Microgrids.

Over the last twenty-five years, Smart Growth and TOD planning have gained proven currency in building strong local economies, neighborhoods and towns. They have done so by establishing compact traditional mixed use neighborhoods and alternatives to car driving. Key are pedestrian friendly streets, public spaces and businesses (where locals can shop close to home while bumping into their neighbors), public transport (connecting to local and regional destinations), and a livable density of housing types and costs (encouraging a community with different backgrounds and incomes).

Smart Microgrids originated with engineers who foresaw applying information and communication technologies to the improved management and reliability of the local electrical grid. This possibility soon opened up other, more important, ones including the safe integration of distributed and renewable energy resources into the traditional centralized grid (for example, household PV systems, green buildings and nearby solar and wind farms).

Smart Microgrids also allow for how local electrical generation can serve community defined needs and goals (especially for a lower carbon footprint) while building upon a large array of energy sources, energy storage and cost reductions. Urban villages can own and operate their own Smart Microgrid(s) anchoring energy democracy and self-sufficiency.

Smart Growth and Transit Oriented Development, on one hand, and Smart MicroGrids, on the other, are not usually spoken about together as complimentary partners. That they are reveals Eros at work, drawing sustenance from the cultural values of reinhabitation that invite all community members into the life-place for fuller lives.

Let's end with insights from two who were intimate with the Eros of Cities: Jane Jacobs when she observes that "The city has something to offer to everyone, since it is created by everyone." and "Designing a dream city is easy, rebuilding a living one takes imagination." And, as Lewis Mumford liked to say, "Life is better than utopia."

The alignment of human and bioregional purposes fosters a sense of being part of a larger whole that is socially enriching. Place-building helps embed local design and construction at the appropriate scales of neighborhood to bioregion.

Practical experience has provided landmarks to help navigate and design this unique terrain:

Safety for All: Buildings, streets, landscape features and good lighting create a safe and stable neighborhood.
Streets for People: A common space for enhanced social interaction and shared use.
Mixed Use: The practicalities of daily life are close by and elegantly integrated into streets and buildings.

Diversity: A range of housing types, densities, and price levels strengthen the civic bonds of community.
Neighborhood Wildness: Water features, plantings, and art evoke an understanding and respect for the wider natural community that makes city living possible.
Walkability and Transit Access: Getting around is safe and pedestrian friendly.
Green Infrastructure: A network of conservation areas integrates biodiversity conservation and a soft stormwater infrastructure.
Community Living Rooms: Comfortable public spaces and safe streets provide opportunities for social gatherings and watershed awareness.

Making a Living

Families make ends meet because of resourceful lifestyle choices and intelligent initiatives for themselves and those close to them. The present range for these choices, though, has grown narrower, especially in more industrialized societies. This has largely resulted from understanding prosperity as stemming from globalized development or, as a reaction to it, an economic nationalism (often with fascistic aspirations).

There are deeper choices for making a living and they come into focus once we step outside of the one-dimensionality of this disheartening competition. From this vantage point, a fundamental realization works itself to the surface: for the large majority of people, community well-being now rests with enhancing the prospects for self-reliance.

Self-reliance can be a starting point and goal for a robust local economy with environmental underpinnings. It is also a concrete alternative to globalization (that does not rest upon extreme nationalistic impulses for legitimacy). At the fore-front of this important movement are the Institute of Local Self-Reliance, the Next System Project, and the Democracy Collaborative.

But most often, alternatives still take the perquisites of growth and the market as their context. This choice undercuts their worth, either as cultural values or as practical undertakings. Is it possible to complement economic growth on one hand with social equality and environmental protection on the other? Are the technological and managerial requirements of growth-driven development compatible with building democratic community rules? Is it a realistic expectation that the premises of ecology can be integrated into the priorities of finance and technocracy?

The answer to the dangers of economic growth and industrial technologies is not sustainable development. Instead, it lies in relocating the proven goals of local green economies, from growth-based assumptions into their proper homes of no-growth and place-affirming values.

Building a strong local green economy is far better than what we have today and is well worth working towards. This is particularly true in addressing the root causes of unjust and feeble choices available to the "hidden America" crippled by penury. It is time, though, to begin to think outside the cultural assumptions of the market-driven Western economy, freeing the imagination and enlarging the possibilities that local and regional economies can aspire to.

Against intimidating odds, alternatives to Western economic models are on the rise. They share a clear-eyed understanding that there can be prosperity without growth by living well with less. Ecological *swaraj* (emanating from Gandhi's culture of self-rule, self-reliance, and moral authority) is one vivid example. Another is the Degrowth Movement from Europe with its emphasis on frugal abundance, direct democracy and a scaling back on energy and resource use.

Distribution day for shareholders at
the Huguenot Street Farm, a CSA.

Aligned with the goals of swaraj and degrowth is the bioregional practice of reinhabitation. What distinguishes reinhabitation are the soft boundaries of the bioregion as a discernible and knowable location and the associated cultural values of living-in-place. Together, they imbue concrete ecological meaning and community vitality into everyday decision-making.

Thomas Berry contends that the greatest environmental threat is the Western industrial economy. He has traced spiritual estrangement from the Earth implicit in the growth of modern technological culture. He writes: "Once we recognize that a change from a human-centered to an Earth-centered norm of reality and value is needed, we might ask how this is to be achieved and how it would function. We might begin by recognizing that the life community, the community of all living species, including the human, is the greater reality and the greater value. The primary concern of the human community must be the preservation and enhancement of this comprehensive community, even for the sake of its own survival."[11]

Bioregional self-reliance can help move us in this direction in palpable ways: by infusing the potentials of a subsistence economy with bioregional worth, and by embedding livelihoods and community sustenance in natural systems. Reinhabitation offers an ecologically wild and socially just regionalism, as terms of reference, to replace both globalization and economic nationalism.

As vernacular intelligence and climax sustainability are afforded the credibility they merit, so do the choices of restoring "human scale" as a foundation of a bioregional economy. The Next System Project recognizes the viability of "the small-scale, decentralized, ecologically-oriented sector of entrepreneurial individuals, small businesses, and households. These approaches also emphasize trading off consumption against increased free time and sociability, and are rooted in healthy, resilient local communities that can sustain high degrees of trust, reciprocity, and mutualism. This approach has a lineage going back to E. F. Schumacher's 1973 classic *Small is Beautiful* and connects with modern bioregional strategies." In Schumacher's words, the long-term effort is to practically maximize "local production from local resources for local use."

Schumacher is best known for his ideas about appropriate (or intermediate) technology that encourages nonviolence toward workers and natural systems. This vision advocates for tools and equipment and alternatives to development through the lens of small, simple, and capital-saving approaches.

Schumacher recognized, though, that making a living begins with the value of meaningful work, and the inherent, or intrinsic, value of meaningful work is the constructive effort at making needed things. It is crucial to personal and community prosperity and has three purposes: "to produce necessary and useful goods and services; to enable us to use and perfect our gifts and skills; and to serve and learn to collaborate with other people." As Albert Camus observed, "without work, all life goes rotten but when work is soulless, life stifles and dies."

Farm equipment that meet the needs of small scale organic farms is central to a bioregional food supply. This can take the shape of downsized refurbished tractors that help with everyday concerns (weeding, for example). The trial and error process of "reinventing" farm equipment, sometimes frustrating, can yield living-in-place know-how and dependable appropriate technology.

When we think of an Etiquette of Necessity, and its translation into an alternative economic culture, it can be expressed rather simply along two complementary fronts: the moral choice of cooperation in meeting basic needs and supplanting narcissistic individualism and consumerism with neighborliness and self-restraint. Reinhabitation adds another vital dimension to meaningful work by grounding it in the protection and renewal of life-places. Taken together, this translates into dignified and responsible livelihoods. It achieves the goals of the local green economy but goes beyond them by actively articulating and pursuing commitments to the Earth community.

How can we give voice to everyday sensibilities, that respect the value of meaningful work, while solidifying the connection between making a living and reinhabitation?

Alexander Langlands, an inventive archaeologist, wants to recover the importance and satisfactions of *craefting* for community sustenance and emotional well-being. He chooses this spelling, rather than craft or crafting, to separate it from the handmade luxury items made for the well-off (for example, fine and expensive jewelry or ceramics) or what is sold at large retail chains for the hobbyist (such as Michaels).

Craefting, while resting on certain physical skills, surpasses them with a refined sense of "wisdom" and "resourcefulness" open to everyone. Apart from "arts and crafts," this sensibility is essential to the everyday requirements of drawing nourishment from what is offered by immediate natural surroundings. Organic gardening and farming and house building are pivotal examples of craefting, but craefting also encompasses activities as varied as beekeeping and road building: ways of provision emergent from and carefully integrated into what is readily at hand. Craefting is best taught by engaging the activity itself. Craefting and local context are inseparable and together offer mental skills not dependent on the industrial, digital complexity and carbon-based power.

Craefting shares much with practical knowledge (as written about by James Scott). Practical knowledge is concrete, embedded in shared experience and grounded in local ecosystems. It is adaptive and includes a wide range of skills and inherited intelligence that is responsive to ever-changing human and environmental conditions. Its underlying value rests on knowing the time and place that practical knowledge can best be applied. This contrasts with the more general and administrative knowledge utilized by the state and its technical extensions (often for the displacement of practical knowledge or social control). The worth of practical knowledge lies in its acknowledged local use and value and how successful it is helping with everyday essentials: preparing a nutritious meal, curing common ailments, or building a sound foundation for a home.

Craefting and practical knowledge, when understood and shared across a community, become common sense anchored by right proportions. From a bioregional perspective, the attributes and benefits of practical knowledge and craefting can combine into living-in-place know-how. The tools that complement living-in-place know-how can be understood as appropriate technology and, together, can get meaningful work done.
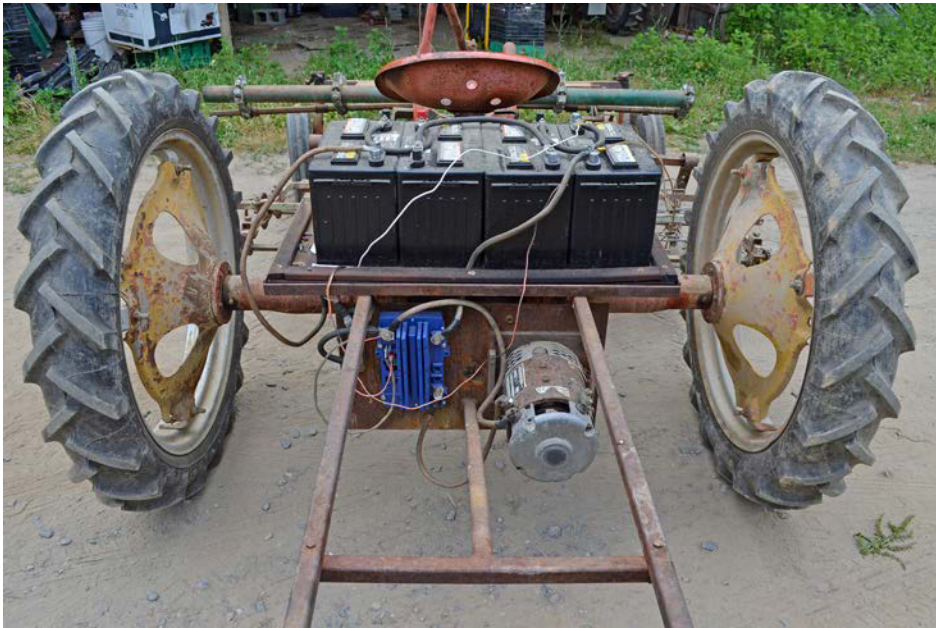
Designing and building appropriate farm equipment can also include converting gas-powered tractors to solar-powered electric ones. The tinkering that reinvention rests upon continues, for instance, to improve batteries, hydraulics, and implements. As does the work of growing affordable organic produce.

Bioregional self-reliance is already visible and one distinctive direction is cooperative arrangements for place-based making. It is well established that small businesses underpin local economic achievements. Stable regional economies are founded on having many small businesses rather than a few large ones. Small businesses can take the form of worker-owned companies financed by cooperative-based financial institutions. In this setting, there are many fertile possibilities for place-based making to help build a cooperative and local green economy. One is designing and building equipment to help bioregional farming efforts flourish.

Bioregional self-reliance makes little sense apart from a reliable and ecologically grounded food supply. In numerous bioregions, there has been a blossoming of small scale organic farms to fill this critical niche (many that operate as CSAs or community supported agriculture). There are also regional organizations to help these farming efforts thrive. For example, in the Hudson Estuary Bioregion, there is a growing network of 60 farms, called the Hudson Valley CSA Coalition, that are assisted by groups like the Northeast Organic Farmers Association, National Young Farmers Coalition, the Rondout Valley Growers Association, and the website FarmHack.

Organic farming rests and falls on the health of soil in many subtle ways. Key to a vigorous soil ecology is keeping it from being compacted and crushed by heavy farming machinery. A lingering paradox for organic farmers, though, is that most tractors and their different implements (for instance, for plowing, seeding, and weeding) were designed and built for industrial farming. The absence of well-designed and affordable farm equipment especially intended for smaller organic farms can be a tiresome experience. It provides an opportunity, though, for designers and makers to come up with other and better choices and then to build them. A reinhabitory favorite is taking existing smaller tractors and refurbishing them to be electric powered with easier to use and more efficient implements.

Understanding and encouraging healthy soil conditions and improved, solar-powered electric tractors are vivid examples of how living-in-place know-how and appropriate technology meld together for making a living (and extend to other necessary undertakings, for instance ecological restoration and energy democracy).

Contrast possible designs and equipment for organic farming with what is routinely held up as important technological advances: self-driving and flying cars; space travel and colonies; billions of people connected by mobile devices; and breakthroughs in artificial intelligence and robotics. This difference clarifies important choices to be made between low-tech decentralized tools that fortify reinhabitation and underpin bioregional reliance and those tools that encourage family and community dependencies (while concentrating economic and political power in major technology companies).

What enlivens everyday efforts at making a living is learning, and relishing, what we need to know to restore the places we live while providing for ourselves. Often that leads to an understanding of our activities as integral and necessary parts of local ecologies and their recovery. We can make a living proper to the long-range survival of places and the people who choose to live there well.

Summer

Fall

Notes

1. Illich, I., 1981. Shadow Work, p. 57, Marion Boyars.

2. Rapoport, A., 1969. House Form and Culture, p. 5, Prentice-Hall.

3. Right proportions have found a full expression in *A Pattern Language*, the early work by Chris Alexander and his co-workers, and in projects including *The Oregon Experiment* and *A New Theory of Urban Design*. Smart Growth practitioners, when planning and building traditional neighborhoods (mixed use, mixed income, and pedestrian friendly communities) are also drawing from the heritage of right proportions.

4. Berry, W., 1987. Why I Am Not Going to Buy a Computer, p.2, New England Review and Bread Loaf Quarterly.

5. Berg, P. and Dasmann, R., 1978. "Reinhabiting California", p.2, Reinhabiting a Separate Country, Planet Drum Books.

6. Aberly, D., 1999. "Interpreting bioregionalism", p.38, Bioregionalism, Routledge.

7. Berg, P. and Dasmann, R., 1978. "Reinhabiting California", p.2, Reinhabiting a Separate Country, Planet Drum Books.

8. House, F., 2007. Watershed Work in a Changing World, p.3, California Salmon Restoration Federation's 25th Annual Conference.

9. Anderson, M., 2013. Tending the Wild, p. 18, University of California Press.

10. House, F., 2007. Watershed Work in a Changing World, p.2, California Salmon Restoration Federation's 25th Annual Conference.

11. Berry, T., 1999. The Great Work, p. 58, Bell Tower.

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