LAS CRUCES SUN-NEWS

On the Positive Side: Animals and animal technology
By John Jones For the Sun-NewS
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"When it comes to having a central nervous system, and the ability to feel pain, hunger, and thirst, a rat is a pig is a dog is a boy." Ingrid Newkirk

We often overlook the many similarities among animal species. Yet any definition of "animal" includes human beings. One way to underline this is to look at a few contemporary examples of how technology affects animal species.

A whole series of technology applications can be grouped under the heading of animal protection, training, containment or tracking:

- Microchipping for identification.
- Radio collar for access and/or containment.
- Portable wireless dog. fences
- "Hotshot" fencing.
- Pet and wildlife training. and/or tracking collars.

Another category involves animal medications. Pet owners know that drugs are prescribed for many veterinary conditions, very much as they are for humans. Some pet owners have discovered, to their surprise, that some familiar over-the-counter drugs are prescribed for their pets. It is important to note, however, that some human drugs are harmful or lethal to certain animals. The prescription for pet lovers is: don't medicate your pets without talking to your veterinarian.

Many tools and diagnostic techniques are, however, similar for both humans and other mammals. (Birds, reptiles, fish, arachnids, and other members of the animal kingdom are necessarily treated differently).

X-ray, a diagnostic tool for looking in between, operating between ultraviolet and gamma, has been an indispensable tool for over a century.

Endoscopy offers a look inside the body using an instrument that examines the interior of a hollow organ or cavity of the body. Endoscopes are inserted directly into the organ. Imaging by sections, using wave energy, is called tomography.

Computed Tomography (CT Scan or cat scan) employs tomography created by computer processing. This method employs digital processing to generate a three-dimensional image of the inside of an object from a series of two-dimensional X-ray images taken around a single axis of rotation.

PET (Positron Emission Tomography) Scan is a medical imaging technique that produces a three-dimensional image or picture of functional processes in the body. The system detects pairs of gamma rays emitted indirectly by a positron-emitting radionuclide (tracer), which is introduced into the body on a biologically active molecule. Images of tracer concentration within the body are then reconstructed by computer analysis. In modern scanners, this reconstruction is often accomplished with the aid of a CT X-ray scan performed on the patient during the same session, in the same machine.

The whole field of robotics has applications in veterinary medicine. The field includes stationary robots (as in assembly line devices) or flying drones (as in the Predator Drone) or ambulatory devices on legs, wheels, wings, etc. It turns out that the most stable-legged robots have more than two legs, as we find in most non-human mammals. (Readers

can check out the amazing "BigDog" robot video via a Google search for "Boston Dynamics," or search the Internet for animal and insect- based robots).

In addition to treatments and diagnostics, there is a wide variety of educational choices that relate to animal welfare, behavior, and support.

- Veterinary Assistant - certification.
- Veterinary Technician - AA, BS.
- Veterinarian - DVM.
- Animal Science - Science Technology Concentration - BS, MS, PhD.

In addition there is a broad range of academic endeavors, research in the sciences, engineering, or the humanities, etc.

Note: For those considering a career in research, however, comes this warning from an anonymous author: "It has just been discovered that research causes cancer in rats."

John Jones is a retired mechanical engineer, with advanced training in systems analysis and systems programming. He has been active in animal welfare in Las Cruces, and currently serves on the board of directors of the Humane Society of Southern New Mexico.