LITTLE LOST PLANET:

Planet Pluto has been demoted. This is great news because it demonstrates that science is more of a process than a product, more method than body of knowledge. New information always accumulates until a tipping point is reached, at which point the conceptual world is reorganized.

No longer will Pluto be the "littlest" kid on the block of classical planets where Jupiter is the fat boy and Mercury the baby. Instead, and pending a final vote in September by the International Astronomical Union, Pluto will become the undisputed leader and namesake object for a new group of dwarf planets called the "plutons." These smaller and odder objects don't meet the new and more stringent definition of a "real" planet, an object that orbits a star, is not a star and is large enough to have become spherical and to have gravitationally cleared its cosmic neighborhood of other objects.

Pluto the object will remain exactly the same. Pluto the concept will not. The scientific "splitters" will have won the day in the court of taxonomy. What is now a single group (planets) will likely become two (planets and dwarf planets).

This recent astronomical controversy is merely the latest example of what has been an unending struggle between lumping and splitting during the history of science. A more explosive struggle erupted in 1871 when Charles Darwin published "The Descent of Man," arguing an idea that has since become common scientific knowledge. Human beings are descended from an ancestor common to the so-called "lower" animals.

The previous decision to split the human animal from non-human animals based on Biblical scripture and bias was revisited when a tipping point of biological evidence was reached. Bluntly put, humans remained the same but the concept of humans was demoted, taxonomically speaking. Humans do have unique differences from other animals that most of us would prefer to exaggerate, rather than minimize. Other animals do think, use tools and have at least a rudimentary language, although we are certainly cleverer and more self-aware than they are.

What even fewer people realize is that the animal group into which humans were lumped has itself been recently demoted. No longer are animals one of three 18th-century Linnaean kingdoms (animal, vegetable and mineral). No longer are animals one of the five more recently designated kingdoms: multicellular animals (Animalia), one-celled animals (Protozoa), plants, fungi and bacteria (Monerans). Today, and thanks to the construction of DNA phylogenies (family trees), all animals from tapeworms to tigers belong to one of three small twigs (animals, plants, fungi) on one of eight small branches on one of three large branches on the tree of life, the one with nucleated cells (Eukaryotes). The other two large branches are the true bacteria (Eubacteria) and a group resembling bacteria but which are so old they're called the Archaea, meaning "the old ones" in Greek.

Basically, animals have been demoted from being the dominant kingdom to being a small twig on a tree of life dominated by bacteria.

The basic lesson here is that there is nothing revolutionary about the rearrangement of scientific information. It happens all the time, especially when technology gives us a new way of seeing the world.