

HOLISTIC VETERINARY MEDICINE: VETERINARY CHALLENGES & OPPORTUNITIES IN A CHANGING WORLD

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Definitions to help readers: The *ethos* or spirit/purposiveness of the animals is affected by the *ecos*, the socio-environmental milieu, and by genetic influences which determine the ultimate being-ness or nature of the animals, their *telos*. The *telos* of an animal may be defined as the set of needs and interests which are genetically based and environmentally expressed which collectively constitute or define the form of life or way of living by that animal whose fulfillment or thwarting matter to the animal in terms of quality of life and a life worth living.

ABBREVIATIONS

CAFOs — concentrated animal feeding operations

Abstract

Within the bounds of legally permitted and culturally accepted norms of animal use there are many ethical inconsistencies in the quality of animal care and standards of animal welfare. One species may be treated in one situation of utility which would be considered inhumane and illegal for that same species or for another of similar sentience in another situation. The veterinary profession operates with documented degrees of success and failure in this ethically inconsistent arena of animal use to secure optimal health and well-being. This can be a challenge when the situation provides animals with little quality of life or a life worth living under conditions causing stress, distress, and disease. Providing veterinary services simply to keep animals alive to fulfil their utility regardless of their lack of quality of life and giving limited quality of veterinary care for economic and other reasons are ethical issues that challenge organized veterinary medicine and individual practitioners.

The *telos* of domesticated animals has been altered to varying degrees, often to their benefit, making them more adaptable to captivity, less fearful and more tractable in the home and on the farm and ranch. But in many instances where animal welfare is questioned and diseases and behavioral problems are prevalent, calling for veterinary attention, the animals' *telos* reflects deficiencies in the *ecos* and *ethos* which animal welfare science and veterinary behavioral medicine seek to rectify. Such recognition of animal sentience and its complexities is a relatively new step for society to take. The intent of this review is to underscore those areas concerning animal welfare and One Health where there are challenges and responsibilities for the veterinary profession to best serve the greater good from a holistic perspective.

While staying at the home of Professor Calvin Schwabe several years ago to present invited lectures to his students at University of California-Davis School of Veterinary Medicine, we discussed animal welfare concerns, the One Health concept, and the veterinarian's place in society (1). We agreed that as the intermediary between humans and

other animals, the veterinary profession serves as the translator of animals' needs and the link between the animal realm and society. Specifically, the profession's responsibility is to serve animals' interests by seeking to maximize their mental/emotional well-being and physical health, societal benefits being consequential rather than primary.

There is a strong public abhorrence of animal suffering and cruelty. The socially accepted concept of animal well-being is a subject addressed only relatively recently from a scientific and veterinary medical/clinical perspective. These two perspectives are of significant application in answering public concerns over animal suffering and ethical and legal questions concerning alleged cruelty and neglect. Modern veterinary practice calls for an integrated, holistic approach to animal wellness and well-being which considers the state of the soma, psyche, and ethos of the patient – mind, body and spirit – the physical, psychological/emotional and behavioral signs/symptoms the patient presents. With the application of ethology to veterinary medicine and its incorporation into animal welfare science, the ethos of animals is addressed and objectively researched beyond mere subjective impression, as are the contingent and developmental influences of the ecos, environmental factors.

Veterinarians are often placed in potentially conflicting situations at the interface between the human and the non-human. These situations range from animals having the moral and emotional regard of being family members to being used for various purposes, especially for food and labor, and as commodities/tools for biomedical research and other purposes. The societal objectification of animals and their treatment as renewable resources and commodities entails moral and emotional separation and disassociation.

The One Health concept currently runs the risk of devolving into little more than controlling zoonotic (animal-to-human) diseases and marketing ever more vaccines and pharmaceuticals, which equates to treating the symptoms and not addressing the causes of disease and suffering. For instance many animals kept as “pets” lead socially and environmentally impoverished lives in crates, cages, even chains, as do elephants and other wild species kept for public entertainment and primates in animal research facilities. Improving the quality of existence can be a challenge to implement for the billions of animals raised for human consumption in stressful, overcrowded concentrated animal feeding operations (CAFOs) or so-called “factory farms.” Far from being kept in “controlled environments,” these animals can become incubators of disease in spite of and in part because of multiple vaccinations, antibiotics, and other drug treatments to promote “productivity,” making them a serious public health threat. Rather than changing pathogenic husbandry practices, the genetic engineering of food animals to make them resistant to production-related diseases through gene-editing may be the next profit-driven intervention, systemic changes being less profitable in the short-term (2). Such techno-biogenetic fixes

rather than holistic systemic correctives will only give short-term benefits at best.

In an industrialized global economy where animals are seen and treated primarily as a renewable resource — when efficiently managed to maximize their profitability — the animal welfare and protection laws and their interpretation and enforcement are often tailored to the situation and relativistic morality derivative of context, cultural norms of animal care and use, and rationalized need. So animal welfare and protection laws are neither universal nor effectively enforced from one state to the next or from nation to nation. Such ethical inconsistencies will continue with the moral pluralism of cultural diversity and the acceptance and assimilation of values and attitudes toward animals and the natural environment until there is some unanimity and unified sensibility. The World Animal Net’s *Model Animal Welfare Act* seeks to accomplish this, the authors proposing that their model can be used as a guide and information source for any countries seeking to introduce or improve their animal welfare legislation (3).

ETHICS AND ETHOLOGY

The oath that I took in the U.K. in 1962 on being admitted to the profession upon graduation from the Royal Veterinary College, London, stating that “*above all my constant endeavour will be to ensure the health and welfare of animals committed to my care,*” I was challenged to uphold from the start of my career. We live in morally (and perceptually) inconsistent societies and cultures world-wide with regard to wild and domesticated animals. Their treatment is determined primarily by financial, traditional, and emotional values rather than by any coherent, empathic, and biologically based ethics (which consider sentience, behavior, and ecology/living environment). For instance, while veterinary services are needed to address production-related diseases and more recently the welfare of animals in commerce, does the profession’s involvement imply tacit approval of such methods of animal husbandry/production? We are talking here about the gamut from pigs and poultry in CAFOs to wildlife farming such as salmon, deer, and fur ranching. But to fail to be involved would not be in the best interests of the animals, the environment, and consumers.

Ethology, the science of animal behavior, as applied in veterinary practice, addresses the *ethos* or spirit of animals in terms of their physical and emotional well-being. It also addresses what improvements are called for in the animals’ environments to correct disturbances and disorders of *ethostasis* or behavioral adaptation (4). The role of the veterinary profession in

promoting animal welfare is now being more widely discussed (5). The application of the science of ethology to veterinary practice and its integration into the veterinary teaching curriculum is the cornerstone of a more holistic approach to animal health and welfare. With knowledge of ethology, the veterinarian can speak for animals' needs/behavioral requirements and related welfare.

Holistic human and veterinary medicine address the diagnosis, treatment, and prevention of disease/illness from an integrative and interdisciplinary mind-body and environment paradigm. The connections between human and animal health and well-being are recognized under the banner concept and movement of One Health. The triune of psyche, soma, and spirit — mind, body, and the patient's will to live — is especially important for the stressed, distressed, and chronically ill and the physically and emotionally impaired (6).

COMPANION ANIMALS

While some veterinarians and others in various animal industries may oppose judicial opinion concerning the emotional value of companion animals, veterinarians are able to provide advanced diagnostic and treatment services to those who can afford them. This results in the costs often far exceeding any judicially determined compensation for emotional loss. Veterinarians are challenged to be responsive to clients' emotional states and reactions to their animals' various clinical conditions, suffering, and death. Blame for treatment failure is part of the price of providing healing and helping services to society.

Veterinarians in companion animal practice indirectly contribute to significant public health cost savings and the general public good by helping keep people's cats and dogs healthy. People with animal companions have significantly fewer doctor visits and shorter times being hospitalized (7). Children have fewer allergies and one may hope, some awakening of empathy when there are one or more dogs or cats in their lives.

However, the strong emotional attachment between millions of people and their animals can mean animals' lives are prolonged long after an objective, quality-of-life decision to euthanize should have been made. This and other aspects of veterinary bioethics in practice and potential conflicts of interest are being more widely considered (8). And in particular this includes the ethics of client-demanded, medically unnecessary surgical procedures such as declawing cats and dog ear-cropping and tail docking (9). Reasoning that it is better for the animals to have a professionally trained veterinary surgeon perform

such procedures begs the question until such procedures are prohibited by law.

Some people are attracted to and exhibit higher attachment to breeds with extreme (inherited) health problems requiring a higher level of care compared to owners with healthy dogs. This observation implies there may be a Munchausen-by-proxy dynamic and that an owner's love towards an animal does not necessarily translate into good welfare for that animal (9). One favored dog gene has a human counterpart that has been implicated in Williams-Beuren syndrome, where it causes exceptional gregariousness and friendliness toward strangers, and may intensify separation anxiety (10). Many of the several hundred genetic and developmental disorders so far identified in purebred dogs are virtually identical to those dysgenic conditions seen in humans (11). This canine population challenging veterinarians with genetic disorders with its increasing numbers of purebreds and designer dogs is biologically clouded by the emerging market for cloned puppies and the reality of gene editing to create totally new characteristics for biomedical and other commercial purposes. Genetic anomalies are increasing in the cat population in parallel with the rising popularity of purebred mutations (12).

The veterinary profession has a dual role to play in this realm of veterinary eugenics, advising breeders, promoting rigorous progeny testing and genetic screening, and working with breed clubs to change potentially deleterious yet still desired physical traits/appearances.

Wider public appreciation of veterinarians working in animal shelters around the world is undermined by the current pro-life, anti-euthanasia sentiment even though humane methods of population control are insufficient in many regions and countries. Significant improvements in the care of animals in shelters have come through societal pressure and veterinary application of ethological science (13).

Providing veterinary diagnostic and treatment services to captive wild animals primarily marketed as "pets" indirectly supports the wildlife trade and is an ethical dilemma for veterinarians in "exotic" animal practice. Their services for such animals are certainly needed but should be coupled with support of local and state legislation phasing out all trade and new ownership of most non-domesticated animal species that do not thrive in captivity. I see progress also when veterinarians give their expertise to not only help save endangered species but to also strive to help improve their well-being in captivity while

questioning the exploitation of elephants, lions, dolphins, orcas, and all other wild creatures used by the entertainment industry.

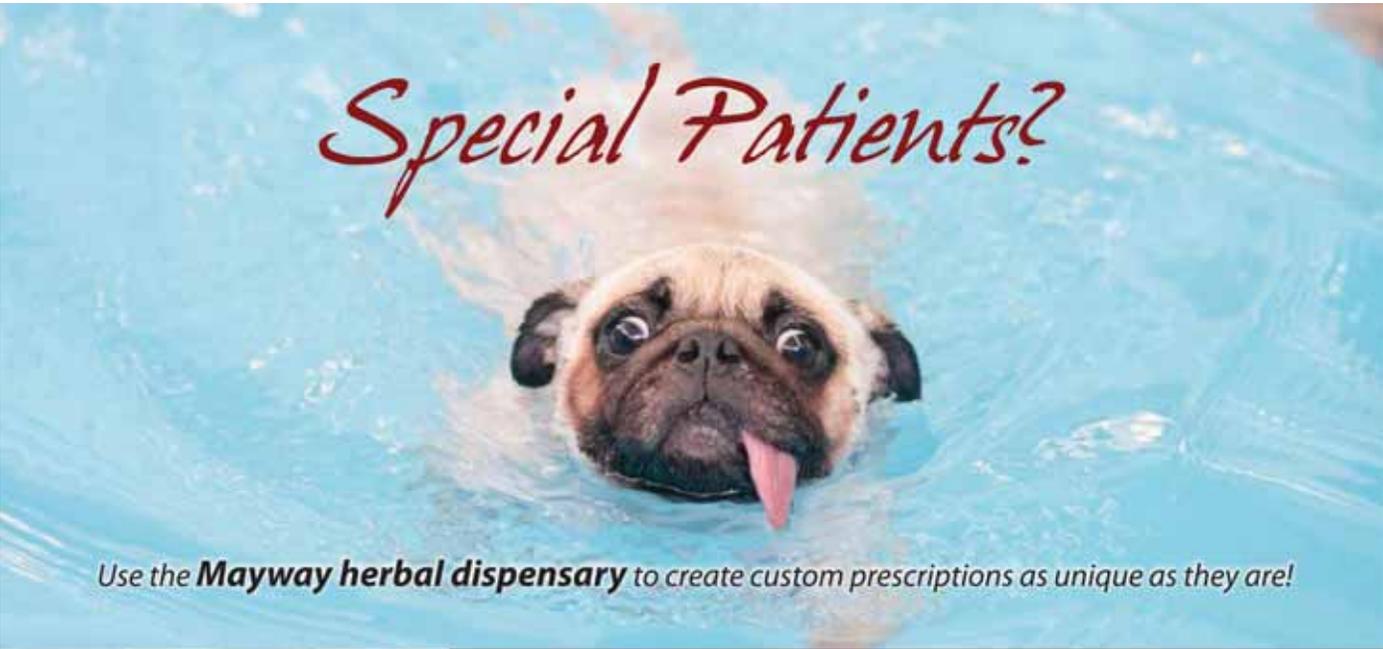
Those veterinarians involved in ensuring proper care of laboratory animals, in spite of anti-vivisectionist opposition and resistance to accommodating animals' behavioral and emotional needs (which calls for more funding for better housing and more staff), have still done much to improve the health and well-being of such animals in many institutions (14).

FARMED ANIMALS: OPTIMAL ENVIRONMENTS & ECOLOGICAL CONCERNS

It is indeed a challenge to heal animals and to keep them well when they are maintained under various conditions — deprived of natural socio-emotional and cognitive-environmental stimuli — which are essentially dispiriting and not in accord with their instinctual and basic biological and psychological needs. The *ethos*, as per ethology, is the essence or spirit of animals' intrinsic natures which, for their health and well-being, requires a biologically appropriate environment. As the late Derek D. Pout, a British veterinarian and classmate of mine, wrote, "The existence of an animal in the wild, thriving in its natural habitat is declaring unequivocally what it requires for its welfare" (15).

Provision of such is limited both conceptually and financially for most captive wild and domesticated species.

The well-intended past contributions by the veterinary profession to increase food animal productivity for the "good of society" are now being re-examined (16). This not simply because human interests have almost always taken priority over those of other animals and their environments, but because in the concordance of environmental, human, and non-human health, we discover the wisdom of the concept of *One Health* which is embodied in the bioethics and practices of holistic veterinary medicine (17). Euthenics — seeking to improve the human condition by controlling the environment — has often caused harm, even the demise of past civilizations (18). Euthenics has its parallel in food animal eugenics to improve productivity with the genesis of production related diseases (19, 20). The One Health concept could be one catalyst to engage government and the private sector to address ways to improve the human-animal-environment connections through forming mutually enhancing symbiotic relationships, for when we harm animals and the environment, we harm ourselves. *What is good for the animals is good for us, and what is good for us is good for the Earth* is a latter day extension of the Golden Rule at the core of sustainable ecological economics (21).



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The contributions of the veterinary profession in this regard have not yet been fully realized and have been subverted for decades by narrowly focused missions, notably the wildlife-decimating cordon fences across Botswana (funded by the World Bank and British veterinary services) (22). To recall this instance of misapplied veterinary services (during the many years when Europe had a “beef mountain” of unsold Europe-produced beef in cold storage while Botswana’s heavily subsidized beef was being exported to Europe!) is not to demean or discount the dedication and brilliance of many veterinarians involved in tropical medicine disease research and control. Their role is in protecting wildlife and in farmed animal health and productivity to improve rural economies and nutrition in developing countries. Responding to challenge is a virtue, but not seeing the broader context and consequences can have unforeseen adverse consequences. One classical example was eliminating sleeping sickness in East Africa to improve human health which led to population expansion along with livestock into wildlife habitat once protected by the tsetse fly, carrier of this disease (23).

Holistic veterinary medicine can provide the ethical basis for considering the consequences of our actions and interventions, acknowledging that the road to Hell is paved with good intentions. The November 2015 British Veterinary Association’s annual congress session “Vets in a climate change world” put a spotlight on the profession’s current involvement in non-sustainable food production (24). Globally, farmed animals contribute 15% to climate change emissions, consume 40% of the world’s annual grain production, and, along with the burgeoning human population (some 83 million of whom are malnourished), are decimating natural ecosystems and biodiversity irreversibly. With rising incomes in developing countries, consumer demand for more meat, poultry, eggs, and dairy products is accelerating, as is the proliferation of CAFOs. This rising middle class is driving the Livestock Revolution and proliferation of intensive systems of production (CAFOs). Where livestock are raised by the poor, there are 2.5 billion cases of human illness and 2.7 million deaths from zoonotic diseases transmitted from the animals (25).

Progress in healthcare across species calls for a revolution in how we treat other living beings, how we choose to live, and what we eat. Veterinarians have been caught in a double bind being called upon to support non-sustainable and generally inhumane CAFOs. Some 40 years ago I and other concerned veterinarians and scientists met denial and ridicule from the agribusiness sector when we raised the issue of the livestock,

poultry, and aquaculture industries’ increasing use of antibiotics in animals’ feed and the reality of bacteria evolving antibiotic resistance. Treating symptoms first has its place at the level of primary care and in triage situations. But to deny the urgent need to phase out CAFOs and to prioritize human population control is like denying the anthropogenic contributions to climate change and the spread of zoonoses and water and food-borne illness. Greater public and government recognition and support of the veterinary profession is especially needed at this interface in order to facilitate the transition to humane, ethical, and sustainable food production, quality, security, and safety, and to improve the health and well-being of animals in other situations of human use and interaction.

HOLISTIC, INTERDISCIPLINARY VETERINARY PRACTICE & SERVICES

Holistic, interdisciplinary veterinary practice and services can help provide an integrative approach to animal health and well-being by applying alternative treatments that complement the conventional within a broad framework that considers animals’ appropriate biological needs — nutritionally, behaviorally, socio-emotionally, and environmentally. Without this holistic perspective, significant advances in preventive medicine and animal welfare are unlikely and will meet the opposition of vested interests in maintaining the status quo without the backing of sound, evidence-based documentation. Sound medical science and bioethics go hand-in-hand.

This field is rapidly evolving to inspire and guide students and graduates to find fulfillment in a multitude of areas because it connects the subject of the animal patient’s disease and possible suffering with the animal’s ecology/environment, husbandry/care, especially nutrition, and socio-emotional relationships and well-being. These areas include: wildlife disease control and conservation and improving the physical and mental health and conditions of those in captivity (in zoos, laboratories and conservation refuges); supporting humane and ecologically sound farm animal husbandry practices and disease prevention; applying ethology to facilitate the handling, transportation, and slaughter of food animals; educating clients in the companion animal sector by promoting and practicing the basic veterinary bioethical principles of right breeding, right (biologically appropriate) nutrition, right environment and relationships, and right understanding and care especially in the applied ethology/animal behavior front (26–28).

In sum, holistic veterinary medicine can contribute to the advancement of comparative medicine and offers a change

in perception which enables a more balanced attitude toward and treatment of animals and their natural environments upon which the wealth and health of our own kind ultimately depend.

CONCLUSIONS

Do these historical and cultural bioethical inconsistencies in our relationships with other animals and the natural environment mean that the practicing veterinarian must accept a set of ethical standards of treatment and prescribed husbandry/care that is in accord with the clients' regard/valuation of their animals and available monies? Or should those standards be set in accord with the animals' basic biological and ethological needs? Subjective and objective perceptions aside, while some deal with clinical reality emotionally and emotional reality clinically, those who address all realities (of differing perception and valuation) with reason, empathy, and compassion bring ethics to life and life to ethics (29). A team approach to dealing with complex cases was viewed as beneficial in professional development, the "negative influences of human factors provoked by an emotional connection with the clients/patients and fatigue/stress brought on by clinical complications were deemed to be detrimental to rational clinical reasoning" (30).

Most veterinarians are purportedly no more lucid in ethical thinking and moral reasoning ability than the remainder of the populace when it comes to difficult decisions concerning animal welfare issues and ethical dilemmas (31, 32). Unresolved ethical issues, even to the point of feeling despair and professionally compromised, or living in denial, may well contribute to the high incidence of suicide in the profession (33). Veterinary schools in Australia and New Zealand have created One Welfare (<http://onewelfare.cve.edu.au/>), an online portal with resources to help veterinarians and veterinary students navigate ethical dilemmas and other difficult situations involving animal welfare. The site includes hundreds of articles on animal welfare issues and scenarios veterinarians might face in practice. The portal was launched in December 2015, and veterinarian Paul McGreevy of the University of Sydney and the project's chief investigator hopes it will help ameliorate stress in a profession with a high suicide rate (34).

As Socrates advised that a life unexamined is a life un-lived, so the examination of veterinary practice from a holistic and bioethical perspective can bring new life to the profession (35). The inclusion in 2011 of commitment to address animals' welfare in the U.S. veterinarian's oath indicated a significant degree of reflection on the profession's societal and animal responsibilities and rectified a long-standing omission (36).

Further inquiry into the responsibilities and future of the veterinary profession can become compounded if not clouded by consideration of professional identity (37). Professionalism aside, public recognition of the veterinary profession as the authoritative voice for animals' well-being beyond the purely physical has advanced significantly over the past several decades along with a broader societal acceptance of animal sentience and concern for animals' welfare (38, 39).

Preparing veterinary students to meet the challenges is the concern and responsibility of teaching institutions. A survey of animal welfare, animal behavior, and animal ethics courses in the curricula of AVMA Council on Education-accredited veterinary colleges and schools led to the conclusion that these institutions need to provide more formal education on animal welfare, behavior, and ethics. The authors assert, "On the basis of public demand and professional obligations for veterinarians, all veterinary students should be taught animal welfare, behavior and ethics in the core curriculum" (40).

Our empathy with other animals, connecting with our ancestral, shared biological and ecological roots — which some call our sacred connections — must be repaired under the unifying banners of One Health, One Earth, and One Economy for our own well-being as well as theirs. This is not simply altruism but enlightened self-interest which the veterinary profession in particular can help society rediscover, as in consideration of the root connections of One Welfare in human and animal well-being. (41). This broadening of perception, conception, and action will open new opportunities for the veterinary profession to contribute to the greater good (42). As poet Rainer Maria Rilke wrote, "If we surrendered to Earth's intelligence, we could rise uprooted, like trees" (43). But there has been an exponential rise in population growth, planetary destruction, and loss of biodiversity over the past half-century which has changed the ecology and contaminated the environment more than all prior ages of human presence on Earth combined. This crisis of the so-called anthropocene age calls for a more holistic, bioethical approach in all human activities, with food production in particular; and the veterinary profession can play a pivotal role in healing human-animal relationships and facilitating mutually enhancing symbioses (44, 45).

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