

RURAL FUTURE



An Alternative for
Society Before 2050

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A Rural County Tale

Bob Giles walked into a dark shed and stepped on the end of a garden rake. When the sparkles cleared, the following was what he saw.

Once upon a time, there was a county in western Virginia that got “down” on itself. It was like 50 other counties in the region sometimes called “Appalachia.” People there said, “things have changed,” but that was what Adam said to Eve. The mines closed, and the railroads lost their soul, addicted to gasoline fumes. Farmers were whip-sawed by subsidies, and farms were bought up and “developed.” A little greed greased the reasoning that concluded that every acre should be worth the same as the top price of where any bunch of buildings was put.

People loved each other and more people had more children. Some families left, but others replaced them, and the population grew to about 5,000 people. That’s not many people in a county of 330 square miles (about 21,000 acres). Take out all of the really old and really young, and there are only about 3,000 people that pay a bunch of taxes. Most of that money has to go to the schools. Half of three thousand votes is not enough to cause a state politician to even notice the county. It is really easy to “get down” on the collective “us all.”

Folks complained about the county. There was poor soil (but some really good stuff and good climate). There were only two major roads, no airports, and no big industries. There was hardly a tax base... except the people. On top of all of this, 64% of the county was in the National Forest. The National Forest Service pays some money to the county to the school fund when they sell timber, but they don’t do much of that anymore, and the small sum seems smaller now that the student body is larger—along with the conspicuous, new county courthouse mortgage.

As if in a fairy tale, people were moaning. A few were wringing their hands. “Oh, if we only had an industry!” Others said, “Oh, if we only had tourists!” Some said ecotourists could be good for them, and others said, “What’s one of those?” Others just said, “Humbug,” for they had land, saw no future for them personally, and cared little for the future of others. Babies could not spell “future,” knew the world revolved around them, and hoped that someone cared a little.

“We can’t ask people to fund the entire work of the county—the schools, roads, water, waste, welfare, emergency, sheriff, and courts.” But we need them all, and someone has to do it!”

“Oh no they don’t!” said a few of them in unison, and frightened, they moved out of the county. The risk of staying was just too great to bear. “We can’t ask our neighbors to fund our needs!” said someone else, and everyone smirked because they were already doing a lot of that through state and federal taxes.

“Let’s get a grant!” someone said. “Stand in line,” said someone from far away at the end of the line. “We might get lucky, but I doubt it, and someone might put a coin in our tin cup, but then tomorrow we will just be in the same place we are today.”

“We need industry!” said someone else, and there was rumbling agreement, like noise from a bear den. They had tried to do that. The effort had failed, mercifully, for the offers they had to make to the outsiders were high, current residents would be treated unfairly, the extra costs for services would have mounted, more children would enter the school system (which was already known to be one of the cost problems), and pollution (another of the cost problems) would invariably increase. The more people, the more houses, students, and runoff and erosion into Broad Run and Sinking Creek, the less beautiful the scenery, the higher the land prices, the

higher the personal taxes, and ... “Hey! We better watch out what we wish for!” Sounds like a fairy tale we once heard.

Then someone said, “No fairy tale. We want industry. We already have a big industry... if we just saw it.” All were puzzled. The National Forest was all around them, and it had always been that way, it seemed. The Forest was up on the mountains... all around. It was the Forest, and that meant trees, and, oh, yes, some hunting and fishing and forest fires. It was just “there,” but had no clear image.

They listened for a long time as they were told of how a company had entered the county, hired some people, and began using the National Forest. The old ways, good “back then,” hadn’t worked. Something bold had to be done for the county and its people. Small changes and simple adjustments were inadequate. A new organization had formed—a for-profit company.

The company rented parts of the County and all lands of willing owners. Every citizen resident could become a member of the Craig County Collaborative, the Craig CoCo. It worked like the landlord of the citizen renters. Many became employees in the diverse activities of the Collaborative. Profits grew from 50 small, modern rural resource enterprises that made heavy, careful use of the National Forest within the County. It was as if the Forest was an invisible, giant industrial “shell-building,” already right there in the county, already open and free for the taking and using. They had not noticed. It was so big! The agency did not mind, and even encouraged such use, as long as a small set of rules was obeyed.

For the new rural land Collaborative to be successful, the lands and waters would need to be tended very, very well. Years ago, that was called “conservation,” but that got perfumed and made silly with too many interpretations. The point: profit can be made from the land if it is used while it is restored, managed, and well-maintained. Profit can be sustained and increased.

Combinations of other businesses formed, both existing and new ones. People invested in the CoCo and received proportionate dividends. Besides income and reduced taxes, the big payoffs for each of them was the ability to live in beautiful Craig, to proudly pay off County debts, and to improve the environment and to hold it—not to be sacrificed to a costly or polluting industry, or to be gathered in as bankruptcy leavings by adjacent counties.

The Collaborative had a new, but very old, idea. It was that the county—all of it, especially the National Forest—must produce goods, services, and relations for a long time—at least 150 years, the lifespan of old trees. In the same way that stable profits come from very diverse stock portfolios, stable profits can come from diverse, well-managed activities within the Forest and elsewhere in the county. These activities were well-known, but they had never been put together as they were in the new Collaborative. They had never been managed with the high technology and managerial abilities now available. The company did these things, and survived, later forming region-wide franchises.

The story continued. The County flourished. The population stabilized; the forests, watersheds, and streams improved; employment increased substantially; new educational strategies became nationally known; a public-health index went sky high, indicating better citizen health; wildlife was abundant, and management systems for wildlife became nationally prominent, as did a regional fishery. Bed and breakfast groups, rather than cookie-cut motels, developed to serve visitors. The county became known as “that ranging place,” the major alternative to ecotourism. At the center of a dozen new organizations working via the Internet, New Castle was abuzz with business. Seeing the potentials on the Forest, private landowners asked for help on their lands, got decision power from the computer, and thus began

experiencing the nationally prominent slogan from the County: “annual personal financial gains from modern, sophisticated, rural resource management.”
Then the sparkles disappeared.

Chapter One

Change: The Nature of Things

I looked at the blood spot on my shirt sleeve. *When did I bump my arm?* I thought, *it must have just happened.*

I had a similar feeling about human population changes in Virginia. Many people have left and are leaving rural areas. When did that happen? Was I asleep? The population here has changed from 80% rural to 20% almost overnight! The rural population has aged, the children have grown up, gone to college, traveled the world, become electronically “connected” in several media, and have seen the salaries that non-farm-workers can gain.

Many rural areas are being left un-managed, with theft present. Superior farms and diverse populations persist, but hundreds of thousands of acres of once-productive land are now left by the urban emigration, in the hands of “absentee owners.”

Rural emigration produces a buzzing hive of problems and herein I share solutions for the future. I’d like for you to engage in topics on which you might take some action in the future. I’m stuck, for I believe I have unwanted bad news for some readers, but I also have solutions to address that bad news. I face unwanted certainty (shared with me by international colleagues) of dangerous imbalances between global human population numbers and their basic needs, to be reached by about 2050 AD... just a few years ahead.

I’ve modeled population dynamics in my work with animal populations. I’ve studied and lectured about the needs for widespread human population limits among populations of over 190 countries.

In this chapter, readers can see a list of problems with which I am concerned; I believe all informed citizens may know about them, and already work in many ways to solve them. Many of the best solutions are beyond personal scale for any successes, but are targets for public, community, and other group work; some don’t require much action, just STOP!

I have committed my time to **Rural System**, and I feel very insecure about giving an answer to what Rural System is. I fear the explanation will not be clear, and the book will be rejected because I may sound grandiose, ashamed at my inadequacy, fearful of omission, neglect, or pauperizing key concepts. Against recommendations of sounding far too negative, I must address the problems ahead, for those collectively are the justification for my suggestions, the context of what I share with you.

I urge you, the reader, to comprehend the beauty, magnitude, and complexity of the rural areas of Earth for all people, and to learn what’s needed for managing these lands and waters for distributed human “good.” I’d like for you to begin (and continue) work on food and water management subsystems for people for the future, to prepare *now* for the unbelievable threats *now* in sight... believable:

- inadequate quality and quantities of water for people in 2030 AD, when significant limits are reached, and
- imbalance in human nutrition supplies to meet world population needs by 2050 AD.

After *knowing that*, I'd like for you to pioneer a start of Rural System as described herein, or work toward creating key components of Rural System with a clear plan for union into the full system. The topic and concepts presented for you and your colleagues are numerous, inter-related, dynamic, and profoundly important. They are Earth-around, enmeshed within the E's of economics, enforcement, esthetics, energetics, ethos, and ecology. We must work with several, if not all, for the near future.

With notable exceptions, the history of conservation, even "the environmental movement," has not gone very well. We are still surrounded by soil, water, forest, wildlife, fish, ocean, air, and waste problems. That's the good news. Energy limitations and climatic uncertainties leap to the front of the line along with genetic alterations of the food we eat. Though great advances *have* been made, many by large contributions of funds and land, and by government programs, we must now face our climate chaos.

However, I've realized after teaching and doing research for 45 years that we cannot sustain a corrective program, much less a planned environmental-scale project. Now we have to provide *significant, evident incentives* to achieve the desired changes and lasting production of essential diverse benefits, even for survival, or preferably a high quality of life.

I depend upon readers to understand the scope and limits to uses of human population numbers, estimates of numbers in over 190 countries, numbers that are difficult to get, and all dynamic or changing in inconsistent patterns and rates over years. The US may continue a birthrate of 2.1 births per woman. 100 countries have birth rates exceeding death rates. A mix of other countries have a rapidly increasing birth rates, others decline... and nations worry about housing, food supplies, economics (markets), and other essential supplies.

The math of countries, populations, ages, death rates, births, health, and available food and medical resources... is together so complex that expert advice needs to be taken. Country leadership must decide for themselves, fully aware of the context... and that's Earth. The numbers are convincing and need action; we do not need to continue to increase the human population now, or soon. There are now more people than Earth can support, in the basics—food and water—without including needs for food quality, reducing waste, and improving health and the quality of human life.

Suggested for first-development in an eastern U.S. region, Rural System seeks to sustain long-term profits and quality of life for rural citizens remaining, and to contribute to diverse national needs. With financial gains from outdoor recreation, specialized tourism, and rural development, Rural System will benefit from innovative wild fauna and fishery management. Rural System will preserve selected areas, and practice modern agriculture and forestry to restore, enhance, and gain lasting, profitable production and marketing from the total rural resource base under lease from land owners under contract.

The proposed umbrella entity described herein does not now seek use of publicly-supported national and state lands and waters, but provides opportunities for the absentee owners of private lands and waters to experience profits related to superior land and water management.

While managing the assets of private lands under contract, Rural System provides related services and products from many unified business enterprises. A central managerial unit provides incubator-like services, and allows the corporation to harvest public research investments to achieve economies of scale and division of labor, to gain synergism, and to stabilize employment (and thus, local tax bases).

The Rural System enterprise proposes long-term, computer-aided, year-around private land management. It links citizens as well as visitors to the land and its long-term potentials for

profits. It provides an alternative regional identity, one of a place for modern, high-tech rural resource development and management for the future.

Successes are achieved via diligent work with personal incentives, diverse enterprises and products, and computer optimization of a total system. Rural System affiliates with and potentiates existing enterprises. It overcomes the old failures of natural resource management, i.e., diseconomies of small-scale operations, mixed objectives, lack of diversity, seasonal work and special events, lack of area-wide annual income, failure to market well, and reluctance to add value to products and efforts. It capitalizes on innovative uses of the Internet, global satellites, and computer mapping that can provide precision in site-specific work on ownerships throughout the region.

Similar influences can be transferred, years later, throughout Virginia and neighboring states, then internationally. The work will be recognized as the product of a special paradigm in comprehensive, diverse, dynamic rural resource management, including a profitable **Conglomerate** operating well past this century, given its **150-year planning horizon**, sliding forward annually.

More about Rural System?

It's a planned, startup company taking a systems approach to solving Virginia's rural problems (then expanding nationally, and internationally). It is like a business ecosystem for rural ecosystems. Rural System provides profit-oriented, lasting, comprehensive environmental management. It is a new use for some old, proven ideas. It's like a lawn-care service (but for many farms), and the lawns include 30 or more shops or businesses (selected from over 150) on or around them, all under one management.

Others have called it "a special kind of cooperative," "odd new share-cropping," and "factory management applied to lands and waters." There's more, and I once told the stories about it and described it in an e-book called *Rural System... Just Dreaming*.¹

In a "nutshell," how would Rural System work to produce profits?

1. It will lease the lands and waters of absentee owners. Owners will receive a percentage of the annual profits of the entire Conglomerate. Their land and their region will increase in value.
2. Conveniently-spaced lands will be managed under contract in "**clusters**," achieving economies of scale and major efficiencies.
3. Lands will be analyzed by staff using a computer system called **VNodal**, with inputs from an extensive satellite and GIS database and our prescriptive system, **RRx** (Chapter 4).
4. Sequenced RRx reports will be provided that will prescribe—with GIS maps—startup work within each 10m x 10m square (**Alpha Unit**) of each property. The reports will be owner-specific, dynamically changing with seasons, land use changes, markets, and prices. It may be accessible from the Internet in the field, but will usually be produced by the corporate computer system to field receivers with an app. Backup information via

¹ Available at http://www.ruralsystemguide.com/A_Rural/TitlePage.html

hypertext will be provided for each **prescription**, so the full “document” may typically exceed the equivalent of 50 printed pages.

5. The prescription will be developed from conventional and ever-changing “expert system” processes, addressing what-to-do-where. Stage 2 referrals will be made to software that is specific for crop, livestock, forest, fishery, recreation, or other categories. Details from such computer runs will be added to the RRx report.
6. With owner approval, the **Land Force** (the major new employment unit being planned) will implement the prescriptions—preserving, restoring, cultivating, harvesting, monitoring, and adjusting.
7. Marketing will be one function within **System Central**, where personnel, accounting, and related text and data will also be handled, with results presented for the 150+ enterprises that are like “corporate divisions” within the planned Rural System (listed in Appendix 1).
8. These enterprises, called **Groups**, when active, will change each “farm” into “**enterprise environments**.” The land, re-developed, will become available for use by people with memberships to Rural System Groups (such as those with interests in gardening, turkey, quail, bird-watching, deer, bear, bobcats, nature study, owls, etc.). There will be other Groups not “of the soil,” but will be for general memberships and services (e.g., poems, music, photography, and laboratory)—income from many sources.
9. Rural System will be hyper-attentive to reducing losses and risks, providing financial incentives for all, and employing advanced social media marketing technology. It will benefit from low structural capital investments required for each Group.

What is Rural System’s target market?

"Markets" are seen within Rural System as human populations of buyers, users, and waste sources and energy loss. The goodness of many ideas must be seen as being evaluated by the number of interested buyers and what they are likely to spend. Marketing or using markets includes:

1. analyzing individual and group wants and needs,
2. advertising with new options and alternatives that are now or may become wants and needs,
3. increasing desire for needed things for the near future,
4. finding innovative ways for Groups to satisfy these wants and needs,
5. stabilizing purchases, and
6. harvesting and reducing losses of crops, energy, and market access and brand.

We have two main markets: first the *land owners*, then the *buyers* of the goods and services of the lands being managed. About 40% of US agricultural land is in absentee ownership.² Some of this is rented out to farmers, other land is owned by corporations. Owners, often living far from their land, seek visitation, recreational use, pride-of-ownership, speculative

² Bigelow D. Land Use, Land Value & Tenure [Web]. USDA Economic Research Service. United States Department of Agriculture. Available from: <https://www.ers.usda.gov/topics/farm-economy/land-use-land-value-tenure/>.

objectives, and modest income. Rural System plans to offer these benefits, plus financial gains made annually. It also provides a public relations opportunity, and potential long-term social contributions of energy, water, food, and quality-of-life spaces for people of the region. Rural System's first proposed customer base is composed of the people of the Roanoke and New River Valleys of Virginia, using the lands brought under management. It will expand to meet other regions' needs and opportunities. We shall seek a volunteered demonstration farm.

Rural System will target the people of the Roanoke and New River Valleys of Virginia, and later expand to meet other regions' needs and opportunities. Within a 30-mile radius of Blacksburg, VA there are about 800,000 acres within private absentee rural land ownership. Our goal is to manage over 1/3 of these (260,000 acres, 370 owners, 40 clusters). Many are abandoned, abused, and victim to theft and vandalism. We may preserve parts, but we intend to manage forests and develop other lands for a variety of Groups (e.g., floral products, tourism, music, memberships, events, sports, a modern fishery, pest control, certification services, and wood). We plant new forests, crops, and tree seedlings. Significant income is expected from the non-field enterprises (see the list of proposed Groups in Appendix 1).

The owners market is expected to increase; the owners are continuing to leave the lands for the cities; few people now have enough expertise or youthfulness to farm.

Once Rural System begins to produce goods and services (and other benefits) using resources from enterprise environments, we shall target the buyers of these goods and services. This second market is composed of urbanites and local people. They are the potential clients of many of the Groups. Some guests will buy memberships, others will use the land (e.g., hiking, nature experiences), or purchase products.

How will Rural System make money?

We shall create and operate a Conglomerate of Groups, and a new Collaborative among our Groups, clusters, and affiliate-private-enterprises. We shall bring solutions—system processes—to rural problems, including incentives at all levels, new economies of scale within clusters, synergism among Groups, a new scope of operations including blogs and related media, a sequenced value-added strategy, diversification, and arranged synergism. In addition, we shall pay special attention to losses and inefficiencies, computer aids and optimization, enormous data banks, and access to research results. We shall build on today's platform of agricultural, forestry, fisheries, and computer expertise for the future.

We have to stabilize significant, observable profits for people from the lands and waters of rural regions. "We" now symbolizes "all of us," and all of us now see "all of us." From seen-inequity I believe billow the clouds of war.

The proposed Rural System is a for-profit corporation of over 150 diverse, small, natural-resource-related enterprises and subsystems, some of which are new, and some, such as classical agriculture, very old. The corporation, often a Collaborative in some areas, will provide modern, sophisticated, computer-aided management of the lands and waters of clusters of private farm lands and waters.

We seek a \$7 million line-of-credit for progressive use and repayment within 7 years, to invest in leases of land, staff, and productivity from a growing number of self-motivated, computer-backed Groups working for future Earth-around franchises.

Creating Resources

There's not enough room within a first chapter to get a running start at a very big idea: that readers' very existence depends on the lasting production of benefits.

Rural System has a twist on natural resource management that may enliven it, the enterprise, and its influences. It *creates resources*. Resources are, perhaps narrowly, defined as, "reserves of commodities that have an appreciable money value to people."³ Endangered species are not resources by such a definition. We accept the definition of a resource being something capable of producing *benefits*. A non-resource may seem to have no value, but some economists assign monetary values to benefits of many kinds.

We find ready examples of each benefit within rural areas. We influence value by education, marketing, and field experiences. We produce potting substance from managed forest litter, waste food, and native earthworms; garden mats from pond algae; household items from diseased tree tissue; buttons from dropped deer antlers; toys from several items; crime prevention from solar-electricity; and decorations from hunters' deer hides. We enhance the value of local paintings, the significance of local songs and dances, the meanings of some wood carvings, and the value of special working-hours toward measured, purposeful accomplishment.

Appreciating fundamental resources, within Rural System we *create new resources*, give them a brand, and attach and increase value to them in our conservation, protection, and marketing. We change the time required to perform select activities, improving efficiency, thus providing an item or service at a reduced price with exceptional reliability and resilience. For every yet unknown songbird, mammal, wildflower, community or composite, each safe cavern, each basic soil type, we offer a "discovery sport," like that of BirdGolf (Chapter 10). We accept, appreciate, and attempt to produce abundant pure water and clean foodstuffs (still highly valued and to become more so) on managed lands.

When asked about Rural System and what it is and might do, the list of components and actions becomes tediously long. Parts, some life-giving, are neglected for the larger ones, such as automated soil mapping for each subscribed private ownership. We have procedures now for organizing knowledge of each 10m x 10m Alpha Unit, or map-cell, of every farm in a Virginia region. Each Alpha Unit is known by GPS location ... and so, as if a medical doctor for each patient, we can prescribe for *each* such space: fertilization, best plants, planting timing, likely harvest time ... and many more such agronomic factors. Almost impossible to imagine, we examined one 200-acre farm, and discovered there were over 8,000 Alpha Units...and Alpha Units are the basis for a knowledge base for the future, and for developing models for other private ownerships as each is gained. The uses for the future are unlimited!

The mathematical concept of "combinations" once seemed to need refreshing, to use in deciding something for modern crop agriculture. I needed to know how to determine how many combinations of crops I could put into major garden-land left by an owner who had migrated to the cities. I started slowly, but the list of possibilities among plants, animals, and environmental factors ballooned.

If a list of 6 crops is computer-selected for a site, how many combinations are possible? I need to know and then to select some to be profitable to achieve the Rural System objective. I need to know and to move that to: *what to produce of x amount and y value of crop z expectation*. The combinations of 6 come from the ancient equation for them. The results are

³ Ehrenfeld DW. 1976. The conservation of non-resources. American Scientist. 64:648-656.

always surprising to me, but more importantly, I am always perplexed. How can I pick the *one* right combination from so many? I take courage, knowing of computer power.

Then I faced *permutations*, hardly remembering that those are a class of combinations that relate to the number of *sequences* of things. How many sequences, not just combinations, are possible for 6 units? The number, to me, is impressive, because that is the real number, the *ancient factor* with which the modern ecologist and environmental manager must deal (beyond classical statistics in which A, such as a factor of soil studied, is then related to water, then wind, then trees, and they are put into an analysis hoping for an equation for explanation or prediction such as: $X = A + B + C$).

The hidden, oft-forgotten or prayerfully-considered irrelevant part of rural land analysis and management is the *sequence* of the factors, *the permutations*. The permutations of a dozen ecological/environmental factors taken 2 at a time are 132! Imagine the costs of gaining adequate, statistical control where there are more factors than 12 sequenced units! Yet, they lead to robust decision making.

Every farmer knows the difference that results afield if rain comes before or after planting. Throughout ecosystem studies, these paired differences (also triplets and others) in sequences are just as evident. In Rural System, we propose work with computer power to bring the *ancient factor*, permutations, back into play for producing realistic, lasting profits from *all* of the main relations in the rural communities. We work to bring deserted once-farmlands under superior, long-term management ... for the good of us all.

The Wicked Problem

Stating objectives is a major part of taking a systems approach to anything. Understanding a system usually includes “As compared to what?” questions. As I write *Rural Future*, I feel compelled to share with you my interests, concerns, and orientation for your reading ahead. I’m not presenting a draft for a multi-color, TV-Bombing, fear-monger conjecture on the “falling sky.”

I am not alone, and do not understand why others, however few, do not see or understand the threatening world conditions that jeopardize regional, national, and international human lives of the future.

Problems seen! Avoid them! Seems reasonable? *How to do that* is more difficult to see, and to decide upon which problems to address solutions. Worse, we need adequate, timely responses to their *combinations* and *permutations*. The problems are so numerous that listing them seems necessary to justify the enormous, extreme-sounding, perhaps unique solutions I have devised as a response.

There just have to be one or more superior solution-options to each of the following “problems” (within a set, *the* problem):

1. Multi-factored global food shortages
2. Continuing agricultural soil erosion
3. Spreading air pollution effects
4. Growing noise pollution
5. Disappearing wild plant and animal species
6. Increasing invasion of harmful plants and animals
7. Increasing negative results of genetically modified organisms

8. Increasing shoreline erosion
9. Declining quantity and quality of groundwater
10. Coastal cities in danger from storm surges and salt intrusion into groundwater
11. Approaching economic limits for coal removal and land restoration
12. Increasing harmful fracking effects on surface waters
13. Increasing numbers of badly impaired streams
14. Expanding broad-scale range and acreage of forest fire
15. Diminishing natural and agricultural scenery
16. Spreading limits to fossil fuel discovery and availability
17. Inadequate land and water restoration
18. Increasing ocean pollution
19. Increased heavy-metals pollution (widespread)
20. Increasing imbalances in marine fish populations
21. Notably increasing urban sprawl over productive, prime farm land
22. Continuing misuses of toxic substances
23. Declining supplies of essential crop fertilizer, e.g., phosphate
24. Increasing need for waste disposal sites, especially nuclear waste
25. Overuse of designated wilderness and wild areas
26. Lack of proper outdoor behaviors (dangers, harmful acts, care of followers, defacements)
27. Restoration required for hundreds of acres of lands and waters, related to energy-resource removals
28. Competition for limited resources between natural resource management project leaders, with limited objectives
29. Predicted climate change (affecting over 7.4 billion people) related to increasing carbon dioxide
30. Inadequate time to address, solve, and distribute the solutions to most all of the above

Dr. Philip Handler, when President of the National Academy of Sciences, said:

Just as ecology is too immature to cope with our vast environmental problems, the social sciences are too young to cope with our most pressing national and international problems—terminating the war in Southeast Asia, establishing a stable permanent peace, learning to deal with political terrorism and the challenge to the legitimacy of government, achieving a successful progressive modus vivendi in our racial problems, coping with violence and crime, reconstruction and management of large cities, curbing the drug culture, developing an adequate system for the delivery of health care, abolishing poverty, illiteracy, and ignorance the world over—capture for us now, and soon Earth around, our wicked problem.

Ignored, it cannot be denied. It is not at all obvious that we have the understanding or the social and political institutions to deal with these furious

challenges—but seek them we must. Meanwhile, the long upward struggle of people from animal origins affords little more than cause for hope.⁴

I believe Rural System is a feasible “place” from which to move rapidly toward a general massive challenge... face it we must; gaining awareness of the immediate threats ahead is necessary, instead of believing that other people or agencies can and will solve them within sufficient time and available resources.

The wicked problem: informed rational management of Earth and its people, forever... now knowing it is possible, and the incomprehensible scope and depth of likely sadness in knowing it was not attempted.

We have to gain awareness of the immediate threats, then confidence or risk-taking energy to face those threats. We must then invest personal time or other resources and believe that other people and agencies are willing to do the same to solve these problems within sufficient time and available resources.

Desperate Hope

For most of my career as a natural resource specialist and university professor, I was involved with the pieces and parts of lands and natural resources. I taught systems ecology for 25 years. Over a period of 50 years I worked on understanding the content of this book, a practical union of the 6-Es of professional life today: energetics, economics, esthetics, ecological, enforcement, and ethos topics for people living in, investing in, and visiting rural areas. I now see clearly a singular working system that I think is essential for people, and I am eager to share it... for in my life I did not even notice... 80% of the people of the US, once rural, have now become urban! Amazingly, 20% of the nation’s people are rural, many absentee. World populations head toward 60% urban! How can it not be noticed? Rural is urban-essential!

I started dedicated work on these ideas at age 70, but I began to realize that I did not have the energy to see through the creation of the enterprise that I called Rural System. I decided to write my dream. Perhaps the limitations can be corrected and the next workers can get the job done.

I woke up from a deep sleep about rural areas and their people. My task is to answer a growing set of related questions. What do owners do with a lot of land that they bought years ago in order to mine coal, now that coal is running out? What do you do when you live in an area, work there, and love the place, but the *work* runs out and salary potentials are cut in half? What do you do as a rancher when the meat prices plummet... or as an administrator when your park budget is cut? What do you do with “family land” when you move to the city or into the “home”?

Simple statements are often given as answers to these questions. You can tally the land as a loss like a piece of depreciated equipment, get all that's left, survive "as best you can," or move out. Of course, you can pray that something better happens, but, with The Reformation's Martin Luther, I suggest praying as though God can do everything, and work as though He or She can do nothing.

People are all linked together, but it is rare that we think of how closely. We all need each other—firemen, paramedics, teachers, journalists and reporters, grocers, painters, janitors,

⁴ Handler P. Can Man Shape His Future? 1970. W.O. Atwater Memorial Lecture. Washington, DC.
<http://files.eric.ed.gov/fulltext/ED050955.pdf>

snowplow crews, and doctors and hospital support staff. Hard to admit, we even need a friend or two. We need them all as part of a reasonably healthful life together. We need to talk together, to listen and encourage. Things easily fall apart when one or more friends move away (a much-shared observation).

When it's time to move, when the resource runs out, perhaps land can be sold to someone else. But who would buy it, and for what uses? If you knew, you'd stay and develop it for the same purposes and uses! You could sell it to the government if they were buying (that is now rare, and as if "they" were not "us"), and they could add it to the National Forests, the Bureau of Land Management, under-budgeted National Parks, or even military areas. Such action is not part of the free-market or of the American capitalist message. It may be all that seems to be left, but this book is about alternatives for people who love these areas and want desperately to live on or experience them. It is about alternatives for urban people who badly need vital, working rural areas with their wonderful human component... and essential resources.

We, a large part of society, have lived city life so long that we forget the rural sources of so much food and water, so much useful energy. Around the world there are rural problem areas. Mining areas are commonly affected. The manufacturing plants have shut in some areas. Lumber mills have shut in many small communities; most of the large and so-called virgin trees for wide clear lumber are gone. North American Indians continue to wrestle with life on some lands. Prize crops throughout the world (tea, coffee, tobacco, and bananas) change in price, use, or acceptability, and the people that planted, grew, harvested, and shipped them are stressed by the changes.

In a few areas, the land has been eroded and so improperly used that any future use seems hopeless. As a particular example, drastic changes have taken place in the Virginia coalfields. The changes coincided with the fall of the Berlin wall, NAFTA, the European Monetary Union, GATT, the Collapse of Communism, new wars, gasoline shortages, the loss of many travel and trade barriers, the passage of many environmental laws and regulations, the emergence of knowledge about "green gold," and the rise of the Internet and e-commerce. Not just jobs in mining but jobs everywhere are being rapidly transformed, downsized, streamlined, or made obsolete by technology, shifts in buying power, and high costs of life-sustaining medicine (*and* the perceived needs for medical treatment vs. problem prevention). The questions are the same. What do we do? Where do we go? Some people answer while plunging into poverty; some people climb into comfort and apathy. What can be our future?

For thoughtful people, since no one can believe the expected and foreseen horrors of the now-developing future condition, the question is, "tired as we are, how do we get ready for the next big change?" For example, what do we do now just *before* the profitable coal runs out entirely? What can we do? On the horizon, like two skipping children, water *quantity* and *quality* around the world head toward crisis shortage conditions in 2030 AD. Earth-around food shortages are foreseen for 2050 AD. I write to share my best knowledge and advice fearfully, and seek your advice... other than that termed "spiritual."

Coal has already run out in many areas. People have exploited the resources (fish, oil, gas, trees, and soil fertility) and the land is left behind. Natural gas may be costlier than expected. Some people never got ahead, so they didn't notice that they were behind. The rural population still increases with the total, but they are far behind urban population growth. The nation is now about 80% urban, and so about 20% of the children of the US are in rural areas. Fourteen million of them are in need of education, protection, relief from hours in school buses, and their accidents prevented. They bother me and my family-inspired senses of fairness, being

"kind," and grade-school pledges of "justice for all." The land and the people that remain are in trouble; the people that see their struggle are in pain. Averting my gaze from little children who suffer causes me pain. Everyone suffers.

It would seem that government should be able to help. Yet members of local boards are stressed; their time is poorly allocated. People that are on the move in troubled areas rarely produce many votes for regional legislators. Loyalty to "place" shrinks when families move out, urban-enticed. Agency staffs are now reduced in size, inadequate to address the complexities of most sites. They are totally unable to visit the thousands of private and public sites throughout regions needing specific, prolonged, thoughtful attention. People in trouble have no resources to help themselves. They are in trouble! They need help from outside!

Agency interest or delivery of services, influenced by leadership, funds, and political pressure, seems to become ficker each day. The university professor, expected to "do science," now lives with no funds to develop a research program in an era of unplanned and unstable grants and contracts. There has to be a better way than begging or waiting for nearly random gifts to solve pieces of noted problems.

There are no easy answers, certainly no acceptable ones for the people who know and love a place, have family and roots, and have advanced age in a discriminating, youth-loving society. There is no clear place to move to. Everything seems "full-up," pricey, too new, and very uncertain. "What to do?" is the question repeated in despair... Not profane, they ask, "what in hell are we to do?!"

The answers are especially critical in the rural environment. There are about 1.3 billion acres of privately owned rural land. Currently, more than 1.9 million acres of land are converted to residential development each year. There are a mere 2 million family farms left. Forty-four percent of farm land is now owned by non-farmers. That suggests that there has to be a major shift in knowledge of the land, but it also obscures concerns and potential investments for the land and its productivity.

In Virginia, for example, 60% of the 25.4 million acres of the state are in commercial timberland. Of that, 80% is privately owned (not federal, not industrial). The state has a \$3.3 billion tourism and travel expenditures enterprise... and 15% of the entire work force of the state (248,000 people) depends on the forests... yet most forests remain unmanaged with harvests unsupervised. The highly-valued tobacco crop has lost its value, and farmers of those special lands and traditions now seek an alternative crop... just anything to stay on the land of their parents.

The rural lands and the people who feel responsible for them in some way are under intense pressures. These pressures include uses for residential development, new services, changes in the beauty of the landscape, shrinking tract size, loss of a sense of place for many, conflicts between energy and water uses, continuing soil erosion and its consequences, and changing wild animal populations, some threatened, others becoming so abundant as to become pests and potential disease vectors.

I have answers for many of these questions and problems, unified and presented in the following chapters of *Rural Future*. I have to be confident (even if it sounds arrogant) for if I am not, the solution, the answer, will float away in the vapors of ten "devil's advocates," a hundred committee meetings, a thousand "buts," and ten-thousand bright graduates, not yet mastering a university library, saying or thinking, "my opinion is as good as yours."

Industrial agriculture, claimed by some to be the rural future, will not grow tall enough from deep in its recent past failures of massive soil erosion and degradation, pollution by

chemicals, atomic waste, animal-factory wastes, depleted aquifers, spread of pests and animal diseases, cruelty to animals, and exploitation of laborers. It quakes before genetically modified organisms, as does the adequacy of the national food supply system before the threat of acts of biological terrorism.

There's a need for a departure from conventional ideas about the future of Virginia's mined-out southwestern corner, North Carolina's textile and tobacco areas, the forest communities of the Pacific Northwest, and the desert lands of the Southwest. A "departure" does not mean that people must physically leave the land. The need is to move into a new realm of thought and action. The move will not be easy, but it is very clear that doing nothing, which is pretty easy, will not solve the problems or reduce the sharpness of the pain that some of us now experience or see on the near horizon.

We need a different way of doing things, a different way of thinking about ourselves and our future, a way to work together. We need a new way of seeing ourselves as the center of a vast, important activity: Rural System.

The departure does not have to be radical to be good... It so happens that the only good one on the horizon *is* radically different. I've spent 40 years wrestling with graduate students and their rich imaginations as they spent time reading and studying. My past, my loyalties, and my knowledge trapped me. I was dedicated to improved natural resource management for people. I was called one of the "environmentalists," but I've seen some of these limits, errors, and destructive behavior. I saw my specialty as being wildlife management, but that quickly blurred as I realized that everything else in the world, everyone else, was in control of "my animal populations." I was not managing them. I was far too small for that, much too narrow. Wounded, I've escaped over the professional barricades.

When I was a small child, my great uncle, a railroad man in Lynchburg, Virginia, would encourage me to eat as he spoon-fed me and would say, "fire the boiler!" I think he would like a railroad analogy of the present situation. Imagine that in the rural area there is a great rail yard, full of quiet and still rail cars holding ideas, information, research results, theories, and assumptions. It is time to pull out the needed cars, inspect and hook them up, and move them off to a destination where their cargo is badly needed. The railcar difficulties are evident, but railroad people make such moves daily. It's time to fire the boiler.

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.

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