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## EDITORIAL

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### The Agrarian Imperative

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**ABSTRACT.** The most recent National Occupational Research Agenda includes, as a goal, conducting research that enhances the understanding of psychological factors that affect the well-being of people engaged in farming. The author proposes a construct, the agrarian imperative, as an explanation for why people engage in agriculture. Several lines of evidence are offered as validation of the agrarian imperative. Historical evidence suggests that domesticating animals and cultivating land to produce food, fiber, and shelter allowed humans to proliferate. In other words, agriculture yielded survival advantages for the human species. Genetic and anthropological evidence is accruing that suggests that acquiring territories of land to produce these necessities has an inherited basis that is encoded into our genetic material. Feedback from the environment influences and modifies the genetic memory pertaining to the agrarian imperative. Psychological evidence, particularly personality research, suggests behavioral traits that are characteristic of persons who are engaged in agriculture. Inability to farm successfully, however, is also associated with an increased probability of suicide. The agrarian imperative could be an important avenue of behavioral research that elucidates motives and risk-taking of people engaged in agriculture.

**KEYWORDS.** Agrarian imperative, behavioral health, farmers, instinct, suicide

*To farmers, land means everything. Ownership of a family farm is the triumphant result of the struggles of multiple generations. Losing the family farm is the ultimate loss—bringing shame to the generation that has let down their forebearers and dashing the hopes for successors<sup>25</sup>.*

The Farm Crisis of the 1980s taught us that the threatened loss of the farm operation is one of the most stressful events that affects farm families, more stressful than divorce or the death of a parent and exceeded, perhaps, only

by the death of a child. In both circumstances the future operation of the family farm is being called into jeopardy. The termination of a family farm is not simply the loss of a job, but also the end of a way of life handed down and cultivated for generations.

What drives family farmers to cling so tenaciously to the land? The best explanation is that agricultural people are motivated by a basic human instinct called the agrarian imperative. Like many animal species, humans have a basic drive to acquire sufficient territory to produce the food and shelter required by their families

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and communities. Sometimes called the agrarian personality, this genetically programmed instinct impels farmers to hang onto their land at all costs. The agrarian imperative instills farmers to work incredibly hard, to endure unusual pain and hardship, and to take uncommon risks.

I prefer the term agrarian imperative over the term agrarian personality. *Personality* implies a set of behaviors whereas *imperative* implies an urge that motivates actions. Not just a style of behavior, the agrarian imperative is a purposeful drive. Although it is appropriate to consider that the agrarian imperative is an hypothesized construct, there are several lines of evidence that offer validation.

### HISTORICAL EVIDENCE

Formulation of the concept of agrarian imperative can be traced back to Konrad Lorenz<sup>1</sup> and Niko Tinbergen.<sup>2</sup> They and their colleague, Karl von Frisch, were awarded the Nobel Prize in 1973 for their astute observations of animals' and other species' behavior in their natural environments. They observed that most animals established territories with sufficient resources to enable the maintenance and reproduction of additional members of the same species.

Animals mark the boundaries of their territories in various ways. Cats spray urine on prominent tree trunks, rocks, or plants. Coyotes howl at dusk and dawn and leave their scat in obvious locations for other canines to detect. Birds fly from tree to tree, singing loudly to proclaim, "This piece of territory belongs to me." Many fish parents guard their nests and attack any intruder until the young are hatched and have found refuge in tangles of plants, coral, or rocks. Personal objects that signify ownership are the human pheromones. We mark the boundaries of our territories with fences, sidewalks, signs, and legal descriptions. Most people even decorate our office cubicles—if we work in such confining spaces—with photographs of loved ones and carefully selected decorations that signify that "this space is mine."

The earliest humans lived as families or kinship groups consisting of a man and one or two

women, some children, and maybe a surviving elder. People seldom lived beyond 40 years of age. Early *Homo erectus* people were scavengers who lived off plants and their seeds, tubers, insects, and whatever other sources of protein they could capture—such as small animals and fish, or find—such as the carcasses of animals slain by more powerful predators. The kinship groups found they could hunt larger prey and gain advantage in protecting themselves if they banded together into larger groups. But still, when children grew into adolescents often they were rejected from the clan or captured by rival clans as sexual partners to build new kinship groups. They established territories, which they marked with rock cairns or which they signaled with shouts and banging sticks and rocks together. The most powerful clans occupied the most desirable territories with the greatest opportunities to obtain food and shelter.

Gradually the human kinship clans outgrew the carrying capacity of the territories they inhabited. Many had no choice but to seek out new terrain. Life remained uncertain, as the plants and animals on which they subsisted varied in their availability. Some hunter-gatherers found that seeds that they had collected and inadvertently dropped around their living sites sprang up into new growth. This was the beginning of farming. Learning how to tuck seeds into moist ground and to hoe away competing plants had survival value. Storing the food produced on their plots for lean times such as winter gave agrarian clans a powerful advantage over the hunter-gatherer troops.

In the history of modern man, agriculture is relatively new—only a few thousand years.<sup>3</sup> Territorial urges facilitated the development of agricultural techniques such as herding goats and tilling plots of land to raise grain.<sup>3</sup> Although the vast majority of people in the world currently are not involved in agriculture, the agrarian imperative is manifested in other fashions, such as the practice of maintaining lawns around our houses, branding business products with logos, and the adoption of a particular style of jersey by a sporting team. These cultural practices stem from urges to stake out territories to raise crops and livestock that became encoded into our ancestors' genetic

memory, much like hunter-gatherers' urges to defend their hunting, fishing, and scavenging territories.

As early humans outgrew their African territories, they pushed into Asia and Europe and eventually went across the land bridge to the western hemisphere and crossed the ocean to Australia. The agrarian imperative fostered the establishment of governments and courts to settle territorial disputes.<sup>4</sup> The agrarian imperative acquired incredible survival value for the human species that enabled humans to propagate prolifically.

### GENETIC AND ANTHROPOLOGICAL EVIDENCE

How is the agrarian imperative inherited? We know that if the DNA of the human genome were laid end-to-end, the genetic material would stretch approximately 66.6 inches.<sup>5</sup> The Nobel Prize-winning scientists James Watson and Francis Crick were the first to calculate the length and spacings in the structures of deoxyribonucleic acid, which they reported in the April 25, 1953, issue of *Nature*. Barely upstaging Linus Pauling, Watson and Crick described how the human genome worked.<sup>6</sup> Molecular geneticists later were able to show that less than an inch of the DNA is responsible for most observable bodily and behavioral characteristics.

What good is there then in the other 66 inches of genetic material? Genetic epidemiologists are tracking down the location of human traits and diseases in the complex human genetic structure. The DNA reserve contains information that possibly can be called upon when the conditions that will lead to their encoding reappear. Probably those "other" 66 inches contain a lot of important genetic information that provides immense survival value for the human species. The genetic code takes into account feedback from the environment.<sup>7</sup> Our biological drives are not an immutable set of programs, but rather they are a set of urges that influence our physical and behavioral responses to conditions surrounding us.

The October 2009 issue of *Science* contains a number of articles that indicate we are carrying

around in our DNA the genetic codes that influenced our *Australopithecus afarensis* and *Ardipithecus ramidus* ancestors.<sup>8</sup> Just as these genetic codes helped Lucy, the australopithecine whose skeleton was found by Donald Johanson,<sup>9</sup> adapt to her wild environment, these and later genetic acquisitions became part of our genetic memory that defines our agrarian roots. Our agrarian roots most fully express themselves when we live and work on the land. How quickly our bodies harden and toughen when we leave an urban lifestyle and become immersed in nature, working the land for a living. Our fingers thicken and our hands enlarge; our behavior becomes practical and our manners become brusque, geared toward accomplishing tasks with a minimum of energy and physical wear and tear. We develop an intense attachment to the land we work. We take great pride in our crops and livestock. Bonds of mutual dependency develop between humans and farm animals. Farmers are aware that we are producing essentials for life: food, fiber, and renewable energy. In short, we exhibit the agrarian imperative as a way of life.

In his book *The Territorial Imperative*, Robert Ardrey<sup>10</sup> contends that the earliest humans were shaped by their environment in Africa to develop agrarian traits, including the striving for territories. He and the anthropologists Louis and Mary Leakey carried on interesting discussions about what structures of the human body to look for in the earliest forms of modern man. Walking upright required modifications in the pelvic attachment of the hip bones and changed the hands so they could be used better to grasp tools. The skull expanded to accommodate more brain matter to store an ever-greater fund of information and increasingly complex language. Aggressive instincts emerged not only to capture prey but also to defend territories that contained the resources necessary to nurture family clans.

Victor Davis Hanson described how agrarianism shaped early cultures and governments. He suggested that farming parcels of land and the struggle for ownership of these territories necessitated the formation of laws.<sup>4</sup> In his book *Guns, Germs and Steel*, Jared Diamond argued that geographic locations that favored agriculture

also favored the formation of civilizations as they exist today.<sup>11</sup>

### PSYCHOLOGICAL EVIDENCE

Besides looking to historians, geneticists, and anthropologists for explanations of the agrarian imperative, we find additional confirming evidence of the instinctual components of the agrarian imperative in the personalities of people engaged in agriculture. In 2001 Marilyn Shrapnel and Jim Davie at the University of Queensland identified five personality styles of the 60 farm people they studied in Queensland: a capacity for hard work and perseverance; confidence in making their own decisions; great capacity to cope with adversity; comfort with solitude and self-reliance; and diminished need for companionship and a comfort level with a small circle of friends.<sup>12</sup> These are the traits that one would expect farmers to manifest. They would seem to be essential characteristics of the agrarian imperative.

Joyce Willock and her colleagues at the Rural Resource Management Department at Edinburgh, UK, and others at the University of Edinburgh evaluated the attitudes, objectives, behaviors, and personality traits of 252 farmers (242 men, 10 women) in Scotland in the late 1990s.<sup>13</sup> Personality traits most predictive of success in farming included conscientiousness, risk-taking, and self-reliance. These personality traits have survival value for working the land as a way of life.

When the objectives of farming are not met and the loss of the farm is threatened, the same traits that motivate agricultural producers to be successful also become associated with depression and suicide. The rate of suicide among male farmers is twice that of their nonfarming counterparts in most studies undertaken in agricultural areas around the world. Farm women also have a higher suicide rate than nonfarm women but the overall rate of suicide by females is much lower than for males.<sup>14</sup> The incidence of suicide among full-time farmers may rise to three to four times the rate of nonfarmers during episodes of severe economic stress.<sup>15</sup> Indeed, in Great Britain the suicide rate

among British livestock and dairy producers rose even more precipitously to approximately 10 times the usual rate for several months in 2001 when their animals were slaughtered to prevent the spread of foot-and-mouth disease and bovine spongiform encephalitis.<sup>16</sup> These hard pressed farmers could not bear to see the means of their livelihood—their cattle and sheep—killed. The traits that contributed to their success as farmers, such as perseverance in the face of adversity and tendency to keep problems to themselves, worked against them.

Fiona Judd and her Australian colleagues compared rates of mental health problems (a common correlate of suicide) and a number of personality measures between 371 farmers and 380 nonfarming Australian rural residents in 2005.<sup>17</sup> Farmers and nonfarmers did not differ in their rates of mental health problems but farmers exhibited significantly higher levels of conscientiousness and lower levels of neuroticism, which they described as a person's ability to acknowledge or express mental health problems and to seek help for these problems.

We know that the suicide rate among farmers, in comparison to nonfarmers, is higher in nearly every agricultural country, from India,<sup>18</sup> to Japan,<sup>19</sup> the United Kingdom,<sup>20</sup> Australia,<sup>21</sup> and the United States.<sup>22,14,15</sup> The agrarian imperative cuts across racial and ethnic groups, but maybe this has something to do with our genetic memory again, for all humans are now thought to have descended from a single African ancestor.<sup>23</sup>

### CONCLUSIONS

Does the agrarian imperative instinct imply that we have little or no control over the behaviors that are entailed with farming? Is it within our capacity to control what is absorbed into our genetic memory? Are we predestined almost solely by our way of life? It is known that instincts encourage patterns of behavior but they do not dictate responses to individual events or circumstances. Living and working on the land influences the information that is absorbed into our changeable genetic material but it does not dictate our behavioral responses. The genetic imperative is a factor, perhaps one

of the most important, to take into consideration as we study behaviors that contribute to the welfare of farm people. Behavior is one of the few factors over which agricultural producers have a high degree of control. Farmers have little control over the weather, agricultural policies, global production, and a host of market factors such as supply and demand. But, carrying out choices to behave responsibly has survival value. We can choose to exhibit the traits associated with the agrarian imperative or we can ignore or even suppress these behaviors.

Scientists, policy-makers, educators, and health care providers are beginning to examine psychological factors that affect farmer well-being, as indicated in the newly released National Occupational Research Agenda.<sup>24</sup> The agrarian imperative could be a fruitful avenue for psychological research concerning risk-taking by farmers and other behaviors associated with well-being that lead to improvements in understanding and managing the safety and health of the agricultural population.

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