

How to Form a Healthy Farm Organism: The Biodynamic Perspective on Economics¹

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Abstract:

The following discussion explores the biodynamic concept of the farm as an individualized organism in interaction with the ecological, social, economic and spiritual whole of which it is a part. The current usage of the term economy amounts to a corruption of Aristotle's concept *oikonomia*, which literally means stewardship of the household and implies a "natural" relationship between man and the world, and which the philosopher contrasted with an "unnatural" relationship based solely on monetary terms. Rudolf Steiner's discussion of farm health revives Aristotle's holistic conceptualization.

1.

In what follows I want to explore aspects of S&S Homestead Farm to show what a healthy farm organism might be from the biodynamic perspective. On this poster, which I prepared for this year's SARE conference in Kansas City, Missouri, you see four photographic images centered on the icon in the middle of the poster that spells out the symbiotic relationship of soil, plants, animals and people to create a *healthy* farm organism. "Soil" is on the bottom of this *Health Icon* because it is the foundation for every decision made in managing the farm, while "People" is on top, because we are the stewards of this soil and all the plants and animals on it, and our primary task is to become response-able to it. The surrounding images represent four aspects of the organism: 1. Food, feed, fertility, and resource self-sufficiency, 2. vegetable production, 3. animal production, and 4. community-based education and outreach.

The white insets on the poster describe programmatic aspects of our work toward the goal of farm health. There are eight such programs, if you will, that can be distinguished conceptually, but of course they all hang together to form one synergistic whole. We will return to the discussion of each of these eight programs in a moment. In the meantime, you will note that implementation of these programs has been supported by a total of four grants, three from SARE (Sustainable Agriculture, Research and Education) and one from EQUIP (Environmental Quality Incentive Program), all of them funded by the Farm Bill.

It is pertinent to our topic to note that in applying for these grants from different agencies of the USDA (United States Department of Agriculture), in every case I had to prove that implementation of the proposed practices would improve the profitability of the farm and of the community of which it is a part. Typically, the grant giver wanted to provide incentives for the farmer to scale up production by increasing his tolerance for

¹ Presented at the annual workshop on biodynamics at S&S Homestead Farm, June 27-29, 2008

risk so that he can increase the potential for profit. This, in a nutshell, is the basis of the competitive market system.

Now, while no one would argue that economic viability is not desirable, if by that we mean our ability to pay our bills and stay out of debt, conventionally we mean by profitability that once we have paid for all the inputs required to run the farm, including labor, benefits, retirement, energy, fertilizers, seeds, machines, tools, land, buildings, taxes, opportunity cost, interest on debt, and on, we should have money left over, i.e. profit, that we can take to the market place and buy more “stuff.” Clearly that is not what we are accomplishing on this farm: my wife and I are *not* paying ourselves wages, we are *not* paying ourselves for opportunity costs on the capital invested in land and buildings, and we *are* paying for our retirement from savings that come from jobs we have held and (in the case of my wife) continue to hold outside the farm. What we *have accomplished*, however, over forty years of building this farm organism is a state of robust health enjoyed by the people who live and work here, the soils, plants, and animals, and we have done this by *maximizing* renewable resources from within the farm, and *minimizing* consumable inputs purchased from the outside. The management principles behind such a healthy farm organism are that it must be: *self-organizing, self-correcting, self-sufficient, and self-capitalizing*.

Let us illustrate these principles by exploring each of the eight farm programs illustrated on the poster, starting with *self-sufficiency*. S&S Homestead Farm was established in 1970 from a sense of dissatisfaction with the quality of food available through conventional commercial channels: as a result of the so-called Green Revolution food was becoming increasingly industrialized, shipped over great distances, processed, flavorless, lacking in freshness, and for all these reasons deficient in nutritional wholeness. The litany of illnesses resulting from the decline of food quality available to the American consumer is too long and well-known to repeat here. So the first rule for the healthy farm organism that emerges is: feed yourself first, then sell the surplus in the market place; and, furthermore, feed the animals and the soils you grow your own food on, from inputs the farm produces.

2.

Food, feed, and resource self-sufficiency necessarily leads to implementation of the second and third management principles, which are self-organization and self-correction, because if your farm goal is health everything else follows, and is organized around that central goal, and corrected along the way as you learn by responding to the task you have set for yourself.

Here are some of the many things you learn along the way: For instance, it is a universal rule of nature that complex, diverse systems are healthier, more productive and more disease resistant than non-diverse systems. If your farm specializes in growing corn and pigs, for example, the corn and pigs will be more likely to be disease-ridden, than if you grow many different kinds of vegetables and animals. Biodiverse systems produce health benefits from animals and plants living in symbiotic relationships to each other.

The system corrects itself, mutually beneficial and pathogenic macro- and microorganisms balance each other and co-exist in harmony. In so many words, polyculture is inherently better than monoculture, even though the market place may tend to push you in the direction of mono-cropping.

Similarly, you increase the benefits of symbiosis by providing for fertility inputs from composts, cover crops and biodynamic preparations, all of which you can produce on the farm, rather than buying organic or inorganic substances manufactured off the farm. Although this is a difficult point to prove by reductionist science, experienced practitioners of biodynamic methods will tell you that cycling nutrients on the farm increases the beneficial *life force* manifested in the health of your soil, plants, animals and the farm organism as a whole. In other words, the utility of cycling nutrients rather than buying them goes beyond the monetary savings from avoiding the expense of the purchase.

Another lesson you will learn, if you are willing to observe and heed the lesson, is that the more you privilege biological over mechanical processes, for example, in working your soil, the healthier will your soil (and therefore your plants, animals and the whole farm organism) be. Good agricultural soil, as you know, consists of about 50% minerals and the rest is water, air and a certain percentage of organic matter. The level of organic matter determines the level of macro- and microorganic life in the soil which, in turn, structures the soil so that it can hold water and air and carry nutrients to the plant roots. Earthworms tunnel through the soil creating channels for water and air flow while also digesting organic matter into perfectly balanced plant nutrients. Fungi glue soil particles together to make it cohere and yet friable and crumbly to the touch. Both of these organisms, however, and many other biological helpers in the soil are compromised, if not destroyed, every time the farmer tills his fields, macerating fungi and earthworms and compacting Mother Earth with heavy treads. Of course, to some degree every agricultural process is inherently mechanical, whether we use the spade or the rototiller or plow in loosening the soil, but the principle remains that to increase soil organic life, and thereby strengthen both soil fertility and immunities to disease, the farmer needs to correct for mechanical impacts. Disease prevention through soil health is better than disease suppression by organic or by synthetic substances, just like pollution prevention is better than mitigation through intervention after the fact.

One way the farmer can learn to enhance soil and farm health in general is to rely on perennial rather than annual species, including native plants and wildlife, naturalized forages, perennial grains, and farm-produced seed and animal replacements. Let me give you three examples: The forages we use on this farm for grazing and haying were brought here in 1880s when settlers from the Midwest and Europe carved new farms out of island forests. The incredibly diverse mix of grasses, forbs, legumes, herbs and flowers in our fields are mostly non-native, but have been naturalized in a long process of natural selection in this environment. Because of their varietal diversity, the forages provide an attractive and nutritious diet for our beef and dairy cows, sheep, pigs and chickens. They are not as productive as some new-fangled forage mixes available in the market today, and they are not always easy to bundle into solid haybales, but they are remarkably

drought resistant and durable, and practically never need replacing which saves huge amounts of fossil fuel, machinery, seed, fertilizer and irrigation, quite aside from greenhouse gas emissions.

Another example is the garlic we have grown for more than thirty years and which we now call “S&S Homestead Garlic,” because we don’t remember the original name. But I do remember getting just a handful of garlic bulbs, which I planted in deep, double-dug soil well enriched with compost and surrounded by other vegetables and flowers. I also remember that the island neighbor who gave me the original garlic, a year later grew almost five acres of it, and lost almost the entire crop to a massive fungal infestation. By contrast, we have never had any fungus in our garlic in more than three decades, and the garlic is large, flavorful and juicy, and has wonderful keeping quality. I believe that more than anything else, this example demonstrates the virtue of polyculture vs. monoculture, as well as the durability and disease resistance of perennial species which this garlic is in the sense that it is the same variety perennially grown from its own seed, in the same soil, and therefore fully adjusted to the environment to which it has been naturalized. We are growing seeds for some other vegetables and grain, such as barley, potatoes, radishes, and kale, with similar results and, given time, would like to develop many more of the seed varieties grown on this farm.

The final example I want to give is our beef cattle. We started some 15 years ago with a Lopez mix of a Scottish Highland, an Angus and a Hereford cow, which we cross-bred with a Simmental bull because of the breed’s reputation for efficient conversion of cellulose (in the grass) to high-quality protein. After line-breeding to produce all of our replacement animals, all of the current cows and bull are 50% Simmental, which we find a highly suitable cross-breed for our purpose since our cattle are raised entirely on grass and hay, without any supplements or medications. Because farm-produced hay is relatively cheap, we can afford to wait with slaughtering the animals until they have reached phenotypical maturity at nearly three years, which means that the skeletal and muscular development is at the adult stage, and the animals begin to put on fat. The resulting carcass is highly flavorful, lean and sufficiently tender to gain the approval of appreciative repeat customers.

3.

What we have described so far can be summarized as pastoral vs. industrial farming: such farming is grass-based to maximize harvesting solar energies; it emphasizes plant-animal successions, and it emphasizes farm-produced inputs as required for production.

Harvesting solar and other cosmic energies is at the crux of biodynamic farming. A biodynamic farm can be characterized as a closed and self-sufficient organism that is open to the cosmos. Rudolf Steiner subscribed to the commonly accepted theory (developed in the eighteenth century by German philosopher Immanuel Kant, given scientific form by French astronomer and mathematician, the Marquis Laplace, and updated by Dutch physicist, Gerard Kuiper in the twentieth century) that our solar system

came into being when a cosmic nebula of hot, slowly gyrating, rarified matter gradually cooled and slowed down, spinning off rings that concretized into planets and stars and eventually settled into trajectories around the radiant center, the sun. The planets and stars not only continue radiating energies they carried with them when they exploded out of the proto-sun, but they also reflect energies as these continue flowing from the center of the solar system. The earth as one of the planets born from the sun, receives the energy flows according to the dynamic rhythms of the seasons, the alternations of summer and winter, day and night.

Some of these energy flows are well known and used, for example, by physiologists to explain the process of photosynthesis by which chemical compounds are produced in plant tissues with the aid of radiant energy, or to explain the process of producing essential vitamin D in the skin of humans or, for that matter, in that of milk cows. Or they are used by physicists to explain the process by which light energy causes the generation of electromotive force. On the farm, the importance of photosynthesis cannot be overstated: nothing grows without solar energy (to see the truth of that, just put a board on your lawn and observe how the grass soon dies underneath). But also photoelectricity is becoming increasingly important to the farm, for example in the form of photovoltaic irrigation and hydronic heating systems.

For Rudolf Steiner, however, photosynthesis and photoelectricity are but gross phenomena in comparison to the subtle energy flows from the solar system, some of which he considered material and some non-material, or rather, both at the same time. In Steiner's view, matter is but the visible form of spirit, and spirit the invisible form of matter. Steiner argued that the life forms that emerged on earth over millions of years were shaped by spirit manifesting itself, for example, in the morphology of the plant as root, stem, leaf, and flower. Spirit is the life force that causes the sprout emerging from the seed to lift itself into the air and grow into the tree, from which subsequently the apple may fall to teach a clever scientist like Sir Isaac Newton about the law of gravity. Spirit understood as "life force" is a nearly universal perception that is called by many different names in folk tradition, religious tradition, philosophical tradition, and in traditional healing practices as well as in modern medicine: in the Old Testament, it is the *breath of God* that turns dumb clay into "living souls;" in the New Testament, it is the *creative logos*. In China, it is referred to as *chi*, in Vedic India as *prana*, in Melanesian tradition it is *mana*. In ancient Germanic tribal culture, it was referred to as *hamingja*, and among the native peoples of North America and Africa it was known as the *great spirit*. American transcendental philosophers such as Ralph Waldo Emerson and his European forbears, referred to it as the "Oversoul," and the German poet-scientist, Johann Wolfgang von Goethe, celebrated it as "Earth Spirit." In the anthroposophic view of Rudolf Steiner, the "life force" in the living plant or animal is released into the human body in the process of digestion, and it alone can nourish us. To the degree that industrial agricultural science and technology ignore the actuality of "life force" (since it cannot be traced empirically or measured mathematically), the resulting agricultural product is dead and therefore cannot sustain life.

In 1924, when Rudolf Steiner gave his “Agricultural Lectures” to a group of farmers in eastern Germany concerned about the falling fertility levels of their soils and of the animals produced on their farms, he argued that chemical farming ever since Justus von Liebig in the 1840-60s had isolated the role of nitrogen and carbon dioxide from the air for plant nutrition, emphasizing the mineral content of the soil at the expense of humus, not only had decimated the store of micro-biological life in the soil, but more importantly, had caused farmers to lose their traditional understanding of what *life* is.

Conclusion:

Biodynamics began with Steiner’s lectures as a way to restore the ancient wisdom of producing our daily bread in a way that respects and engages the whole of nature and not only what we can understand through reductive science and shape through technological means. Steiner was not a detractor of the so-called natural sciences, but he knew that the latter were incomplete unless paired with a science of spirit which he termed anthroposophy (“wisdom of man”). In his teachings, Steiner paired esoteric knowledge of the East with ancient philosophies of the West, stemming from Aristotle and updated, a couple of generations before Steiner’s birth, in Goethe’s phenomenological studies of color theory, plant morphology, and anatomy.

Biodynamics laid the groundwork for what today has become the organic movement. It fostered the practice of community supported agriculture (CSA) as a form of associative rather than competitive economics. Followers of Steiner, such as Maria Thun and her students in Germany, worked out by careful experimentation and documentation how the dynamic energy flows from the cosmos to the earth could be harnessed to enhance the *life force* in soil, plants and animals by responding to the rhythms of the seasons, the lunar calendar, as well as an astronomical calendar that predicted how energies that were stronger or weaker according to the changing positions of planets and stars relative to the sun and the earth, benefited plant life, and when. Many biodynamic practitioners today follow those calendars in deciding when to cultivate the soil, plant seeds, care for the crop or harvest. Steiner also recommended a series of six fermented herbal preparations (yarrow, chamomile, nettle, dandelion, oak bark and valerian) to stimulate the composting process, plus horsetail tea for fungus control, and two field-sprays (a manure-humus preparation to enliven the soil and a silica preparation to speed the ripening of fruit). Very much like homeopathic medicines, these extremely diluted and potentized preparations facilitate the metabolic processes in the compost and strengthen the life force in soil organisms, plants and animals.

To many people today, anthroposophy may seem rather esoteric and elusive; but biodynamic *practice* is just that: it’s *practical*. Biodynamic farms are of necessity complex, because they require the integration of animal and plant production, and require the highest possible level of biodiversity. But in practicality, biodynamic farming requires a balance of analysis with observation and intuition. It requires *response-ability* to the dynamic ebb and flow of biological life shaped by the seasons.

Who or what then is a biodynamic farmer? He is Aristotle's *oikonom*, steward of his household, or rather of the little corner of nature which is the garden plot or farm entrusted to him for a short while or for a lifetime. The biodynamic farmer does not reject natural science any more than he rejects the virtues of profitable enterprise. But his focus extends beyond scientific fact and beyond profit to a vision of the farm as an individualized organism that is healthy because it is in tune with Nature.

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