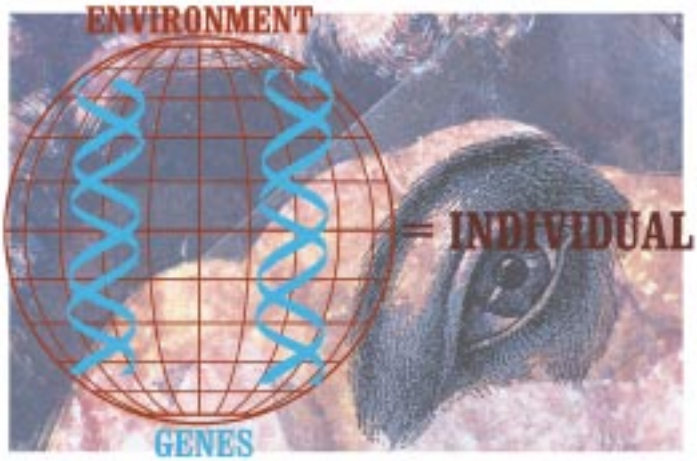
Behave

In this booklet, I have discussed how behavioral principles influence food and habitat selection. I have attempted to show how simple strategies can be used to improve the efficiency and profitability of agriculture, the quality of life for managers and their animals, and the integrity of the environment, thereby enhancing the long-term sustainability of natural resources on private and public lands.



Scientists and managers often ignore the power of behavior to transform systems in spite of compelling evidence of the significance of environment in behavior. It now appears that there are only about one-third the number of human genes previously thought—roughly 20,000 to 40,000 total. Only a few hundred genes distinguish humans from mice. Geneticists say "blueprint" is not an appropriate metaphor for the genome. According to Craig Venter, president and chief scientific officer of Celera Genomics Inc., "We know that the environment acting on biological steps may be as important in making us what we are as the genetic code." Yoshiyuki Sakaki of the Riken Genome Sciences Center adds, "For companies that have concentrated solely on genetics, [these results] are bad news." On the other hand, the potential is virtually unlimited for those willing to understand how environment interacts with the genome to influence behavior.

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Understanding the behavior of any creature is simple: behavior is a function of its consequences. Favorable consequences increase and aversive consequences decrease the likelihood of a behavior. This seemingly simple principle has enormously complex manifestations because consequences evolve from the ongoing integration of heredity and environment. At conception, each individual receives genetic "instructions" for its morphological and physiological development. To facilitate adaptation, these instructions can be modified by social and environmental experiences, and experiences early in life can influence gene expression. The uniqueness of these interactions makes each individual different. The plasticity of these processes lets animals adapt to ever-changing environments, and lets people use behavior to transform systems.

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Once mastered, behavioral principles become a part of the "infrastructure" of the person, not the place, so they are readily transferred from one locale to another. Such knowledge can be used to improve economic viability and ecological integrity of confinement-, pasture-, and range-based enterprises; to enhance and maintain biodiversity of

rangelands; to restore pastures and rangelands dominated by weeds; to alleviate livestock abuse of riparian areas; to anticipate the influence of behavior on systems; and to improve our ability to manage complex adaptive systems. By understanding and applying behavioral principles to our lives and those of the creatures we manage, we can transform systems ecologically, culturally, and economically. But understanding isn't enough. We must also learn to behave with compassion toward others who have different beliefs and values. To do so challenges us all to embrace one another as we collaborate to change the world.

Twentieth-century physics has shown that there is no absolute truth in science, that all concepts and theories are limited and approximate. Science is a quest for understanding, for truth, an attempt to account for observable phenomena in the physical and biological worlds, but science cannot be perceived as "true" or "final" in any absolute sense. It is merely a tentative organization of working hypotheses that, for the moment, best account for the facts concerning physical and biological processes whose interconnections are the fabric of a web characterized by change.

Managers confront a similar challenge: How does one manage ongoing interrelationships among facets of complex and poorly understood ecological, cultural, and economic systems, in light of a future not known or predictable, in ways that won't diminish options for future generations?

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The best way to predict the future is to create it, and in the arena of constant transformation, anything is possible if we dare to engage one another and the environment in ways that nurture creativity. Creativity comes from venturing into the unknown. The familiar—comforting, orderly, generally predictable—often lacks creative zeal. The unfamiliar—obscure, potentially dangerous, always unpredictable—typically bestows creative opportunities.

Creativity comes from unions of opposites, from compassion, from opening up to that which is different from oneself. The contemporary world of natural resource management is filled with passion, but often devoid of compassion. The challenge is to transcend the boundaries we create. "All boundaries" as Peter Senge writes, "are fundamentally arbitrary. We invent them and then, ironically, we find ourselves trapped within them." Ultimately, the courage to love is the courage to transcend boundaries and traditions, and it is the source of creativity.

Illustration - Mary Donahue