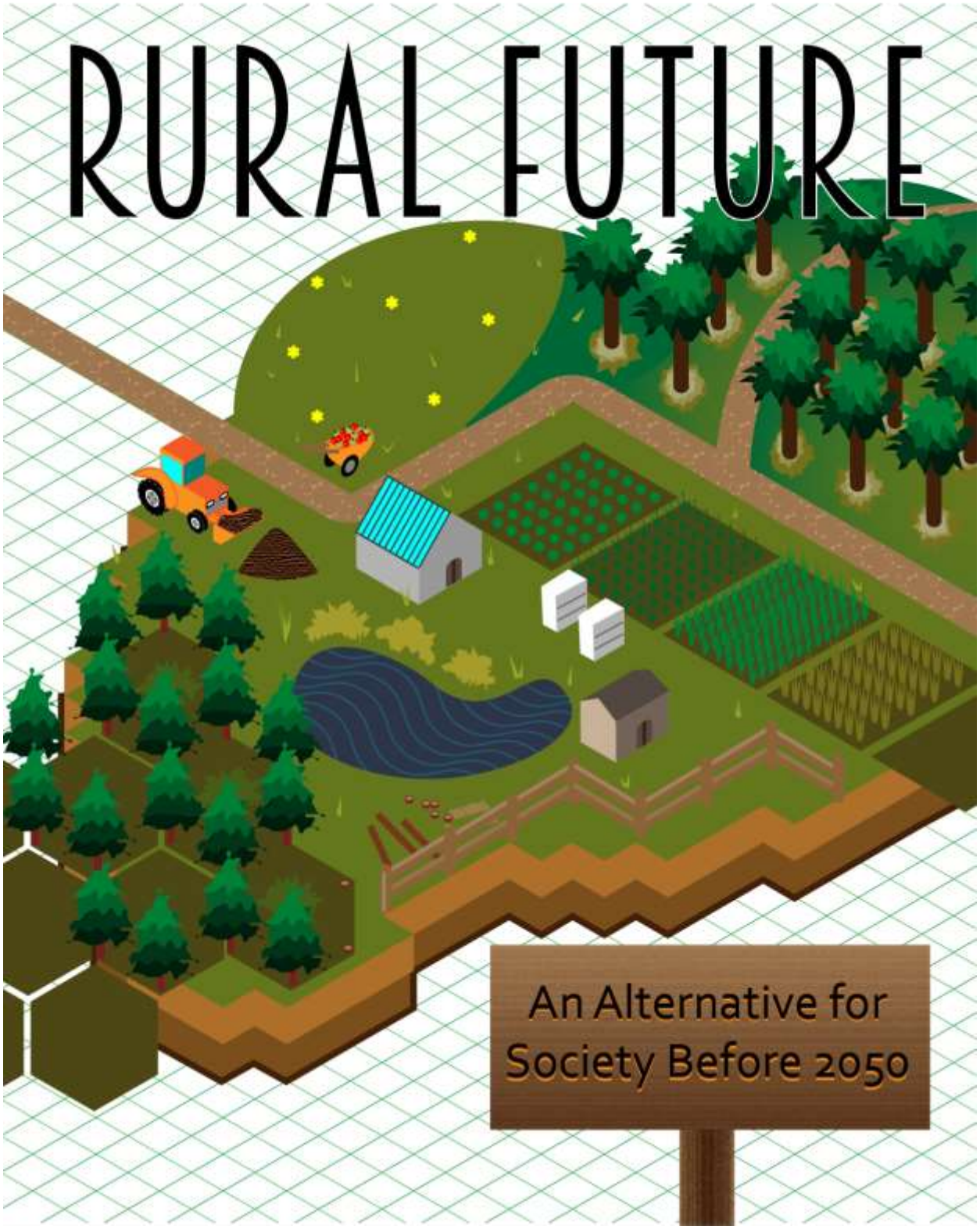
RURAL FUTURE



Rural Future

An Alternative for Society Before 2050 AD

By: Robert H. Giles, Jr., Ph.D.

Edited by: Laurel Sindewald

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From Another Angle

"Just farmin', or more like a lawn service!? What's a Rural System? What's it about?"

About? It's now a planned, large, complex, dynamic business-like system to revitalize and hold well rural regions for human-kind, and the resources upon which they depend.

Many very bright people wrestle with the meaning of "rural," especially as it may differ from "urban," because this distinction influences where voters live and how funds delivered from public coffers seem to be allocated. In Rural System, I specify a dynamic **Border Group** working at the rural-urban border. The differences between hobby farms, some residential areas, and center-city cooperative gardens are usually very small and not worth a human half-life of discussion and statistical report. The Border Group will work with all of these and many other natural resource features at the rural-urban border.

Rural System is a slowly-evolving concept that will someday become real. It does not exist, so it cannot be quickly demonstrated. It is very much like a corporation producing diverse items. In the beginning, it will be regional, but it is designed to become franchised widely. It is planned to be a for-profit corporation, but it will often deal with social needs of populations and regions, much like existing socially-oriented enterprises. Part of the continuing confusion has been the adamant split in legal advisors between the corporation being "for profit" or "not-for-profit," and my foundation belief is that only a significant, evident profit will achieve the desired, long-term, fundamental aims for Rural System.

People have left rural lands for the cities. Thousands of people! They age; they grow ill; the emigration continues. Rural residents and those absent daily inherit rural lands. Many do not know what to do with them... other than pay real estate taxes on them and visit once a year for "old-times-sake," or for huntin' and fishin'.

The lands and residual resources are often unprotected, unused, unmanaged, and/or exploited. Forests, for example, may not be tended for minimal profit in harvests, restoration, carbon sequestration, and watershed revitalization, or even hunting and fishing at a minimum.

The designed, interior structure of Rural System has a **Safety and Security Group** to work with local law enforcement and modern tactics to prevent losses (fire, vandalism, restricted uses by guests, with added safety, and first aid). Safety and Security will just be one Group within the active Rural System working on one ownership. There will likely be from 3 to 10 such ownerships managed within a cluster.

The structure is given to specify what Rural System "looks like," but its ever-present functions will include reducing financial losses and damages (elements of a "lean strategy"), and providing jobs and funds for local people, a small community tax base, and a staff—all required/desired for making the areas profitable under contract.

Multiple Groups are evident, and will be independent, with strong leaders, employed local people, and local awards for measured monetary loss reductions (e.g., timber, or deer theft, vandalism, or trespass). One example Group is **Stills**, which will serve all photo-related interests. Another, to serve many, is **The Marketing Group**. **The Furbearer Group** will benefit from trail camera units, supplied by The Marketing Group. There are over 150 planned enterprises working together (listed in Appendix 1), and there will typically be 20 active on each ownership, even more within a cluster. The Groups will work—they will hire, produce, relate, and yet they will be interdependent, not just interactive—the Rural System **Swarm**.

Several ownerships within a small area (e.g., one-half of a county) will form a cluster and share major strengths of all Groups of the ownerships. Thus, they will automatically gain reliability, increased diversity of scope, scale, and resilience. They will utilize advantages of branding, economies from shared use of large equipment, software, related research reports, fencing, and drinking facilities for livestock (where appropriate).

Groups (like Safety and Security) may have a very typical public, non-profit role. That image can be changed. There are others, like **The Lands Group** (data- and map-based), that will largely be *supportive* within Rural System and linked to all Groups, but used by only a few. Safety and Security will be linked to all, but will put pressure on **The GIS/GPS Group** for many more services than other Groups.

All Groups will be linked by contract, and all together will benefit, proportional to total financial net benefits, as well as from additive Group benefits that will likely not be proportional. Though I resist the concept, some take pleasure in saying Rural System is "a business ecosystem." So very different from actual ecosystems, the analogy makes me think that descriptions of Rural System must have been very poor.

Each ownership will have detailed GIS maps and data, available to staff and fundamental to Rural System success. The GIS maps will describe the ownership with details about each Alpha Unit on the ownership. Data is available for all of Virginia, and connections for mapping analyses for Virginia and even, recently, for Earth!

The major uses of GIS will be performed by (and within) VNodal, the "brain" of the system. VNodal will specify jobs for The Land Force (the work force, mostly of recruited and trained local employees) each morning, sent to mobile devices in the field. These "prescriptions" will specify where each worker is to go on the property, and what actions to take (i.e., trail work, fence repair, planting, etc.) Data and observations will go directly to VNodal and be processed, results will be summarized, and actions will be listed to make needed changes to work to objectives. New prescriptions will specify means to keep production and profits within the bounds required for long-term system success. "Two low or too high" profits will typically require field action to correct. A major advantage of the great diversity of Groups is the assurance of full time, around-the-year, stable profits and work, unlike that on the average farm, with part-time laborers.

Some inherited properties in western Virginia, like elsewhere, seem like punishment rather than wonderful, treasured gifts. Steep cliffs over a river are hardly farmland. That is Rural System's non-secret basis for rural work. We are for farm *and* for non-farm, for lake and dry stream-bed... all together. Given that we "know" more than 100 factors about every Alpha Unit on a map of every piece of land in western Virginia, I think I can start a small Group list with at least 15 profitable things that can be done with such properties if contracted within Rural System. Not a "farm" by any definition I know, Rural System will respond to a tract of land needing great care and tending, all with careful use, restoration, enhancement, and continued, shifting planning and unique resources, all aided in their protection and distribution.

Such lands' pure real-estate issues need dynamic analysis; their relationship viewscapes and their values need precise, computer-map analyses. The role of Rural System may become one of denying the appropriateness of real-estate tax values on a property, while balancing potential land value gains from Rural System work and enhancements. Unrestricted, tax valuation can become deadly to property ownership and value. Enhanced land value can open doors to county and small rural community labor, an enhanced tax base, and balanced real-estate

taxation and community involvement in expanding land values... and critical protection in many areas.

"What is Rural System? Really! Just briefly now!"

Rural System will be explored for uses within India, then within peaceful parts of Africa. It's a planned, private enterprise that will provide new, hi-tech, long-term management of lands left by urban emigrants, achieving social and natural-resource objectives for people through the distant future.

If you must know, Rural System first requires VNodal development. That will be done while much of the above is solidified, but the data requirements are specific. VNodal requires abundant software access, collection, and unification (some by translation of results from one to inputs to another). With the aid of VNodal, Rural System will exponentiate the practical usefulness of data.

Rural System does not plan to do research within the first years, only to conduct less-intensive studies, and use available software with special recognition of known and discovered workers. Major databases, like that of the wild animals of Virginia, are needed for demonstrations, and use will incur some costs.

The "nodes " of VNodal are the junctions at which **results** from one computation about daily-gathered data become **inputs** to important models, for example, of fertilizer needs, plant growth, and expected yields per acre per unit time in GPS-numbered and GIS-selected plots. (For example, a unit of land was selected for growing "kale 237," because the market analysis said its price per unit harvested and packaged would be better than for "kale 176.")

Trivial differences for the small rural farm can become quite large for 80 acres selected by GIS, and scattered over 900 acres of contractor ownerships. Rural System will gain by working with scope, scale, market information, knowledge of degree days, harvest rates and timing, buying locations, beneficial waste production, and more—all helpfully processed to generate decision aids to progress toward stated objectives. Objectives include long-term, relatively stable, bounded, significant products and benefits, indexed by equivalent local human losses, and planned over 150 years—sliding forward a year annually.

"Again—what's Rural System?"

It a complex thing—a bunch of enterprise environments managed together in clusters and Collaboratives, with a Swarm of many linked Groups, to achieve long-term, sustained profits and all five objectives.

"More detail?"

Let's talk! I'm Delighted!

Chapter Eleven

A Plan for the Integrated Health of Land and People

There is little agreement over full meaning of "health" and "wellness," but we study them and seek approved definitions—ones that can become actively used among the people, land owners, and staff of Rural System. We have begun parallel discussions and criteria-setting explorations about the meaning of "forest health." We continue to study and learn to generalize Aldo Leopold's concept of "land health" for people and ecosystems, as we seek criteria for our success in future rural regions.

We work toward a health objective for rural land and waters following restoration, improvements, or maintenance, and we must face the potential, negative realities of bioterrorism, general malevolence, revenge acts, legal obstruction, genuine ignorance or mistakes, and the ever-present and potentially increasing climatic or Earth-force disruptions.

We add to this list our awareness of human disease, and we study dimensions of the One Health Initiative. Sherman Jack (2012) describes the One Health Initiative as, "a worldwide movement of physicians, veterinarians, and other scientists recognizing the fundamental links among people, wildlife, and the environment." [1] The movement champions an "integrated, interdisciplinary approach to health management…" as we do in Rural System.

Jack spoke of the need for increased cooperation to address new health concerns, e.g., human population encroachment into natural areas, and citizens unaware of many zoonoses (diseases that can be transmitted from animals to humans); the spread of disease following environmental change (e.g., malaria, related to temperature increase); and once-checked diseases now reappearing. We fully intend to develop and maintain healthy rural environments, but we are eager to recognize, identify, and work with the counter-forces that impede or prevent Rural System's lasting success.

Jack suggested an overly simplistic diagram, with three overlapping circles related to health, of (1) humans, (2) domestic animals, and (3) wildlife. We suggest these are the objectives of a subsystem prioritizing at least generalized management of the diverse, changing environment. Simplistic diagrams help a little, but they must quickly promote *systems thinking* about other connections and relations, leading to objectives, such as those of *people* … and quickly to those of the *flora and fauna* upon which they depend. The persistent question needing to be asked and answered is: what is the positive, physical reality of a "relationship" in the forest, deserted farm, or urban border?

I find a few useful, named relationships, real or likely, starting with the letter **"R": Respect, Recover, Reuse, Repair, Restore, Recycle, and Redesign** … that seem especially dominant in cooperative work, essential throughout Rural System.

Respect seemed an outlier at first, but now seems closely related to embodied energy—the perceived or actual energy cost of gaining and holding an object (tool, vase, machine), or the personal ability to do useful work—i.e., physical power. The other side of such power is reduced

[1] Jack SW. 2012. One Health: More than Just a Catch Phrase! Journal of Human-Wildlife Interactions. 6(1):5-6.

physical power (disease or injury)—as stated, the inability to do useful, meaningful work. Physical power, as used here, is related to speed, quality, ease of repair, probable life, ease of use, safety in use, pleasing appearance, and long depreciation rate.

In the spirit of the One Health Initiative, we explore, for further meaning, parallels in human and domestic animal literature and management actions. Herein, we begin at the border between urban and rural, and then introduce Rural System's plans for more robust Collaboratives and vital communities in the rural regions within which Rural System works.

A Sight from the Urban Window

Rural System has, as its foundation, general systems theory and diverse texts and computer systems. It draws an imaginary line between the urban border and the rural region. Urban areas, cities, will have resources and pressures, and "infrastructure" in hand, with vast engineering, architectural, financial, and related system resources. Rural regions may lack many of these resources, but are home to indispensable natural resources.

The scale is evidently different between rural and urban: high human density and sparse areas in cities, served by and dependent upon dispersed elderly people and vast, often-despoiled rural acres and volumes of water. I concentrate on rural, know the urban, and know well the mid-ground—the residential areas or zones. The border land can be seen at the map-edge of lands labeled "urban." They are essential together—and if we do not self-destruct beforehand, there will come a beautiful union of the rural and urban. I work toward that in Rural System's **Border Group.**

I know that people stand in the urban window and look to the lands loved, to real home, where life was good, where challenges were known and overcome with help of neighbors. Everything was different then. That is the look of so many people. I work to create vital, productive rural regions that are beautiful from the urban window, but where people may see hosts of guests from the cities, enjoying the rural regions in all of their diversity and novel changes; rural has lasting roots for all of us.

There are special needs, conditions, and opportunities within the border, and within Rural System we plan and design The Border Group to meet them. Sadly, it is now a place of growing conflict and difficult problems. As homes and shopping malls proliferate, the United States loses about 6,000 acres of open space every day, four acres per minute, and most of it in the urban border zone. Border area development in the US (along with rural loss and urban change) is among the highest in the world.

Few people know—and have no reason to see and comprehend—what the consequences will be, from 7 out of 10 people living in cities by 2050 AD. The borders will have to expand... into rural areas, the sources of so many basic and yet not-judged-to-be-basic resources. Borders will be challenged by connecting routes between communities, as now, and between areas within cities. People will need to adopt higher densities and diverse housing for city dwellers, return to restructured rural areas, or reduce population size.

Of course, the border is a place for people... where many things happen as they move into towns and cities, and then outward again, back into the rural landscape. Resource managers at the border (the wildland-urban interface) are challenged by the homes and activities that present needs and obstacles to what they can do as managers. Paved surfaces change the flow of rainwater, roads and road barriers intersect animals' areas, curbs present barriers to small amphibians and reptiles, and free-ranging pets create special problems for birds and small

animals. Well-meant, bird feeders may also attract some unwanted animals and their behaviors. The border zone is a challenging area where the cities and towns are encroaching on the rural area, and the rural area with its noises, odors, and unplanned conditions are infringing on urban quality of life.

Sprawling encroachment will expand on important farmlands, increasingly prized in value for growing food, and not only for structure-space. Urban problems will continue to push remaining middle-class people to the border, and put stresses on the lands and waters there as central cities decay. While there is continued conversion of rural lands to urban uses, Rural System seeks to improve the food productivity of those remaining lands and their central "support services," economies, and communities.

Within these remaining communities and active farms there must be capital, human skills, technology, and supporting systems. Few appreciate the costs of urban crime, school quality, housing finance and rehabilitation, transportation, and taxation within the average urban maze. At the urban border, conflicts are likely to arise between abundance and shortages between urban and rural area people, before and after looming changes… especially without adequate planning, and structural and social components. Somehow, planners must address the abundant, heart-felt expressions of the mutual needs for unique, irreplaceable natural resources, some space, and a "common heritage" within border lands, among other needs.

There are over 150 suggested Groups now within Rural System (Appendix 1). The Border Group will become one of the most important and will use the talents and software of many, many other Groups, some forestry-evident and others related to waterfowl, gardens, recreational trails, and legal hunting. Working with The Border Group, we propose full, sensitive development of the lands and waters left behind—the result of the rural emigration of a dozen years. We propose to work with absentee owners to make money for them, enhancing their land values and their visits for the future. Their lands, ponds, streams, and especially forests will take on extra meaning from the context within which they are located. Staff ecologists will work at the edges (with well-known "edge effect" phenomena, scattered within the ecology text books).

Proximity matters. Some forests are near processing industries and others are distant; resource proximity to uses influences the value of forest products. Forests harbor potential threats to crop fields in the form of pests. The nearby presence of cropland changes the transition probability for a forest-acre to field-acre. Forests increase some land value; residential, urban land, and roadways increase the probability of wildfire in forests. Some forest flora and fauna are enhanced by proximity to forest edges, while other wildlife is reduced. The quality of recreational sites, and experiences on them, are influenced by nearby forests.

Urban parks may reduce the heat island effect on the city, and Rural System can integrate such conditions within its models to enhance desirable effects and reduce others, such as from forest winds. Rural System will have access to GIS data for each region of work, integrating winds over forests with energy conservation of buildings, both within the border and throughout rural regions.

The border of the city is the "overlap area" for people of the city and those incoming from the rural areas. It is the wide but only generally-defined area at the outer urban edge, where residual interests, activities, hobbies, and wishes converge. There, the dynamic—perhaps locally unique—of a very busy, somewhat-urban forest is often found … about which questions and unusual, unified city-forest problems emerge.

Urban and urban-border tree canopies are already well-known for social services, such as:

- Reducing the urban heat-island effect,
- Saving energy in housing,
- Reducing some storm effects (e.g., wind),
- Improving air quality,
- Providing homes for birds,
- Adding to human "livability" indices (including psychological benefits), and
- Helping to control storm water.

We think that many urban dwellers realize how precious and vulnerable their street, park, and yard trees are. Some observers suggest that forest changes may be coming, related to unplanned, harmful insect introductions, as well as from changes in precipitation and temperature.

Studies continue, and the Rural System forestry staff will watch area-wide changes, rural and urban. Philadelphia, for example, has 16,884 acres of existing tree canopy (large and small). An Urban Tree Canopy (UTC) assessment helps prioritize planting areas, project long-term needs, and strengthen a city or border collective capacity for serving citizens. Zoning codes need to be studied to assure responses to late-stage problems.

Elves, Inc.

We imagine **Elves, Inc.** will become a Group of Rural System, to manage the urban and urban-border forests. The forests of rural towns, small cities, and their borders are a topic of immense importance. They are, as so many other modern topics, on the cusp among disciplines.

At once forestry and parkland management, the work of Elves, Inc. is so far interlaced with poorly-defined terms like urban ecology, urban forestry, community forestry, social forestry, vertebrate pest control, outdoor life, nature study, ecotourism, and viewscape management. Part of the entrepreneurial development for the region, Rural System will probably develop Elves, Inc. in collaboration with existing enterprises to establish a modern, sophisticated program for creating, restoring, and managing scenic, healthful, nature- and tree-dominant communities near and within rural-area towns.

There is no single word or phrase now associated with the vast topics the Group will address now. We call that total system simply Elves, Inc. (small creatures, small forests, with marketing appeal and potentials). Elves, Inc., continuing job expansions, will address the natural managed spaces of trees and shrubs, landscaped spots, streamsides, stormwater gardens, ponds and their borders, and viewscapes into and out from the town/city edges.

Elves, Inc. will provide a response to a growing need for community forestry and related work, for giving land an appearance of being under care. It will seek to attract and to retain the attention of visitors and tourists, and to help manage the outdoor appearance of small towns and villages throughout the forest region. All small rural towns now suffer financial difficulties, and "forests" are far down most lists of needs and budget lines. We believe that Elves, Inc. serves for more than personal town cosmetics. It is for the results of what government was once intended, that is, for beneficial projects that individuals can rarely do alone. Elves, Inc. will be a regional Group, achieving economies of scale and allowing superior natural resource work for rural towns, independent developments, corporation lands, and communities, to produce a variety of wood and tree-based urban benefits.

Elves, Inc. can play a vital, diversifying role for Rural System. The system will serve under contract with towns and communities throughout private lands (and recreational and

roadside areas). It, however, will also be involved in the management and uses of the underlying and surrounding lands and waters, human health and safety near trees and their areas, pest issues, noise attenuation, carbon capture, economy of tree leaves, energy conservation, nature-beauty, and related lawn and plant communities. As throughout Rural System, Elves, Inc. will exhibit direct marketing and exploratory contacts for other Groups, such as **Nature Folks** and its songbirds unit, **The Pest Force**, and **The Sculptors Group**, using removed woods for potential uses in carvings.

The Modern Community: The Recent Human Environment as Context

The well-known "small farm" cannot likely be recreated now as a food base; a food-export source; a community financial base; or as a safe, healthy, well-educated, lasting-family home. Widespread, water quality and quantity are now threatened. Absentee owners have little information about agricultural agencies or their services. An estimated 63% of absentee owners have never been farmers.

Fewer than 2 percent of Americans farm for a living today[2]; only 17 percent of Americans now live in rural areas.[3] People now leave farms in Virginia. Some are aging, infirm, and rural medical and assisted-living services are inadequate. Transportation is sparse. Agriculture is within the topmost-dangerous occupations. Rapid access to affordable health and medical services and centers must be stabilized as regional needs increase. In 2012, the average age of a principal farm operator was 58.3 years, up 1.2 years since 2007, and continuing a 30-year trend of steady increase[4] in age and rural-area-life difficulty.

Farms cover 8.3 million acres, or about 32% of Virginia's total land area.[5] Much of the rest of Virginia's land is covered by buildings, highways, and airports. Absentee landowners own an estimated 45 percent of agricultural acreage in Virginia. Nearby where I write within Western Virginia, there are more than 300,000 acres (variable criteria throughout) of absentee farm land, an estimated initial market for Rural System services. Current average farm size is 180 acres.[6] Small farms and ownerships in Virginia are marginal (family income is below the poverty line) and "success" is tallied by some as related to international trade conditions. Eight percent of farms account for 85% of farm sales.[7]

Rural housing quality declines. The absence of broadband for high-speed internet work now limits business and education growth for the region. Threats of fossil energy shortages and local limitations abound; critical knowledge is absent… that agriculture is highly energy-dependent. Active strategies to respond to harmful shifts in climatic temperatures and growing seasons are only slowly forming.

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[2] USDA. 2014. 2012 Census Highlights [Internet]. Census of Agriculture. [cited 2017 Apr 23]. Available from: https://www.agcensus.usda.gov/Publications/2012/Online_Resources/Highlights/Farm_Demographics/.
[3] Council of Economic Advisors. Strengthening the Rural Economy - The Current State of Rural America [Internet]. The White House. [cited 2017 Apr 23]. Available from: https://obamawhitehouse.archives.gov/administration/eop/cea/factsheets-reports/strengthening-the-rural-economy/the-current-state-of-rural-america.
[4] Ibid.
[5] USDA. 2012 Census Volume 1, Chapter 1: State Level Data—Virginia [Internet]. Census of Agriculture. [cited 2017 Apr 23]. Available from: https://agcensus.usda.gov/Publications/2012/#full_report.
[6] Ibid.
[7] Ibid.

We may assist the region in meeting part of those needs with an alternative strategy, integrating sophisticated, diverse, computer-aided land use, conducted by a Conglomerate of for-profit businesses. "For-profit" is held by Rural System and believed to be the base of a strategy that provides the only consistent major motive and opportunities for society to gain sustained protection, restoration (as needed), and science-based management of rural lands and waters—partially meeting human needs.

We continue to ask for reflection on our objectives, no one of which is "maximum profit." We have consistently said that Rural System is not a high-yield, high-rate-of-return enterprise, and thus typical angel investors have not been interested. Rates of return are ponderous… less than to send shrub fruits to market? The evidence is in: traditional farmers fail and are moving elsewhere. Superior and extended work without salary, little innovation, unavailable (off-farm) family workers, and land inheritance issues together destabilize farm life. We see new ways to success, and to modest, stable, bounded profitability for the system while it achieves its other, closely-related and interdependent objectives.

There is an alternative to the present, rapidly-forming, very troublesome conditions: a well-developed Rural System, existing within the same lands and waters of the present, but differing in many ways by their great diversity, emphases, productivity, resilience, reliability, and gainful linkages. All parts of Rural System will work toward common, long-lasting financial gains, rewarding participants and society by making many desirable social and natural-resource improvements.

The Rural System's Cooperatives, Collaboratives, and a Conglomerate

In 2013, I was delighted to learn of the book *Make No Small Plans: A Cooperative Revival for Rural America*, by Lee Egerstrom.[8] He described the changes in rural conditions after the Great Depression as "very bad," and as "continuing to get worse since then." There has been a flight from rural areas along with school closures, hospitals, and changing government aid. The needs, then and now, are seen, and local involvement of farmer groups—cooperatives—seems like one way to meet them. Egerstrom wrote that the time has come to find creative thinking for new structures for the ownership of production facilities, to build job security through equity stakes in plants, to engage community development programs, to range widely for cooperative action in rural areas, and to gain more favorable trade agreements.

Now we see that technology provides benefits in some areas but subtracts them in others. Fewer people are now needed in areas where large machines can do their work of producing food and fiber (or mining coal). The declining needs for more workers shift human needs and resources for schools, hospitals, and retail space and service. Egerstrom observed that awareness of the difficulties ahead must be motivational. A new form of social action is needed for the people of the rural regions—all of them—those ready to leave, those returning, and those who have already left for the cities. Egerstrom further wrote that, "*cooperatives* are the most efficient vehicles for developing value-added business ideas and raising community capital to turn ideas into action. These businesses raise the value of area raw materials …They also provide jobs and gainful employment in rural communities for people no longer associated with the land" (1994:13). Within Rural System, I work toward a way to integrate the best elements of past

[8] Egerstrom L. 1994. Make no small plans, a cooperative revival for rural America. Rochester (MN): Lone Oak Press.

cooperative ventures, programs, inventions, and unique functions for the future society of rural lands and waters.

The migrants have left behind (and continue leaving) their small, un-economical farms. Egerstrom observed that the new land owners were stressed by their understanding of communism, and therefore the seeming affronts of cooperatives to individual farm ownership and management. There were genuine concerns and issues with communism that hampered cooperative developments, including those of intensive livestock production and practices, pollution management, and other projects. The absence of cooperation led to diverse, uncertain agendas, inadequate return on investment, uncertain regional and international commodity prices for uncertain produce, and regionally uncertain bank credit.

Within Rural System it seems essential to continue the process of encouraging the cooperative agrarians. People now in cities just do not know the language, the sources of food, the costs, the risks, the rapid changes, and the danger of the over-elaborate county scene. There is no sacred adapted mission, just that the successful large farm is a substantial *business* and a substantial *investment*. As other businesses, they seek net gains. Modern arithmetic in urban schools will likely not address the personal costs of the taxes that are behind the subsidized foods on urban plates. Egerstrom (1994:64), listing major changes, said that "rural Americans must start over—just as their ancestors, the pioneers, did—to give their farms and towns reasons to survive and prosper in the next century." We must work "collaboratively" in the new high-tech society to improve our collective standards of living.

I wonder, sad, about a culture change, unsure of the new spirit of work, the need for thinking like pioneers and entrepreneurs, acting as if on a moon mission, skeptical of international unity, challenged by "natural surprise" alerts received daily from the internet, unsure of "place" within the new Earth or epistemology.

Egerstrom, quoting Mr. Joe Famalette, said "farmers have to ask themselves if they want to just be farmers or if they want to be farmer-business-people. If they want to stay a farmer, they will be growing crops under contract for someone else. If they decide to be a farmer-business person, they will be growing things for themselves (their cooperatives)" (1994:143). We suspect that people cannot stay farmers and continue to grow crops without major change and cooperative effort, and will continue leaving for rational reasons related to family finance.

Herein is our premise that a farmer, successful and still rural, *must* be a business person, a Rural System person. In our proposed **Conglomerate** of Groups, people involved will be growing and working for themselves and their customers—perhaps worldwide. Major parts and processes of cooperative systems can be held, enhanced, and continued, but, now surrounded by change, they must be guided toward acceptable *rates* of change and future possibilities.

Hope remains, among:

1. a few historically-strong, large farms holding forth—well-capitalized, family-dependent, and actively engaged in markets, with some local labor and using public resources; or
2. the Rural System Conglomerate, including diverse, abundant, related Groups, with some national and state agency aid, niche markets, strategic alliances, and dispersed clusters.

From analysis of the needs for integrated systems to fill existing voids emerges the imagined and under-design **Rural System Collaborative**, avoiding pitfalls identified by experts on cooperatives, making modifications, and extending into the new enterprise environments. The Collaborative will apply GIS, GPS, and computer-aided decision-making with simulation, and with diverse electronic media for advertising and marketing from in and around Rural System

enterprise environments. Clusters of ownerships, unified within a Swarm of Groups, will be the new Rural System Collaborative.

Not just another marketing approach, the Collaborative will be seeking great efficiencies—better deals—for buyers, but also wellness, along with other objectives the members may wish to achieve together for the common good. We can imagine the emergence of leaders, male and female, with ideas for great differences in produce and sale areas, climates, and access. But we see how to overcome problems *together* for people now and for the future … we are not dependent upon phlegmatic people, the ardent leader…. or the occasional monoculture-payoff. Rural people will be better served by the effective, diverse *Collaborative*.

Lee Egerstrom wrote that, "A new rural America is starting to take shape, rising from the ruins of communities that were no longer needed to serve the needs of traditional agriculture." He just did not realize the *pace,* having said in 1974 that he had campaigned for Congress in towns sick, "if not dying." "Schools have closed or, at best, consolidated beyond recognition," and, he noted, "...needless to say things have gotten worse." (1994:7) Even in 1994, he called for "America to take back control of [the forces of change]," and suggested "a golden age ahead for agriculture and for all of rural America."

Readers may call some of the work of the planned Collaborative misdirected. However, as suggested in our text for employees' "Decent Work" (Appendix 3), it will actively engage and display social responsibility, respecting and valuing employees, the community, and the visual environment. We believe this ethic will influence long-term Collaborative profits. The Collaborative is planned to operate off a modified, enlightened self-interest proclamation of the once-Senator, Hubert Humphrey: hunger, thirst, ignorance, illness, today-centered thought, and inefficiencies represent lost Earth-markets.

Warned by Egerstrom, we know there is now no known likely set of farm policies that can restore or sustain large populations of farming people around current cities. People have left; others leave. High productivity is a conservative goal, as regional needs are estimated to grow and peak in 2050 AD. The options are few, the time is short, even for young people… between now and the year that Earth-populations will meet and begin exceeding food and water supplies.

From my analysis of national needs, narrowed to state needs, and then to what I knew best, the potentials and needs of Western Virginia became evident. The needs mirrored the plight of communities throughout the US and international communities that I had visited. I realized that I had found a solution for "home-town use," one isomorphic, and with broad, lasting benefits. The private lands of Virginia (and especially those vast lands of absentee landowners) may now become the centralized test and demonstration areas for rural resource management… now. Past natural resource management has not worked well, sufficiently, and shows little sign of preparation for the looming changes and limits.

I now write of a concept within Rural System: Conglomerate structure. My working hypothesis is that *abundant, rich food and abundant, clean water can now only be achieved at the massive scale needed via profit motives, and working in tandem.* Profit is needed for large numbers of people, with much land to assure that the computer-optimization effort approximates *lasting* optimization… production within bounds or "limits."

The Vital Community

Human community stability is one of the major objectives of Rural System, and that stability becomes increasingly valuable as we see the potentials of the "now" community

becoming the "next" or, for Rural System, the *new vital community*—re-shaped, and in touch with the changes all around. We see dimly that communities within rural areas are highly stressed by excessive demands. People in rural areas now need new technologies (with high costs), for older tools and methods to be replaced or repaired, and a new awareness of the enormous future needs for rural products as well as social amenities. Herein, we discuss standback and feedforward, essential parts of the modern general system (Chapter 2), relating specifically to our community objective.

Rural System itself is seen as a human community. We are not in the old, challenged business of "farming" but in that of a new, expansive corporate community, a Conglomerate—computer-aided and technologically active—with business centers and housing for diverse enterprises such as ranging (Chapter 9) and modern wealth management. The Rural System Conglomerate—a mixture of businesses, housing, farm clusters, and modernized agricultural cooperatives (Collaboratives)—will create communities, new social forms.

A community is not just a mapped area; we know that. It is composed of people relating well to each other, providing stability, reliance, and common interests and helpfulness, and we know well the differences between groups of people. Some we admire and others... not so much. Along with high employment, we shall strive for functional, vital families that make good use of the funds gained resulting from employment, and are proud in doing meaningful work, engaged in continuing learning, and healthy. We aspire for areas of regions with low crime rates, few people in poverty, and most people unlikely to overuse alcohol or drugs. There will likely be a working medical treatment center, and few teen-aged pregnancies.

As others, we face "the rural problem" but see "problems"—many, not one—defined as being within a gap between where we are now, and where we intend to be. We are eager to become involved with citizens as we come to understand and operate on closing that gap... which requires understanding the present and the desired future (and knowing how to quantify or express them so that we can tell when we are achieving the specific, desired results of our collective efforts).

Our Rural System strategies for stabilizing small rural communities, such as those found in Central Appalachia, are to attack and reverse the following observed limitations or problems:

- High tax burden per person;
- High maintenance costs;
- Uncertain payoffs;
- Few employees in the area;
- Uncertain public services for local groups of people;
- Little income available for starting and building profitable markets;
- Not enough use of waste and composting;
- Storm water problems, flooding, and need for water capture; and
- Unmitigated crime and drug use.

As part of our work in responding to these problems, we shall attempt to gain local employment that stays close within a region. We shall work for employment opportunities, educational spaces and opportunities, and for satisfied, happy citizens who stay and have their personal objectives well-met within the region. We intend to develop an escape from the boom-and-bust of typical farm and mining communities—a strategy we call *planned, bounded profits* (Chapter 12).

We learn from John Schultz's book, *Boomtown USA*,[9] that people are, "moving to small towns, primarily for quality of life issues." We are aware that they are moving *from* cities for these same reasons, and some may move *to* work in new cities, clusters of farms, and innovative additions to small rural communities, potential "roots for individual success." We recognize the coined "agurb," a rural town having experienced growth in population and employment from 1990 to 2000, and having a per capita income growth of more than 2% per year from 1998 to 1999. However, as Schultz observed, "Not all small towns are prospering."

He wrote that more than half of the 15,800 small towns in the US have lost population, and the trend seems likely to continue. All small towns are in a fight to survive, and most are losing. Rural System is developing a mixed strategy for all involved, planning to attract urban youth to border and rural areas; increase electronic communications among rural residents; diversify Rural System enterprises and their marketing efforts; make use of housing spaces of leased lands and at-home computer workplaces; provide diverse resources for young families; engage in outdoor recreation; and attempt to use creative solutions for quality-of-life issues, beyond restoring and enhancing the lands of current owners.

Rural System will work to build improving and enduring economies, vibrant communities, and regions stronger than in the past, largely by helping low-income people get ahead, but also through growing the stock of evolving, multiple regional rural assets, providing the base for a prosperous future. Within our well-related Groups, we shall work on specific needs such as improving community involvement against crime, and for youth development and related environmental justice programs. We propose to consider and advance green infrastructure for most buildings and their areas for communities, as well as Rural System farm structures.

It is very difficult to unscramble the statistics and use them convincingly, especially in the cross-currents of economic and political forces... For example, only about 20-25% of the US population is currently called "rural"... but an even smaller 1.9% of the population is actually on farms. We'll not get into "family farm" discussions, but we see changes coming with an improved communication system, dispersed work from computers, occasional business group meetings, and greater dependence upon commercial exporters (both short- and long-distance) than ever before. We shall move toward land ownership clusters as communities, and hope to see some of these emerge as unique Collaboratives.

Rural System has designed many intensive solutions to revitalize rural communities after large-scale departures. We plan to:

- Develop a superior, repeatable community development strategy;
- Develop a sound energy policy and relevant program, including at least energy-efficient mortgages, passive energy retrofits, using utility incentive programs, and personal energy efficiencies;
- Develop small gathering places within or near a community center (or merge with a nearby community) for local topic discussions, presentations, concerts, dances, art displays, and celebrations of community successes;
- Create a committee or organization for action, with social networking for community-wide participation;
- Develop a studies unit (e.g., history, population, economics, health care, problems, select resources) with easy access for citizens and scientists;

[9] Schultz JM. 2004. Boomtown USA: The 7 1/2 Keys to Big Success in Small Towns. Herndon (VA): National Association of Industrial and Office Properties.

- Enhance or create a library and information center;
- Develop special units of integrated work to increase employment opportunities for minorities, youths, elderly, handicapped, and economically disadvantaged individuals;
- Develop community service action programs with the courts, as well as adult social groups (e.g., beautification, waste disposal, highway clean up);
- Work within Rural System for education, leadership, and work-force development;
- Provide reports on the likely effects of regional, state, national, and international economic and natural resource changes on communities;
- Provide specialized youth workforce development (e.g., chemistry, carpentry, welding, programming);
- Provide diverse children's programs (e.g., recreation, service, and advocacy); and
- Develop a Rural System **Brown-Bag Group**, providing nutritious, quick lunches for the local workforce as a community alternative to fast food.

The preliminary **Vital Communities Strategy** will have within it, and have related to it:

- Abundant data and modern maps about the community, its history, ownerships, and leaders;
- Local museums to preserve cultural heritage and history;
- Internet materials and documents describing our objectives and processes;
- Speeches and publications for community members about our activities and intentions;
- Local field trips to planned Rural System work sites and demonstration sites;
- Reports of contributions to the local tax budgets;
- Published success stories and ongoing visits from community members;
- Consultations with off-site community experts;
- Meetings with county/local representatives to discuss Rural System activities;
- Annual financial reports with current lists of local Rural System employees and affiliates;
- Reports from citizens on likely effects of Rural System activities on family well-being; and
- Specialized training and services for community members.

Many authors describe how modern communities are being tested—people interacting online, creating anew the conceptual and functional elements that relate them. Rural communities will be inspired to find, for themselves, new online sources for entertainment, business, research, recreation, medical help, and other needs. They will create a community dialog, one now directed at needs, availability, shared objectives, and timely opportunities (food, sales, equipment, sites for work or service, warnings and risks, etc.).

The Internet is the new playing field where adaptive social processes can evade, settle, or surmount conflicts. It can show special needs or techniques, store past knowledge and retrieve it for timely decision-making. There are opportunities for communicating sound as well as images, words as well as voices, the past as well as sketches of the likely future... at reasonable costs for every rural community member. Markets are now worldwide, not just “down the road.” Whether they are realistic or not will depend on fossil fuel or other energy availability, and new modes of transporting *physical* things.

Many strong communities start and build around special environmental phenomena, such as ancient trail and road crossings, railroad crossings or centers, waterholes, and stream and river

crossings. Some develop near mines and factories. If these latter features close, or the resource is fully removed, the financial support and the reason for being for the community disappear. Yet, to abandon a mine site is part of the initial financial calculus of the land owner or large corporation. We see new opportunities in restoring formerly-mined lands for intensified food production, with secondary advantages of community diversification, food quality, and local tax advantages.

Quality of Life

Just what is a reasonable objective for rural communities? We think it's a stable, vital community that has conditions agreed upon by a few knowledgeable people to be adaptable, linked with others, resilient, and with reserves (resources for the future). Such stability for the citizens and businesses need not be official, but merely an area easily bounded by sketches on a map, agreed to by 5 out of 10 citizens of the community. The community is not necessarily a legal town or city, just a recognized place within which many people together will describe that it and its people as different than its surroundings. For example, Donoghue et al. (2006) wrote that, "The concept of community is a sociological phenomenon that continues to be shaped by differing interpretations of social structures, processes, relations, actions, and change related to human groupings."[10]

Discussions of community often include a high quality of life, and we continue work toward quantifying that expression and condition. There are many dimensions to achieving and maintaining it. "I live in a society of serious conflict," said Emmanuel Etomi of the Royal Dutch Shell Company, speaking in 2003 about Nigeria.[11] "This is being fed by corruption, poverty, and high unemployment among youth in a region where little of the wealth has been returned to the people." I have heard this said about many areas of the world... the coalfields of Virginia, West Virginia, and Tennessee; Senegal; former tobacco areas; US rice fields; and Native American lands. Rural System recognizes that such conflicts are real.

A part of the Rural System strategic intent is to reduce regional conflicts. We know that much conflict is massive, diverse, long-standing, and has already been the subject of past corrective efforts. We shall continue, optimistically, with our particular efforts and a plan to understand how our activities are affected by, and may contribute to, regional conflicts. Conflicts will probably make it difficult for us to operate safely and with integrity, and we may inadvertently feed the conflict. We know unmitigated conflict may reduce the achievements and impacts of our community stability and development objective.

We're not following a "borrowing trouble" basis for developing our strategy but just the opposite; we're using partially an "avoiding it" strategy, trying to be upbeat and trouble-free, then creative. We rarely emphasize conflict and instead shall work toward the desired conditions. We know that conflicts and issues arise between communities and corporations. We also know that most of these can be prevented and that some will not be resolved quickly... but we shall move always toward progress from our work together.

We know that there are various levels of quality of life. Most people aspire to a "high" level, others just to a *higher* quality than they now have. Quality of life differs by neighborhoods,

[10] Donoghue EM, Lynnae SN, Haynes RW. 2006. Considering Communities in Forest Management Planning in Western Oregon. USDA Rep. no. PNW-GTR-693.

[11] Tran M. 2004. Shell 'may have to leave Nigeria' [Internet]. The Guardian. [cited 2017 Mar 17]. Available from: https://www.theguardian.com/business/2004/jun/11/oilandpetrol.money

and is influenced by many dimensions, such as prenatal and early childhood care, general happiness, socioeconomic status, and high school graduation rates. Communities can rank and weigh these and other dimensions (like open space, scenic views, wild animals present, and back-to-nature atmosphere) according to their relative importance in *their* quality of life.

We have a special awareness of modern communities; they are strongly affected by images and realities of the past. Buildings, dams, roads, mines, and even forests set a pattern on the land, and while communities are social, they are strongly affected by space, structures, and past actions, including zoning and related decisions. Donoghue et al. (2006) [12] recognized that human communities are inseparable from surrounding ecosystems: "The past two decades have seen an evolution of concepts used to depict communities and their connections to forest resources and their management. The evolution of concepts shows a growing emphasis on the complex, dynamic, and interrelated aspects of rural communities and the natural resources that surround them." The result is an emerging social form, a modern, diversely-Internet-linked community, concerned with quality of life over the long-run.

We must face for the present that we have lost, recognizably, a level of human community. In the loss is the very definition of what we mean and feel when we use the term. In families, there are now two job holders; it seems that everyone is "working." There is little time or opportunity for meeting, exchanging ideas, casual conversation, or time together. There is little "moving up" from one neighborhood to another.

Even the messengers or connectors are rare—the milk man, newspaper boy, laundry or dry-cleaner delivery people … now even the postman. Relatives, unlike the past, now live far away. Grandchildren are almost unknown by many grandparents. Stores are too big or too far away from former communities to have people we know with which to pass more than the time of day. These stores usually have owners living outside the communities, and thus poorly attuned to interior sentiments of any form.

People are, more often than in the past, called *individuals,* and groups with names have multiple personalities. There are few groups, just individuals accustomed to private cars and solitary TVs. Entertainment is rarely social; people once went out to movies, played games, sang songs together, and listened little to pop singers. Maybe we have learned an artificial indoor culture and image of rightness from watching so much TV. We now see inside neighbors' homes, where conditions reflect on those living there. We know little of neighbors' values, thrift, manners, or courtesies.

The potential growth of tourism, urbanization, and large construction projects can put increasing pressure on the preservation of the cultural heritage of a region. Especially if the indigenous needs and interests towards local heritage are under-addressed, no effective steps can be set towards preserving the cultural heritage of the region through management and planning.

Studies of people are common, and we recognize their limits, but also their usefulness. Professionally-developed, the studies can express *well* "people overall," people over very large areas. We shall study these and use them carefully to make a point, draw conclusions (as sharply as possible, quickly, and at reasonable costs and benefits) about people of the region. The information will be used within a computer simulation of what things would look like if these values were real and were actively used, and may be an able influence on plans, marketing, and future budgets. Individual or group uses are likely to be different, and that difference—discussed and resolved—might be worth the cost of having the analysis "in-hand" on decisions to be made.

[12] Ibid.

We know quality of life is often quantified for study, and some use, with it, human life expectancy. We compute savings efficiencies in "years of work-time lost" (in classes of age 18-58, if needed, and of units of 4.5 family members), based on the variables of reduced falls, smoking, diet, heart limits, diabetes, child birth and care, first-aid safety at work and at home, driving safety, air pollution, water quality, noise, and exercise.

We have developed a long list of the factors for a desirable human environment. They may be considered human objectives in systems. We know that thoughtful people can and will express personal, relative value for objects or criteria in a list. These are human expressions—timely, changing, approximate—probably producing satisfactions or satisfying creative needs.

Rural System staff members have experience with profit indices, as are used in many industries. We can also use an index to appropriately weigh, and relate intrinsic and aesthetics values to measurable, relevant rural forms and functions. Most mathematicians, appraisers, and managers struggle to assign numeric value to these phenomena, and yet we all accept that intrinsic value and aesthetics not only exist but truly influence our choices.

We shall work toward significantly reducing family health and welfare costs. We shall add sickness and other losses to the annual "net cost" summation ... then display results annually, and study correlations and effects of such an index on the profit index. Within our results, we shall stabilize our financial gains as bounded values, and present with it a paired value, a graphed quality of life index, Q*. Now, with computer assistance, we will be able to use Q* reports in daily decisions made on estimates of differences in relative goodness, or simple "betterment."

Rural System's primary planned work is with diverse natural resources, and these activities are for bringing economic advantages to the towns and business places, directly and through employment. Diversification within the community is seen as very important, and we plan to diversify business-related activities for employees, the nearby residents, and the natural resources upon which they and others depend. Failure will be in thinking Rural System is a proposal *only* for increasing the profitability of soil, water, forestry, and agriculture. It's much more than that; Rural System is a proposal to improve quality of regional and expanding human life for the future.

We do not plan to meet our community objective and improve Q* by giving money to small rural communities. We shall hire people, provide living wages, and logically expect that to flow into local businesses, household improvement investments, health improvement, and local tax benefits, parallel with Q* gains. We shall work for communities in rural towns and areas of rural Virginia by doing "citizen work," meaning we shall work to build family health, average individual longevity; wealth management with living-wage adjustment; new, quality living space; and financially-supportive work centers.

Rural System's Human Health Hypothesis

Eager to maintain and increase the health of humans within our areas, Rural System staff recognize human wellness as a significant objective (integral with Q*), and readily see the financial dimensions to it, well-related with the other activities and objectives of Rural System work. The Q* annual index for residents may become used throughout each region of ownerships. We may display the index along with the financial index, minimally suggestive of the relationship of the two, and eventually build toward a net index—the hypothesized, desirable interaction of the reported Rural System profits and benefits of the family health and wellness indices.

We support and see means to participate actively toward gaining wellness for employees of Rural System. The behaviors and closely-related activities of employees can be examined within wellness programs, and modified if need be to achieve reduced family health costs and losses, and therefore higher *net* annual budgets for employees and for Rural System. We plan to develop an active health analysis and prescription Group for caregivers and participants, related to testing a developing hypothesis:

*A greater median annual financial **family-health index** (expressing the costs of wellness and health) will be achieved by participating family residents than from **monetary gains** from the well-related lands under intensive Rural System management.*

As part of our health project, we shall inquire about Community Supported Agriculture (CSA) programs to allow Rural System staff to develop deep and long-lasting relationships with local communities. CSA or other options may produce foods throughout the growing season for cash. We can expect customers to become long-term investors in our lands to make significant developments. We shall implement recommended, site-specific field procedures to develop whole-food production, storage, and marketing subsystems with opportunities for local families, and attention to food, water, and nutrition security.

We shall seek to use resources of the Ford Foundation and others to engage in regional public health. That is a massive task with obscure borders, but we find it essential to achieve our objectives, especially as we see challenges emerging in nutrition, diseases and pandemics, energy and food quality threats, addiction, and the changing conditions at the urban border. We shall study and press for research on disease dynamics with GIS software, innovate new roles for people with addictions, and manage realistic ecotourism concerns relating to diseases. We shall address the human concerns of lands undergoing reduced coal mining, increased emigration, and requiring revitalization.

We may improve local food and nutrition gains by:

- Supporting networks of civil society organizations to gain accountability and realization of food security;
- Supporting small-scale producers' organizations to increase their production of highly nutritious foods, and improve their access to local markets;
- Increasing citizen knowledge on well-designed, resilient and reliable food systems, whole systems including marketing and a view of the future;
- Reducing food losses, wastes, and inefficiencies;
- Improving the availability of nutritious food supplies in households, addressing food security in the long-term;
- Assuring foods of high quality, stimulating production for diverse, nutritious diets, combined with education for full-range nutrition; and
- Facilitating developing strong and proactive, local, multi-stakeholder forums on the "Right to Food," and demonstrating their effects on local people.

Within **PowerPlace,** our educational Group (to be discussed next), we shall have strong economic, nutrition, and population health components. We learn from reports of school room behavior that modified diets can result in profound, positive behavior changes—i.e., "poor" diets changed to recognizably healthy and improved diets (fresh vegetables and fruits, whole grain bread, and salads). The changes are notably reduced vandalism, litter, and security challenges;

greater calmness; and reduced fights and general bad behavior. Behavior change is expected, knowing the brain uses 20% of peoples' energy.

We have information from a few sources, quite believable, about the poor diets within families in poverty. We shall work toward nutritious meals… and have an active supplements program to fill in a few of the gaps when nutritious meals are not available. We shall work toward balanced meals, partially to mitigate harmful body weight and its results on activity… and general health. *Food affects behavior.*

MIT economists established a Poverty Action Lab in 2003, and we hope to use their idea and studies to respond to the thousands of people in poverty at the corner of three states—Virginia, West Virginia, and Tennessee. They have selected one way to identify "extreme poverty" —difficult among several ways—as living with a budget of a dollar per day. We work with State and Federal "poverty criteria," but we suspect the list to be incomplete. We list a "general lack of income," but hold and examine whether that condition is due to inherited conditions, e.g., determined based on sex, age, and race, access to adequate educational sequence, and good health.

We shall take standardized "wellness indices" and modifications under study for estimated improvements. We'll follow (experimentally) behavioral change and poverty-status, with additions of measured meal-supplements from Rural System gardens—notably lentils, and other nitrogen-high meals—for education-score improvements. Our working hypothesis is that improving health may be cost-effective within rural system performance.

Treating Addiction in Rural America

I've learned of the thousands of people with alcohol and drug addictions within the region where I am hopeful to start Rural System, and I can imagine the high costs likely to occur, even the failure of Groups or the entire system due to this now-rampant "learning disorder,"[13] or chronic brain disease.[14] I appreciate herein the support and noted work of Laurel Sindewald and Anne Giles. I write here to share my understanding of addiction, and to gain a base for creative aids to provide addictions treatment for people in the region, suffering the effects of coal-mine closures.

I appreciate the many thoughtful current efforts, well-intended toward reducing addiction and/or its harmful social effects and outcomes. There appears to be no singular cause or treatment for such a complex condition,[15] within so many people of diverse form and function, experience and expectation. I struggle to learn more. For now, I simplify studies and seek alternatives to overcoming the following collective fundamental causes. These now appear to be *centers for analysis* and treatment, many within the field of Rural System operations:

1. **Disaffiliation:** failures to connect within relatively stable communities, small (marriage; family) to very large (military units); the loss or failure to gain group-unity (**community-less**).

[13] Szalavitz M. 2016. Unbroken Brain: A Revolutionary New Way of Understanding Addiction. New York (NY): St. Martin's Press.
[14] NIDA. The science of drug abuse and addiction: the basics [Internet]. [cited 2017 Apr 23]. Available from: https://www.drugabuse.gov/publications/media-guide/science-drug-abuse-addiction-basics.
[15] Sindewald L. 2017. Complex and Interacting Factors Predispose People to Addiction [Internet]. Handshake Media, Inc. [cited 2017 Apr 23]. Available from: http://www.handshakemediainc.com/2017/04/15/complex-and-interacting-factors-predispose-people-to-addiction/

2. An effect of #1 – **Lost reliance**, increased risks, loss of team or membership status, loss of past affiliation (e.g., family, employment, high group status thus reduced confidence, rare synergism).
3. An effect of #1 – **Lost resilience**, increased risks over time, reduced permanence and confidence, survivability, and life expectancy.
4. **Helplessness:** experiencing or believing personal shortage of resources, knowledge, skills, physical abilities, actionable-beliefs in a higher power, or the diverse consequences of disappointed belief in national power.
5. **Hopelessness:** perception of being without alternatives, without assistance sources, and in the face of extreme risks to be encountered.
6. **Worthlessness:** shortage or absence of action… or delayed action, resulting in judging one's self as not being praiseworthy; being without rewards, other-noted success, appreciation, or name recognition
7. **Purposelessness:** without needed, high-level, durable, socially-relevant and recognized, *lasting* goals or objectives—whether planned or undergoing action.
8. **Trauma:** about half of people with trauma develop addiction, and over half of people with addiction have a history of trauma. Research suggests the relationship is causal.[16]
9. **Co-occurring disorders:** people with addiction also commonly have co-occurring mental disorders or personality disorders, which often pre-date and contribute to the development of addiction.

Becoming aware of one or more of these centers can help us all understand each other, and begin actions to help individuals or groups understand addiction, its causes, and targets for relief and wellness. This will be a preliminary basis for work with staff and others, replacing it with rapidly-developing knowledge as it advances, and providing action for people throughout the rural environment. Tentatively-planned actions, believed to be responsive to the needs of people within Rural System and its environments, are being explored among messages to everyone within Rural System, especially those sensitive to the items listed above.

Given the above dimensions of our understanding of addiction, we now think that *addiction* needs consistent and repeated definitions in order to sharpen discussions and measurements of specific topics within the realm of past uses of the word. The most recent definition for addiction comes from the National Institute on Drug Abuse (NIDA),[17] as: "a chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences." For this reason, and given research on the cost-effectiveness of treatment over incarceration,[18] we recognize that imprisonment and other negative consequences are unlikely to be effective in reducing addiction rates or severity in the future.

We believe that meaningful, gainful employment may be substantially helpful for supporting the recovery of people with addiction, and to that end we have planned **Advance**

[16] Sindewald L. 2016. Trauma and Addiction: Common Origins and Integrated Treatment [Internet]. Handshake Media, Inc. [cited 2017 Mar 19]. Available from: http://www.handshakemediainc.com/2016/09/06/trauma-and-addiction-common-origins-and-integrated-treatment/.

[17] [NIDA] National Institute on Drug Abuse. 2016. The Science of Drug Abuse and Addiction: The Basics [Internet]. [cited 2017 Mar 19]. Available from: https://www.drugabuse.gov/publications/media-guide/science-drug-abuse-addiction-basics

[18] Sindewald L. 2014. 10 Facts on How Addictions Treatment vs. Incarceration Cuts Costs for Taxpayers [Internet]. Handshake Media, Inc. [cited 2017 Mar 19]. Available from: http://www.handshake20.com/2014/03/10-facts-on-how-addictions-treatment-vs-incarceration-cuts-costs-for-taxpayers.html

Group within Rural System. Advance is imagined to be a small Group within Rural System that assists the public local courts and affiliates in achieving supervised community service work for individuals—work that is required and is constructive, meaningful, and planned in the region.

Advance will supervise workers, plan projects, set priorities, provide transportation, and attempt to attach individuals to their *personal* work on the land (e.g., planting "their" tree; building "their" stone wall) for the good of the land and all people. The Group will conspicuously attempt to overcome, with participants, helplessness and hopelessness. Advance will be quick to clarify and advance *purposefulness*, and to build Tetrads, or groups of four people, to provide mutual support as they learn new skills in Advance work.

Advance will introduce participants to areas of work of Rural System, especially that of **The Land Force**, and will serve as a rural, usually-outdoor job market, especially for youth and healthful exercise. Where feasible, jobs available within the Groups of Rural System will be announced, and additional educational programs within **PowerPlace** will be encouraged for people entering court probation or seeking to re-enter the workforce after time in prison. PowerPlace may also serve well the staff and students of **StairSteps**.

Another *employment-oriented* Group, StairSteps will work from an office in a rural community. It will maintain a private, for-profit employment service for people with special talents and abilities who seek part-time work. Their model is somewhat like that of Uber. The members will choose to work whenever they want, and for as many hours as they want, and there will be no need to ask anyone for vacation. All members will be carefully selected, and opt in or out as they decide and at their leisure. Members of StairSteps will be a new type of consultant, often with *many* skills and talents (as is common within rural settings), and a willingness to work alone or within small groups.

Members of StairSteps will have priorities in response to requests and to messages on an on-going blog, to be developed. The new business will depend upon computer-accessed talent, timely responses to local need, and mutual personal needs for brief jobs. StairSteps will require additional team and enterprise development, access to talents and needs within almost all Rural System Groups, realistic scheduling to meet local travel costs and challenges, and will need to provide support for the region through community centers. There may be an option for individuals or small teams to work at home.

But employment is not expected to be sufficient for supporting recovery from addiction. The centers of action for addiction are paralleled by a more general observation of human nature made by Sebastian Junger in his book, *Tribe*,[19] that to form human communities is natural, mammalian, and probably genetically controlled. Summary evidence allows a working hypothesis that forming into groups (tribes) has survival value for species, including humans.

Junger (2016:15) observed that because of "basic freedoms" of American Indians, "they tended to be exceedingly loyal." "It was a simple ethos that promoted loyalty and courage over all other virtues akin to preservation of the tribe." He listed comfort and protection from hardship as appealing characteristics of tribal groups, as well as a strong emphasis on "sharing," frequency of moving, and minimum accumulation of surplus. He observed that the more individualistic the common choices about life, the more diminished are group efforts toward a common good.

He also noted that modern society – despite nearly miraculous advances in medicine and other areas, has the highest rates of depression, schizophrenia, poor health, anxiety, and chronic loneliness in human history (Junger 2016:19). People who are poor are forced to *share* their time and resources more than wealthy people, thus "live in closer communities" (Junger 2016:21). We

[19] Junger S. 2016. Tribe: On Homecoming and Belonging. New York (NY): Hachette Book Group.

examine the "community" concept, known to have many meanings but to be singular enough in use and meaning to identify a human concept, perhaps one found to be similar in other life forms.

Our community concept, enlightened by *Tribe*, is that alcohol and drug addiction is influenced by community, and thus treatable by bringing diagnosed individuals into measurably large, long-term roles in communities—those socially recognized as having beneficial purpose. (Addiction-specific mutual-help groups like AA may be helpful, but really any community support will do.[20])

We agree with Junger that, "poverty is more natural than affluence," (Junger 2016:21) and reflect on its certainty and potential, perhaps universal truth. We glance at animal populations and see fewer affluent reproducers with access to resources than offspring (in a poverty-like struggling condition of shortages and limits). We learn that financial independence leads to personal isolation, the non-community, and then to risk of depression and suicide.

The maximum benefits of community may be found in the large-scale disasters or crises (Junger 2016:52-53).[21] A message about the disaster or threat of food and water shortages (and perhaps of war) may emerge in energy devoted to the community, rather than to individuals.

As elsewhere in this book I welcome advice and input on ideas within this chapter. Implicit within the above, we continue to study addiction and its treatment. We investigate broken personal linkages as a cause of addiction, study the impermanence of linkages, and ponder whether the cure may involve near-permanent human linkage.

Employment and Rural System's PowerPlace

Rural System's major concept of *community* is directly related to our role in increasing jobs, engaging in meaningful work, and holding fast to workers. The employment we propose and prepare to provide contributes to community social benefits, in part by stimulating the local economy. Rural System jobs will also help by contributing to a tax base for the community, providing citizen services.

The Land Force, led by **System Central** and Group leaders, will train and employ local people. We will hire superior workers, both full- and part-time, who will seek to implement the objectives of their Groups on enterprise environments. We'll recruit and educate leaders for many Groups to get each started as soon as possible and provide marketing advice for each from the first days of employment. We're in a buyers' market for staff.

The Land Force will work daily on prescriptions from VNodal, read in the field on mobile devices. They will move in field vehicles to ownerships and hike to GPS-specific sites to complete daily work. Their work may include forest thinning, trail building and repair, sign placement, visitor center creation, faunal-sighting reports, and stream improvement.

Rural System is very thoughtful about the needs of Hispanics in the US and other recent migrants to the region. A map from the USDA's Economic Research Service,[22] provided by The

[20] Sindewald L. 2016. Addiction Recovery with Others is Easier than Recovery Alone [Internet]. Handshake Media, Inc. [cited 2017 Mar 19]. Available from: http://www.handshakemediainc.com/2016/09/27/addiction-recovery-with-others-is-easier-than-recovery-alone/

[21] Ibid.

[22] Coates D, Gindling TH. 2013. Hispanic Growth, Higher Rural Incomes [Internet]. The Daily Yonder. [cited 2017 Apr 23]. Available from: http://www.dailyyonder.com/hispanic-growth-higher-rural-incomes/2013/02/12/5652.

Daily Yonder, shows the growth of Hispanic populations in rural counties, which has led to higher rural incomes. Dennis Coates and T. H. Gindling[23] found that this demographic change has benefited rural America. I believe that can and should continue.

Young Americans have been moving out of rural areas and small towns, leaving behind smaller and older populations. That trend of declining population has slowed and in some cases reversed, largely as the result of growth in the Hispanic population in these rural areas. This growth in rural areas is also changing the age structure of the population, making it younger. For this reason, young families are at the center of Rural System community thought, planning, and system developments in those areas, with a special focus on language, and financial, health, and social resources.

We see needs for assisting Hispanics in revitalizing parts of communities, gaining education and language skills, and benefitting from wages that we intend to offer for performing the diverse, prescribed work of the Rural System Groups. We envision Didactron-like[24] educational space developments, the PowerPlace, with rapid development of safety materials in Spanish, and translations of resource and Group-related materials developed by each Group.

We now believe that Rural System needs to have a system to teach *about itself,* and to share our thoughts, hopeful for stimulating new clarity in education and planned desirable changes for the people of the system. We plan significant advances in local education and job training, along with responding to the many needs and talents of emigrants to our regions. Together, these will comprise a modest, carefully-regulated, for-profit enterprise, one of the Rural System Groups.

Called PowerPlace, the Group will be more than a fancy name for the "same old schools," or locations. It will be an institution providing electronic education, and will present ideas and knowledge as multi-dimensional—thought systems—and students as masters of needed, practical change. It will bring the world—as in some TV work—into a teaching center. PowerPlace's objective is to cause behaviors to change, cost-effectively, to behaviors that improve life quality and allow individuals, families, and Groups to prosper financially. PowerPlace will teach concepts and applications for meeting the stresses ahead in 2030 and 2050 AD.

Symbolically, PowerPlace will be in the minds and bodies of world citizens, together. It will begin and end with concepts of certified achievements—a system designed to give people sufficient power over their environment and social conditions to allow them to reach, and then hold, high quality of life. PowerPlace is based on individuals or small groups (like families) being profitable. It will be directed toward reducing costs and losses as much as toward "making money," but will aim to become a profitable Group, with collective income from:

1. Fees for educational units and programs;
2. Fees for proctoring exams;
3. Rentals (room and board) during educational stays and outings;
4. Publications, software, and media sales;
5. Conferences, tours, field trips, and experiences;
6. Equivalent worth, hours of labor (trading);
7. Innovations and project results;

[23] Coates D, Gindling TH. 2012. Is Hispanic Population Dispersion into Rural Counties Contributing to Local Economic Growth? Contemporary Economic Policy. 31(4):649-668. doi: 10.1111/j.1465-7287.2012.00334.x
[24] Giles RH. 2012. The Didactron. Blacksburg (VA): Handshake Media, Incorporated.

8. Fees for automated evaluations; and
9. Shared profits of the Rural System Conglomerate.

PowerPlace, as planned, will have a large financial incentive to connect its graduates with well-paying employment. Rural public schools, unable to stop their drop-out rates and unable to resolve conflicting social interests and wars in athletics, busses, religion, etc., are ignored and are "gone around" by us to offer a reasonable, advanced, private educational system to willing individuals. PowerPlace's broad view is that it will move willing people, or those that can be motivated, into an optimized, objectives-oriented life system with measured behavioral objectives, with fairly clear financial costs of achieving them.

We need one special, physical PowerPlace, then many derivatives, with high technology education for potential landowners and others. While we know individuals who give their lives teaching, we contemplate the immediate needs for superior teaching of many people in small groups, with field experiences. Simultaneously, we need to implement now-available media sources, and thus present alternatives to large, interior classroom experiences (i.e., virtual reality). We need some units for teachers and advanced students. We may offer experiences within courses as part of professional development or for doing effective work with Groups. PowerPlace will emerge as a Group with places and technology for educating employees and citizens of the region.

I learned of a 1963 premise that "*educating,*" means "causing desired, changed behavior." Our message: we achieve *desired behaviors, cost-effectively*. Local people can become valuable to their employers with fresh insights and exploring new opportunities, gaining skills needed to advance or change their careers. PowerPlace will help staff and guests pursue personal and professional goals, discover opportunities within Rural System, and possibly find, get, and hold jobs. They may discover a future work opportunity—their specialty for life—and explore that specialty internationally.

The maker of fine furniture does not belabor the saw, the hammer, the smooth surface, the imported wood, the stain… for they are the creation, together. The tricks of the trade, the artist's unique ploys, and the final appearance are all central to the teaching system, honoring the teacher, the perceptive buyer, and the appreciative guest observers. Within Rural System we see "the system," and shall celebrate its conceived, desired results, with greatly increased value over time—desired change at modest cost. The parallels are the furniture—the functional, working, socially appreciated system; the furniture maker—the creative, insightful teacher or creator of the app or change device; the planned or detailed furniture sketch—the planned educational objectives or "target"; and the furniture buyer—the student, working and using the educational system, equivalent to the furniture.

We need to move toward an appropriate definition of what our desired change is, and what units, exactly, are to be measured to compare present behaviors with those achieved in PowerPlace. I continue working toward redeveloping the concept of education for an expanded, behavioral objective for a teacher or teaching/education Group. "Preventing undesirable behavior(s)" must somehow include behaviors that pose clearly-immediate risks. (Not only in conventional "classes," we shall need to continue to face poacher, arsonist, and natural-resource-related criminal behaviors.)

Within PowerPlace, we are likely to study and use results as we clarify for our personal use, then advance the measures we develop as we certify "learning" and study the time and costs to achieve it. We are likely to seek means to achieved measured *improvement* in knowledge or specified behaviors. We may test current status and, having a good estimate, avoid time and costs

in re-doing the work proposed to result in such measured condition(s). We shall discuss continuing development and consistency with learned professionals, those within modern education and having timely understanding of the role of review and "catch-up" (of existing knowledge) for practicing professionals and workers, seeking credentials for advanced work within employment.

PowerPlace will offer programs that will allow people to invest in their education without sacrificing their current responsibilities. We shall attempt to add fresh insights, explore new opportunities, and allow our employees to gain skills needed to advance their careers. We shall suggest pathways to pursue personal and professional goals. Employees may acquire hands-on experience with the latest tools and techniques to help each other boost credentials and advance their careers, which to us means growth within Rural System, but also means becoming even more valuable to *any* employer. We may work with employers to develop very specifically-trained employees.

We shall study successes of students seen in groups of 4, as if each student is located (conceptually) at the corner of a tetrahedron, symbolically related to encouraging, aiding, and learning together on selected topics and benefitting by the gains. We call these groups Tetrads, and shall help students connect with others to form new Tetrads.

PowerPlace will work on moving functional knowledge cost-effectively toward human uses. Nearby each PowerPlace there will be planned, outdoor teaching-learning places for individuals or small groups with "nature" on display—from deep soil to tall trees and shrubs, at a pond or aquarium edge. It will be an outdoor-oriented, hands-on action and display space on a number of management topics: logs and logging, erosion, Alpha Units, and other principles-in-use—on display.

Our online programs will give employees and serious students the flexibility of online courses—studying whenever and wherever a student wants. We shall educate our staff and students (our future) as quickly and as well as we can, at efficient cost and measured financial gains. We shall concentrate on and revise new approaches with students, who will learn how general systems are conceived and how they relate within Rural System action. Aware that more than 41% of the US population, 25 years and older, have not attended college, we shall move staff and interested people into PowerPlace as cost-effectively as possible, achieving desired behavioral change/hr/$. The concept may be too profit-oriented for many with whom we discuss Rural System, but we shall continue testing it.

PowerPlace will pay new parents to achieve a set of competencies and behaviors in life, and accident insurance policies (reducing future costs and heading children into PowerPlace). It will measure achievement, and once there, certify its achievement and move on with refreshers and attention to the new, desired behaviors. There are major financial savings likely from personal use of knowledge of personal and public health.

PowerPlace will award children prizes, trips, and various other awards for achieving certain actions (such as self-awareness of their abilities and limits), physical attainments (weight, health status, etc.), and for core abilities (manners, speed reading, keyboarding, courtesy, speaking, writing, algebra, logic, elementary probability, elementary programming). Students will move at their own pace; time will be removed (except as it relates to measuring the costs of achievements).

"Courses" are not the functional concept, only teaching/learning units, and these will be selected by students, even with computer aids using their interests, abilities, and past performance successes as criteria. There is no concept of high school "advanced placement

courses," only each student's ability to master each unit... and the units will be very numerous—unending.

High fossil energy costs for school bus transportation will be eliminated or reduced. Athletics will be emphasized only for exercise for lasting health. (Competitive spirit is believed to be innate, developed over life, and need not be equal in all people.) PowerPlace will conduct special programs for stressed youths of "broken" homes. It will seek the best current strategies for reducing drug- and alcohol-related influences, likely to be a major deterrent and detractor to effective education.

The interior programs of PowerPlace will provide youths hourly wage employment in healthful outdoor work experiences, improving Rural System enterprise environments. Programs will seek to move public high school youth into PowerPlace, providing alternative certified performance for employers, and reducing social costs. It has the clear objective of moving students into a program of study better than that of the current often-very-diverse, wasteful-of-time, over-priced, grade-inflated, undergraduate college/university programs. With credentials in hand, graduates of courses or programs may seek further study or university experience.

Because of government and employer requirements for quick analyses of applicants, certificates of accomplishment in named programs of study will be given. These will become the equivalent of curricula and diplomas, and we shall seek "official" designations by professional and scientific organizations. The teaching/learning units will allow this rapid learning and preparation for future tasks... not the long press for a 4-5 year "degree diploma."

Educators will be identified and recruited for stabilizing educational quality and behavioral-change effectiveness. PowerPlace will contract firms to conduct a far-reaching international marketing effort to make each PowerPlace participant eagerly employed … because each will be certified, well-accounted, financially-oriented, and existing within a Group structure with potential synergism.

Part of the marketing effort will be to recruit outside reviewers (other than the regional university standards commissions) to visit, study, and even compare a reasonable set of student participants and their abilities, employment, psychological profiles, health, and financial successes after graduation. The work of PowerPlace might energize the universities and create a new era in higher education. We may aspire to that. Rural System and the quality of life for people that is its potential for the future, requires something very new; minor adjustments will not suffice.

PowerPlace may profit from educational programs for local citizens about Rural System; regional educational programs for staff, families of staff, and land owners; and programs or internet courses for sale to university students or university departments and agencies. My book, *The Didactron*,[25] suggests the possible role of a superior teaching space to be created, allowing the teacher full control over the characteristics of that environment and information about student responses to the teaching.

As PowerPlace will increasingly move to an international mode, we shall need many globally-oriented Groups, and the attitude and philosophy that supports and encourages them, especially in economically "down" periods. We shall have to plan and build well-connected facilities, teachers, students, advisors, faculty, and administrators to ensure seamless communication as we develop together a scalable, cloud-based intercommunications platform. That platform, within PowerPlace, will operate off "knowledge is power" and thus shape, connect, and build for the present and the ever-changing future.

[25] Giles RH. 2012. The Didactron. Blacksburg (VA): Handshake Media, Incorporated.

Diversity is widely believed to be a key ingredient of economic development of rural communities. Diverse communities can withstand industrial disruptions and are more prosperous than others. They can buffer major changes and make adjustments to such changes. Rural System has planned many Groups, with the intention to carefully stabilize rural economies through human and enterprise diversity.

Environmental Justice in Rural System

Regrettably, sections of some small rural communities are said to be in poverty. Poor neighborhoods and rural areas are more likely to be sites for toxic waste processing and industrial sites with high levels of pollution. **Environmental justice** is a rising advocacy movement in response to these conditions, seeking to improve living conditions and quality of life for low income people. Success stories do exist. Majora Carter presents one shining example in her Ted Talk, *Greening the Ghetto,*[26] on her project to create a waterfront park in a South Bronx ghetto.

Green infrastructure strategies are also available, to reduce negative human impacts on natural environments, including ways to decrease pollution to local waterways by treating rain where it falls, and so keeping polluted storm water from entering sewer systems. Green infrastructure is a set of tools and techniques, including green roofs, permeable materials, alternative designs for streets and buildings, natural storm water controls to reduce flow into sewer systems, trees, native plants, rain gardens, and rain harvesting systems. Green infrastructure is a means for addressing climate change and mitigating its impacts by making clusters and communities resilient.

As an example, one project in Syracuse created a ground-breaking hockey rink made of captured rainwater.[27] The water harvesting system at the arena captures an estimated 400,000 gallons of rainwater and snow melt per year. In the basement is a 15,000-gallon cistern system that captures, filters, and uses the rainwater for the hockey rink and other purposes.

Since green infrastructure techniques may be less expensive than conventional storm water management approaches, there may also be cost savings. The need for improvements to the nation's water and sewer infrastructure is staggering, estimated to cost over $650 billion dollars over 20 years. Increased emphasis may be placed on green infrastructure to improve affordability.[28] We shall attempt to merge environmental justice, related EPA concerns, and the concerns of citizens throughout Rural System and in work with green infrastructure.

From the EPA's blog on May 30, 2014,[29] we learned from Gina McCarthy that Marian Wright Edelman, President and Founder of the Children's Defense Fund, once said: "We must not, in trying to think about how we can make a big difference, ignore the small daily differences we can make which, over time, add up to big differences that we often cannot foresee." Rural

[26] Carter M. 2006. Greening the Ghetto [Internet]. Ted: Ideas Worth Spreading. Available from: https://www.ted.com/talks/majora_carter_s_tale_of_urban_renewal/transcript?language=en.

[27] Save the Rain. War Memorial Water Re-use System Complete [Internet]. [cited 2017 Apr 23]. Available from: http://savetherain.us/war-memorial-water-re-use-system/.

[28] EPA. 2013. Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs [Internet]. Rep. no. EPA 841-R-13-004. [cited 2017 Apr 23]. Available from: https://www.epa.gov/sites/production/files/2015-10/documents/lid-gi-programs_report_8-6-13_combined.pdf.

[29] McCarthy G. 2014. EPA: Making a Visible Difference in Communities Across the Country [Internet]. EPA Connect: The Official Blog of the EPA Leadership. [cited 2017 Mar 16]. Available from: https://19january2017snapshot.epa.gov/aboutepa/epas-themes-meeting-challenge-ahead_.html

System, very aware of the needs and advantages of the *small daily difference*, seeks to assist in making a notable change in communities by improving the lives of families through innovative approaches to educate, engage, and empower regional families and communities in environmental protection and justice.

Some Rural System approaches are conventional, but we shall work from basic human motivation for long-term wellbeing, and we believe that such actions can follow from diverse profits. Unique markets may be on our future agenda, helping to solve the challenge of offering choices for affordable, healthy food in our communities while creating jobs. We may study ways to improve local air quality and thus health, and to help clean up and revitalize areas along waterways, unifying gains, reducing future costs and losses, and developing new, healthful recreational venues.

Environmental quality (EQ), as used within Rural System, is a general term expressing a desired condition of a large set of dynamic elements for a majority of the people of an area. EQ is time-specific, dynamic, and can be changed. The EQ of an area may be challenged; the factors influencing EQ may reduce human surroundings from being enriching or even livable. The environment may be polluted, and the amount and type combinations, timing, and sequences may influence EQ for humans and/or the resources upon which they depend.

EQ is affected by serious and complex barriers and initiatives that are technological, economic, social, political, legal, institutional, and sometimes international—these many interacting factors underscore the difficulty in understanding and achieving needed change. Within Rural System we try to understand the *causes* of environmental problems, and to engage in preemptory work to prevent or reduce them.

Understanding *human resilience* in the context of interconnected ecological, health, and social systems (as in the One Health Initiative) may develop—with sustained programs over time—a new, positive, productive statement of community values and its livelihood for the future. We may achieve *hopeful places*—future scenarios or possibilities in view—especially if the major alternatives under consideration are simulated.

Future scenarios for vital rural communities can be addressed well within the system concept of feedforward, and using GIS technology. The value-weighted, preferred solution may be cast, and then the costs of achieving it can be discussed. It is best, for the future, to lay aside most cost considerations as the real characteristics of the desired future are cast in computer simulations... then alternative investment strategies may be realized, and the present compared to the possible desired conditions. An action plan may solidify the desired end conditions, as well as investment strategies to achieve those.

Rural System will seek improvements in the financial status of residents and associates, stability of worthwhile community elements and adjustments of others, and achieving modern sophisticated natural resource management for stabilized, diverse, bounded benefits. Together, local governments and Rural System can plan for successful, resilient community adaptation to the social, environmental, and economic challenges presented by climate change, and a challenging set of other undesirable conditions—those now and likely emerging.

Wealth Management for Citizens

The proposed **Wealth Management Group** will offer and work toward achieving additional profitability for rural land owners, their friends and guests, communities, and for Rural System. Wealth Management staff members will be fully aware of and appreciate the other

conventional dimensions of wealth such as health and quality of life, adequate food and clothing, and comfortable quarters.

Basic to our work together are three unequal premises (to be tested):

1. More money can now be made from reducing risks, reducing taxes, reducing payment on loans, and increasing gains from diverse investments and current subsidies than can be made from the soils of a current rural ownership of 500 or more acres.
2. Good health (a fixed definition is sought) may be seen as personal or community wealth. Estimated net annual family monetary gains from health and wellness management may be greater than from Rural System estimated annual regional commodity profits.
3. Modern landowners may benefit from dispersed, wealth-related and risk-avoidance strategies that may yield significant financial gains for owners, some of which may also advance Rural System gains.

The Wealth Management Group, though interested in commodity prices and land production, will play a central role in Rural System by emphasizing that owner success and land retention in viable production depends upon the flow of all funds, tallied in the annual record of total gains and losses of Groups. The process is expected to build a sound base for populations of stable, diverse human communities.

There are many difficulties involved in achieving consistent, good performance in agricultural investments. Owners have to understand the many intersecting forces in order to stay in business, balance long-term investment principles with technical knowledge, and block out confusing "noise." It is essential to try to see the big picture, particularly forces related to social and demographic shifts. There is much to take in and use effectively, which explains for us why so many hard-working rural citizens do not become involved in successful investments, or need to delegate such tasks to other people.

We believe that even modest investments and loss reductions are sufficient to bring the current rural enterprise beyond the marginal financial status that drives people to leave for the cities, or seek care or other employment. We are developing a strategy, with computer aid, of feasible, constrained options to significantly improve average future farm revenues. The Wealth Management Group advice will protect land owners from the financial storms that have swept through the nation, and even the world in the past.

We shall not provide pages from a commercial computer program. Advice will be from our Wealth Management Group, with major options for owners' and Rural System leadership choice in making hard decisions. Not all of our advice is conventionally palatable. We shall work from a well-grounded, evolving, improving model that may, in some years, merely park money in an investment account. Otherwise, the computer system will be responding to data such as the age of the ownership, planning horizons, acceptable levels of assumed risk, desired growth of resources, innovations, constraint, and perceived productivity. We do *not* start from zero and *do* allow pooling of funds in a cluster's mutual fund, developing a Collaborative investment operation.

We know that "the rural market" is roughly cyclical (known as "irruptive" in animal populations), but that periods and amplitudes are unknown. We shall watch carefully, but include in our models the typical causes of the notable changes in market cycles. We shall incorporate not only market movements, but whether staying in the market matches a landowner's changing financial needs. We shall continually be adding variables and performing group as well as personal-suggestion adjustments.

Rural, state, national and world economies are interconnected, as in ecosystems, and we know about and can model these. Politically dominant corporations and sociological and demographic shifts are changes that will be incorporated and studied using our developing models. We can conservatively make over 6% growth on an investment, more than from forest growth and from most small cropland production. (Though we work hard to improve agricultural and forest management, we know their limits well.)

Finding someone competent enough to advise is very hard for a small investor. Getting piece-meal advice is dangerous. The Wealth Management Group is designed to provide investment and other financial advice. The Wealth Management Group will provide financial analyses for the entire Rural System enterprise, but also present results of financial models to communities, individual landowners, and clusters (Collaboratives) of lands under contract. It will also provide specialized analyses for the employees of The Land Force, and sell related services to other people within communities.

The Wealth Management Group has novel concepts of risk, especially those related to rural resources. It will deal actively with production functions (as ecological succession or transition and yield curves). It will use related ecological concepts of cyclic behavior and complex interactions, such as predator-prey relations. It will confront the silliness of "sustainability" texts, and advance the concept that sustained income is not desired; an increasing (though fluctuating) income is desired. Incomes *can be* sustained, but that is very difficult, almost impossible. The alternative concept, "bounded wealth," is badly needed (Chapter 12).

The Wealth Management Group will also advance the concept of the long planning horizon, 150 years. The rationale of planting a tree as a 150-year investment in land volume must be faced realistically. For decision-makers, it also presents useful comparisons with current present-discounting analyses. A 150-year planning horizon builds feedforward into presentations of decision alternatives. As a well-known example, major new changes will be occurring in fossil energy availability and costs, requiring massive changes within the rural environment.

The Earth Institute at Columbia University within Science Daily in 2009,[30] elaborated on the capability of index insurance to help farmers manage risks associated with climate change. We shall study its local utility. Climate has always presented a challenge to farmers, herders, fishermen, and others whose livelihoods are closely linked to their environment, particularly those in poor areas of the world. A type of insurance, called index insurance, [31] now offers significant opportunities as a climate-risk management tool, according to a publication presented during a workshop at the Global Humanitarian Forum (GHF) in Geneva.

"Green" investments are no longer just a luxury, but are now a legal responsibility, according to a new report by the United Nations Environment Programme (UNEP) and a powerful group of asset managers controlling some $2 trillion in assets. The 120-page publication argues that if investment consultants and others do not incorporate environmental, social and governance (ESG) considerations into their services, they will face "a very real risk that they will be sued for negligence."[32]

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[30] The Earth Institute at Columbia University. 2009. Index Insurance Has Potential to Help Manage Climate Risks and Reduce Poverty [Internet] Science Daily. [cited 2017 Apr 23]. Available from: https://www.sciencedaily.com/releases/2009/06/090624093313.htm

[31] See ATTRA and NCAT YouTube farm insurance webinar related to whole-farm revenue insurance.

[32] United Nations. 2009. Green Investments a Legal Responsibility, Say UN and Top Asset Managers [Internet]. UN News Centre. [cited 2017 Apr 23]. Available from: http://www.un.org/apps/news/story.asp?NewsID=31464#.V8dOCJgrK00

Even in Virginia, part of a developed country, Rural System's practice of investing partial profits back into the land itself is notable as a form of preemptive risk management, aiming for increased future productivity and planned profitability. The potential for savings in reduced food costs, increased safety, reduced medical expenses, and then for reduced losses from vandalism and theft suggest a complex future strategy. The Wealth Management Group will further offer related, strategic opportunities for conventional investments.

The Wealth Management Group will work with other Rural System Groups on common goals and problems. **The Lands Group** and **System Central** may advance financial gains within **The Realtor Group,** using GIS software heavily for land valuation and optimization. Thus, we see major synergy between The Realtor Group, **The Law and Justice Group,** the Wealth Management Group, and a variety of local and regional professionals.

Rural System recognizes that annual gains from pasture products or from forestry are not generally separated at tax time, and that the entire financial system of the ownership are managed as a single package for decision-making. It is this total system and its profitability that determines good land use, whether the farm must be sold or whether it becomes an increasingly valuable entity within an inheritable estate.

There are many changing laws and regulations related to taxes, and few farmers or forest owners can follow them well (or even at all).[33] To increase crop production by 10% through years of genetic work, fertilization, herbicide use, and cultural practices, only to lose 10% of the net annual financial gain because of excessive taxes paid in ignorance of the current law is not wise by any standard. The Wealth Management Group will work with The Law and Justice Group to avoid the costs of litigation, and to protect landowners from financial losses.

The difficulties and extent of financial analyses are almost beyond comprehension. "Stabilizing profits," a Rural System objective, is much more easily said than done. The impossibility of stabilizing a natural resource system in the environment of unstable federal, state, and local tax laws, subsidies, globalization effects, changing land values, theft, sickness, and climate change—together—is evident. Controlling these, or exerting some control is not among the initial tasks of Rural System. Gaining knowledge-control over them, however, with the aid of VNodal, will add significantly to the potential profitability of any rural ownership. Computer simulation can suggest the most likely scenarios (and limits) for decision-makers.

I'm convinced from my Tennessee Valley Authority (TVA) work and conversations with older land owners and managers that the answers to improved land management are locked into "diverse profits," and that Rural System is the way toward them.

Rural land is reverting to early-succession (fallow fields, shrub growth, undesirable tree species, and erosion) as people leave it for the cities. Some is bought and added to the operations of the large farmland owners (accompanied by the externalities and disadvantages of "monoculture"). The financially unprofitable farm creates major hardships for the elderly land owner, the family heritage, and surrounding communities. Residential areas may expand onto these lost farms, increasing urban costs of services and depleted natural scenic values.

The premise of much of Rural System work is that if sound financial arrangements can be made for the rural landowner, significantly more of them will remain or become residents. Others will employ The Land Force to manage their ownerships well. Rural land can stay rural land, be profitable, and provide many financial and social values, such as those of groundwater recharge, watershed protection, abundant wild fauna, landscape beauty, and healthy food.

[33] See, for example, the 2007 Farmer's Tax Guide, IRS Pub 225.

About the Author

While many Americans are presently astonished at conditions in rural America, Robert Giles, Jr., Ph.D., has been working tirelessly for decades on planning solutions to interconnected rural problems. Dr. Giles is a Professor Emeritus of Wildlife Management at Virginia Tech where he taught for 30 years. His Bachelor of Science degree in Biology and Master of Science degree in Wildlife Management are from Virginia Tech. His Ph.D. in Zoology is from The Ohio State University.

Dr. Giles was born on May 25, 1933 in Lynchburg, Virginia. He attended E.C. Glass High School, during which he was awarded a Bausch and Lomb Science award for studies of the ring-necked pheasant. As an Eagle Scout, he was awarded the W.T. Hornaday National Award for Distinguished Service to Conservation and the James E. West Scouting Conservation Scholarship. During his undergraduate years at Virginia Tech, Dr. Giles was an editor for several magazines and the president of the V.P.I. Corps of Cadets of 6,000 students. He was also a member of seven national honorary societies.

During his time as a Professor in the Department of Fisheries and Wildlife at Virginia Tech, Dr. Giles was known for his innovative applications of computer programming and Geographic Information Systems (GIS) to land management questions well before such skills became standard practice within the field (and before GIS was a term). With the support of the Tennessee Valley Authority (TVA), he created the woodland resource management system of TVA, once used on 300 farms a year. With staff and students, he created the first wildlife information base (BOVA – Biota of Virginia database). As chairman of a local planning commission, consultant to the National Wildlife Refuge System, aid to the State Cooperation Commission, consultant for Wintergreen and several realtors, and as a landowner himself, he has developed a unique and alternative perspective on land and its management. He wrote the first plan for wildlife other-than-game for Virginia.

Dr. Giles began working on the Rural System concept in the early 1980s, but did not begin in earnest until his retirement in 1998. When asked about his aims for designing Rural System, he said, “I am now convinced that a superior demonstration of modern comprehensive natural resource management is badly needed and is now possible and most likely within the context of a new corporate rural structure. I do not want to do research. I do want demonstrations of the results of literally millions of dollars of unused research findings. I propose to bring all the power of the computer that I can to realistic and relevant use for parts of the region. This will include using that power already achieved by investments of resource agencies. I propose a system, subject to the law and to reasonable issues of cost, propriety, and community acceptance, that achieves such objectives.”

A colleague of his once said that Dr. Giles can come up with more ideas in an hour than most people can in a lifetime. His creativity is exceeded only by his humanity. Raised in Southwest Virginia, Dr. Giles knows the struggles of people in Central Appalachia, impoverished after the collapse of coal and tobacco industries. He has visited rural areas of Africa (Nigeria, Senegal, Uganda), China and India, and is well-educated in the sufferings of people in poverty worldwide.

Dr. Giles is a systems thinker. He believes that the problems faced by environmentalists and those of interest to humanitarians are interconnected, and that a system of problems must be met with a system of solutions. His career, his values, and his innovative capabilities make him

uniquely suited to tell the story of how a for-profit systems approach can best solve the rural problems of a progressive, capitalist society.

Contact information:

Robert H. Giles, Jr., Ph.D.
509 Fairview Avenue
Blacksburg, Virginia 24060
United States of America

Publisher:

Handshake Media, Incorporated
http://www.handshakemediainc.com
contact@handshake20.com