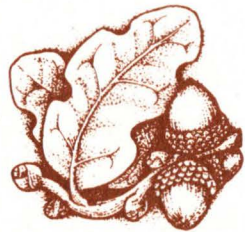


FIGURES *of* REGULATION

Guides for Re-Balancing Society with The Biosphere



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The South African Army is now inducting Bushmen into its ranks, teaching them to forsake traditional bows and arrows for R-1 rifles. And their phenomenal tracking skills, gleaned from centuries of stalking animals over the vast roadless stretches of southern Africa, are being used to track down black nationalist guerrillas contesting South Africa's control of this disputed territory [Caprivi Strip, Namibia] . . .

In return for fighting SWAPO, the Bushmen are paid about \$400 per month by the South Africans—a considerable sum in these parts, and a staggering amount for people unaccustomed to cash. In addition, the SADF [South African Defense Forces] provides housing for some 900 women and 1,500 children of the Bushmen troops . . .

Lieutenant Wolff concedes that a cash economy once baffled the Bushmen. "When they first arrived here, their sense of money was very poor," he explains.

But now, he says, they are being taught to invest their earnings. Indeed, Bushman wives are even being offered insurance plans—as a hedge against the death of their husbands in combat . . .

Lieutenant Wolff admits that the Bushmen have "no political sense" and know little about the causes in the war which they are helping to fight.

Indeed, when this reporter asked a Bushman trooper why he was involved in the conflict, he replied simply, "For the money."

"Bushman: The Hunters Now Fight Guerrillas"
Gary Thatcher, March 1981 news story

When the Key Breaks in the Lock

The cheapness and relatively easy access to fossil fuels has been the key to the Industrial Age. Proficiency and faith in technology certainly had to be there as well when the first iron bridges were trusted in England (Lewis Mumford's convincing starting event for the Industrial Revolution) and there has been a continuous need since the beginning for displaced agricultural people to supply factory work forces in cities. But the reliable Instant Vulcan resource, the essential founding power, has been black-smoking coal and more recently grease-smearing petroleum.

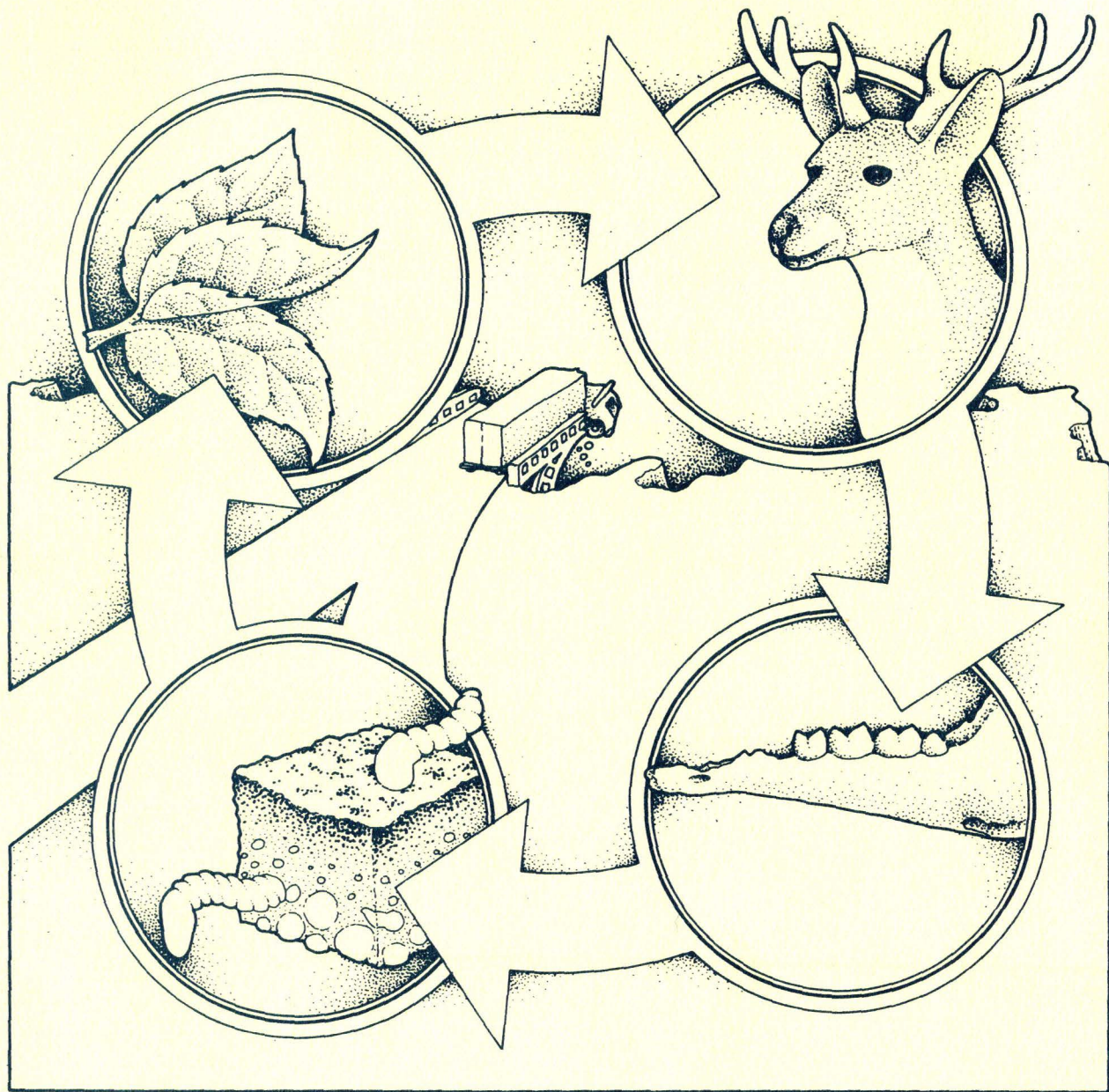
There is a necessary link between the use of fossil fuels and the goals of industrial society that is more evident now when the epoch of heavy resources exploitation and industrial hyper-production is coming to a climax. The Industrial Revolution forged a lock for a future based on material progress. Cheap fossil fuels were the singular means for running the machines that turned the tumblers to open that future.

Coal, gas and oil will never again be as inexpensive as they were when that lock was designed. Their availability can only diminish as finite reserves are exhausted. The promise of industrial society that levels of consumption, wealth and convenience will perpetually rise became worthless when we saw that merely doubling the price of crude oil could quickly reduce the size of cars, increase the price of food and

guarantee stagflation. It's two o'clock in the morning and the housekey has broken in the lock.

Beneath the fuel price issue there is a larger question that must be faced before we are stampeded toward nuclear power in a frantic search for a better key. Isn't the cost of industrial society to the biosphere, the inter-connectedness of all life on the planet, becoming too great? The Late Industrial period (dating from World War II) brought a vastly accelerated rate of destruction to natural systems. These systems are the fundamental basis for all forms of life and ultimately support society as well. Dumping of poisons in the oceans, chemical pollution of fresh water supplies, loss of arable land through erosion and desertification, removal of forests, river diversion, acid rain, lethal smog levels, and an increase of carbon dioxide in the atmosphere from burning fossil fuels that will alter temperature and climate planet-wide have advanced far beyond anything experienced during earlier periods of industrial society. Nuclear hazards are a Late Industrial phenomenon. "Triaging" the biosphere, giving up whole regions and sectors of life, and liveability, to barely maintain or slightly increase levels of material consumption is a defining characteristic of the Late Industrial period. The means and goals of industrial society have finally led to trade-offs that can remove the possibility of life itself.

A new key isn't the answer when there's a trick lock guarding a house that will collapse when we finally get inside. There has to be a transition from Late Industrial society toward shared values, goals and understandings that fit with rather than contend against the regenerative processes of the biosphere. We need to begin building a dwelling in life instead of on top of it.



The Cycle of Provision Can Be Broken

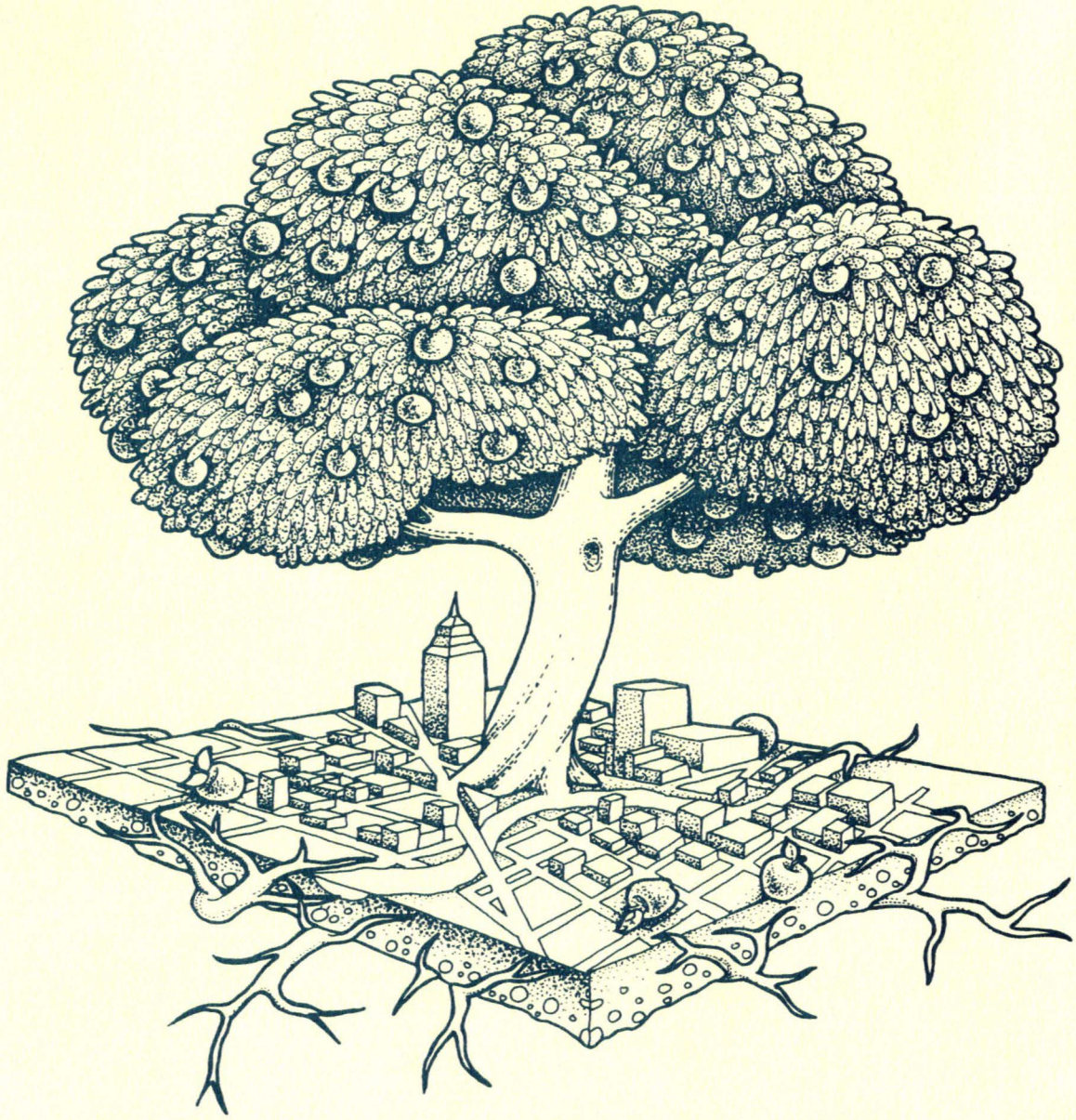
The rough shape of a post-industrial society is already somewhat visible in the activities and movements that have sprung up within the last few decades to slow down or undo some of the negative effects of the Late Industrial period. Development of renewable energy, using sustainable methods to grow nutritious food, preserving and restoring endangered species and ecosystems, cooperating in networks to distribute locally produced food and goods, opposing further encroachment on natural areas by strip-mining or water diversion projects, and regaining local control over development and land use decisions are hopeful signs that human needs are being reconsidered in terms of the requirements of other life on this planet. Even though these activities relate to a wide range of society's functions, they aren't all going on in the same place. They provide only a vague outline, as vague as the term "post-industrial" itself. Despite the urgent need to reformulate what society as a whole and individuals in it should reasonably aim to attain, and the methods through which those things should be sought, proposals for a sustainable society are still treated as though they belong in the fantasizing world of utopian science fiction.

One of the major reasons for this dilemma is the money-dominated sense of reality that prevails in Late Industrial society, the productivism that relentlessly favors short-term economic gain over long-term sustainability. Natural resources are chiefly seen in their ability to make money, and there are few limits on using them as rapidly as possible for that purpose. The ultimate test of worth for an activity is whether it "pays the bill." So thoroughly is this accepted as an ethical standard that utility companies can successfully campaign for building nuclear power facilities on the basis that they will save consumers

two or three dollars a month on utility bills, regardless of the health or safety risks.

The transition toward a society that fits in with natural processes of the biosphere requires a practical counter-ethic to immediate economic gain. The goal of **reinhabitation**, becoming full members of the life-community where we live, gives substance to the otherwise amorphous shape of post-industrial society. The restoration and maintenance of **bioregions**, naturally defined locations of natural and human communities, can be the basis of an effective counter-ethic.¹ We can overcome the barriers to making this transition if we establish frameworks of understanding for evaluating methods and activities in terms of their ability to restore and maintain bioregions.

1. For a further discussion of *reinhabitation* and *bioregions* see **Reinhabiting a Separate Country**, Peter Berg (editor), Planet Drum Books, San Francisco, 1978.



Rootedness of Cities in the Soil

Figures of Regulation: What We Need to Learn to Do

Prior to the Industrial Revolution most decisions about activities that effected natural systems were guided by custom. The traditional hunting practices, agriculture, house designs and uses of tools that evolved in distinct regions over long periods of time were maintained not on the basis of discrete decisions but to be consistent with the "right way" to do things. It's not surprising that under analysis with contemporary criteria of efficiency and appropriateness these customs often yield the best way, if regional availability of materials and local conditions are retained as limiting factors. After all, customs incorporate the intelligence and experience of many people over generations of dealing with those limits. Taken as a whole, a traditional culture's customs also represent sensitive understandings of the relationship between human needs and the requirements of the overall life-community. The practical evidence of this is that these cultures continue to exist and maintain themselves in their home regions.

In order to restore and maintain bioregions we need to develop frameworks of understanding that are equivalent to customs but even more attentive to balance points between human needs and the requirements of the natural community that ultimately supports us. We need a basis for limits to our undertakings that like customs are not of a

specifically religious, legal or ideological mold. The fact of our species' interdependence with all life provides the ultimate justification for these limits: it absolutely forbids us from wantonly destroying life that sustains us if we expect to continue to live. These limits should be seen as serving our mutual interests rather than as restricting individual freedom. Stanley Diamond points out about tribes who are dedicated to maintaining traditional customs, "Freedom as a concept does not exist among primitive people because society is not perceived as oppressive."² These limits can obtain a benefit that none of us could secure alone.

The frameworks of understanding, or areas of social rapport, that would be appropriate for reinhabitory activities could be thought of as regulating them, but not as a machine is regulated by an operator. In biology the term "regulation" describes the process of redistribution of material within an embryo to restore a damaged or lost part without the necessity of new tissue growth. The embryo is thus able to continue developing in the face of abnormal conditions by filling in the features of a disturbed stage further along in the growth process. This sense of regulation should apply to limits on activities that threaten natural systems.

Although they would be new expressions of value these regulatory understandings needn't be restricted to a list of "dos and don'ts." Their representation can be as varied as the activities themselves. The term "figure" is especially relevant to this kind of

2. **In Search of the Primitive: A Critique of Civilization**, Stanley Diamond, Transaction Books. New Brunswick. Second Printing 1981, p. 17



Multiple Views of a Natural Resource

representation because it connotes a diverse range of meanings besides mathematical numbers: an object seen mainly in outline; a painting, carving or drawing of an object; an analagous person, place or thing; an imagined form; a conspicuous or impressive aspect; or a series of movements that make part of a dance.

Figures of regulation is a workable phrase for the new equivalents to customs that we need to learn. Late Industrial society with its misplaced faith in technological solutions (to problems caused by unlimited applications of technology in the first place) is out of control. Our social organism is like an embryo that is suffering damage but there are no internal checks on our activities to re-establish a balance with the capacities of natural systems. The point of figures of regulation is that they would incorporate the concept that individual requirements and those of society are tied to the life processes of a bioregion. A bioregional model can identify balance points in our interactions with natural systems, and figures of regulation can operate to direct or limit activities to achieve balance.

The idea of a figure as a series of movements in a dance is useful for understanding the multi-layered nature of figures of regulation. The performance of a dance follows a distinct sense of rightness that would otherwise exist only as an idea, and it suggests connectedness with many other activities and ideas. It is a process that makes the invisible visible. As a dance unfolds it implies further action that is self-referenced by what has gone before. Figures of regulation are assemblages of values and ideas that can similarly become ingrained in patterns of activity.

Criticizing Late Industrial society Stanley Diamond

observes that, "New technology turned the countryside into an extension of the city."³ Figures of regulation can be applied to the amounts and kinds of resources used, seasonal times when activities are undertaken, the sites used for various purposes, methods that are appropriate to specific places, and other life-community considerations to begin moving the city into the bioregion. Rather than confronting current technology-centered practices however, figures of regulation can modify or replace them. Adaptive tactics can be designed around introducing figures of regulation to deal with problems as they arise. They can be both the means for transforming Late Industrial society and the embodiment of understandings that become central in reinhabitory society.

3. *In Search of the Primitive*, Diamond, p. 19

Seeing It Work

The working form of figures of regulation is in new cultural practices. Some examples of shared practices in Late Industrial society can illustrate how social activities based on mutual understandings of value operate.

Shoveling snow from house paths and sidewalks is an activity left over from an earlier period that shows how an unorganized set of individual activities results in fulfilling a social objective. Each householder shovels only a single path to the house and the length of sidewalk in front of it, but these increments eventually clear the entire sidewalk for everyone's benefit. Snow-shoveling requires obtaining special tools, storing and learning how to use them. It is a regional practice that is specific to a particular season, and is still followed faithfully in small towns.

Heavy morning water use in urban areas is a practice by individuals that society accommodates in ways that have surprisingly great effects on natural systems. Toilets, showers and sinks being used nearly continually by everyone in a large city for an hour in the morning establishes a peak level for which water systems are designed. Peak levels dictate the maximum capacities of water supply and distribution systems, and consequently the extent to which water is diverted from natural courses and the uses of native ecosystems. Water management involves eco-cultural decisions on a scale that ranges up to damming major rivers and the creation of deserts.

Figures of regulation should interrelate individual, social and bioregional requirements in new cultural practices for priority areas in the transition from high energy and resources consumption to reinhabitory society. The results of these practices would be:

- (1) Construction of new renewable energy housing or redesign of current houses with recycled materials
- (2) Participation in community transportation systems that eliminate most uses of private automobiles
- (3) Using intermediate power generating facilities scaled to local watersheds
- (4) Developing small-scale agriculture while restricting food imports and large-scale agribusiness methods
- (5) Restructuring water supply, use and disposal around considerations of regional native ecosystems through recycling, conservation and waste water utilization

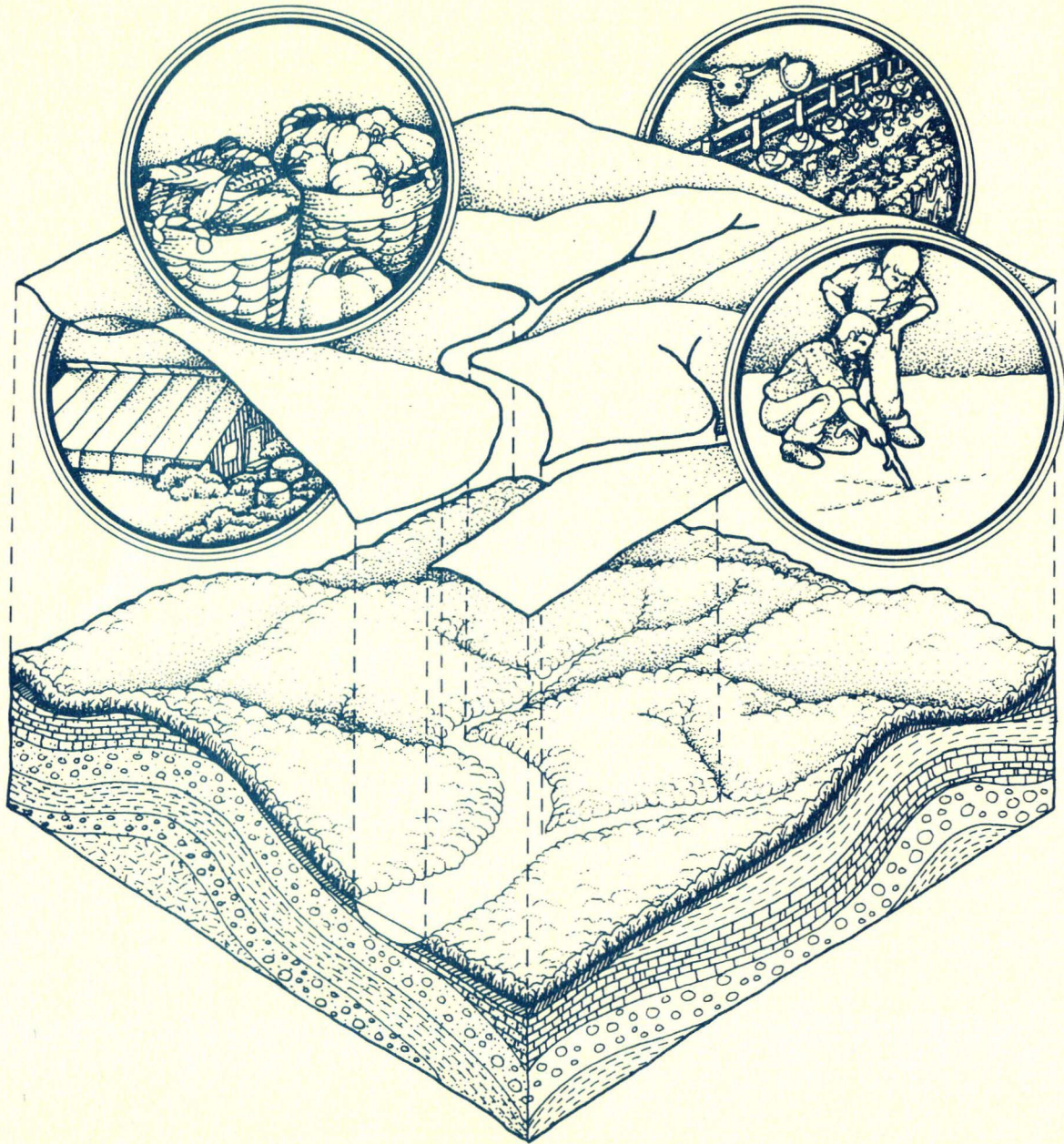
In constructing new renewable energy housing, for example, figures of regulation like those shared by the "barn-raising" participants in new greenhouse construction groups can come into play. These groups are assembled for a weekend to learn how to build a greenhouse addition to a house that can provide both food and passive solar heat by actually building one. The owner is a working participant and the crew members will eventually lead groups to build their own and other greenhouse additions. Recycled materials are used whenever possible. The crews cook meals and eat together while becoming a community of renewable energy practitioners and activists. Figures of regulation guide their ethics: They want to raise some of their own food and unplug from fossil fuel powered utilities. And the practice of participating in "barn-raising" groups becomes a new custom for starting toward that goal.

A greenhouse addition, like any of the other

possibilities for alternative energy, could be constructed entirely through Late Industrial practices. A contractor could be hired to handle the whole job, for example. And the ethical motives could be completely consistent with Late Industrial ethics: do anything to make or save money. Figures of regulation, however, relate the implementation of renewable energy technology to broad aspects of energy flows that include human labor and community interaction.

Figures of regulation can be elaborated further in building new renewable energy housing or retrofitting houses by arranging labor or materials exchanges between workers, development of small-scale cooperative "cottage industries" for supplying recycled materials, and many other aspects of the housing transition process. Community design itself could eventually be determined by figures of regulation. The specific practices would be those of the particular community as it responds to its own circumstances.

Figures of regulation can help organize disparate ideas about energy, food, water, agriculture and transportation that will be connected together in a sustainable society. They can do this by providing the ethical underpinning for recognizing the overall life-community in seasonal celebrations that stress multi-species relationships. Memorial Day is recognized in Late Industrial society as a time to commemorate the victims of war. Observation of equinox or solstice days can become reinhabitory events to celebrate our interdependence with natural life processes.



The Watershed As Foundation of Human Activities

Locating the Roots of Society in the Biosphere

Our function as individuals in society, as well as society's overall function, has been seen in progressively more mechanistic terms. Individuals are adjusted to society, society is rated for success by statistics of unemployment and GNP. It is a configuration of smaller machines within a big machine.

Figures of regulation imply that society can function to maintain stable relationships with the natural processes of bioregions. But figures of regulation can't be relevant as long as society is viewed as a machine. It is essential to re-establish the roots of society in natural processes in order to develop reciprocal relationships between society and the biosphere. Our requirements as living organisms are the basis for our identity with other species, and our interdependence with them and natural systems. These requirements are "human species limits" that are ultimately served through figures of regulation.

The main biological root of society grows from the need to reproduce our species. The interaction of individuals relating to each other at each state of growth and development (ontogeny) provides the first essential circle of social relationships:

- Conception to birth, a continuous relationship with a mother

- Early nurturing, assistance from many individuals during a state of helplessness
- Learning to communicate with symbols learned from others
- Puberty and ultimate sexual differentiation
- Mating, mingling personal identity with another
- Birthing and nurturing offspring
- Full adulthood, attainment of social trust to represent and affirm values to offspring
- Death, absorption of identity into social memory and species history

Regardless of the degree to which these stages are obscured from their direct biological significance by contemporary mechanisms (birth certificates, school degrees, marriage licenses, death certificates) they nevertheless root our identity as mammals in the biosphere.

A second source of necessary social relationships is the immediate locale. Without ways to understand the unique conditions presented by natural places in regard to obtaining food and water, dealing with topography and climate, building shelters and securing needed resources, we wouldn't be able to survive. Relationships and symbolic communication are necessary to convey methods for obtaining sustenance, report variations in natural characteristics, and maintain regular practices. Late Industrial society labels our immediate locale "the environment," reports food availability through prices and weather on television, but the values of cultures and the forms they have taken have always been tied to the unique conditions presented by the regions where they occurred. Disregard of that tie is fatal.

The ontogenetic and place-perceiving roots of society are firmly planted in the living biosphere, and society can be seen as a form to ensure human species survival and continuity. Figures of regulation can shape the activities of society around interdependence to achieve that purpose.

Further Implications of Figures of Regulation

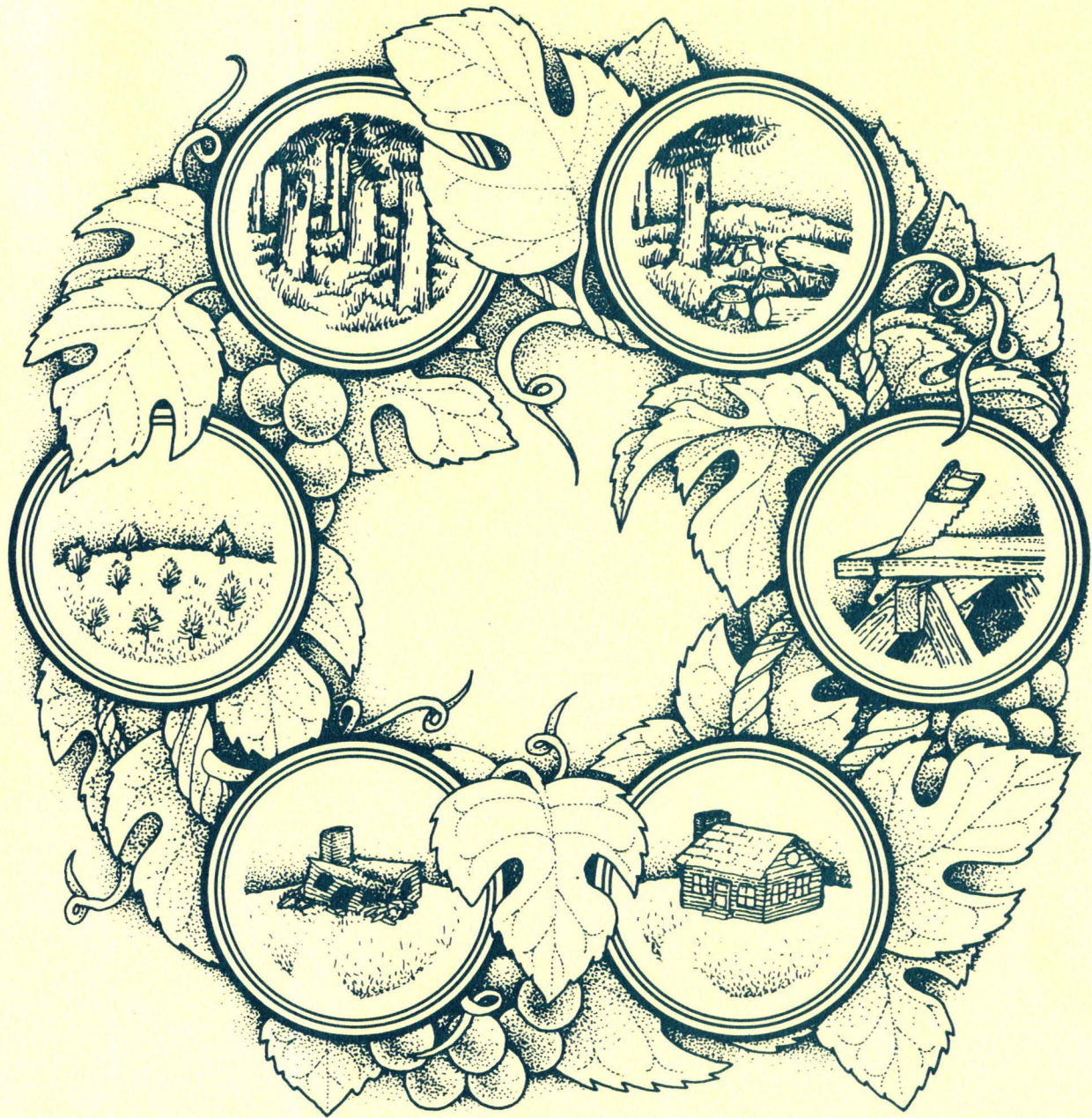
The interdependent sensibility that is present in figures of regulation is currently restricted to a small segment of society, life sciences specialists and those involved with environmental concerns. When the general population begins basing activities on ethical understandings that include considerations of the overall life-community there are significant implications for the condition of bioregions, social coherency and the way people view themselves.

An abundance of natural life in an unscarred environment is a consequence of restoring and maintaining a bioregion, and will provide evidence that figures of regulation are working. Social success or progress would also be measured by increased quality of life such as providing diverse work opportunities for individuals to interact with natural systems. Rather than feeling alienated from society and the life-community as many do currently, people would be able to view themselves as belonging to both.

Individuals, society and the bioregion would be interconnected rather than existing as separate entities. A political manifestation of this connectedness could be in the establishment of small-scale bioregional governments with watershed-bounded units. Smaller, more naturally defined political entities would present many more opportunities for participation in the political process than currently exist, and decisions resulting from direct democracy would be more prevalent. The spirit of these governments could be mutualistic and nonhierarchical as a reflection of the operation of the biosphere itself.

Although an understanding and grasp of every aspect of natural processes isn't available to everyone all the time (the specific quantities involved in the local process of photosynthesis or the nitrogen cycle, for example), figures of regulation nevertheless allow people to have confidence that they are approaching things in the best way. Their increased certainty and sense of belonging to a place in the biosphere implies a social vision quite different from that of Late Industrial preoccupation with space travel and technological breakthroughs. Emphasis would be placed instead on discovering more about biospheric processes and how they apply to unique bioregions (an area of investigation which has been neglected during Late Industrial fascination with physics). Research and experimentation would be directed toward aligning technology with those processes.

Finally, faith in natural cycles and the life-affirming purpose of the biosphere implies revitalized spiritual ties with our planet, and development of many cultural forms and events to express celebration of our reciprocity with the places, living things and delicate connecting life-web of Earth.



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