

Comparative Psychology and Ethology: A Short History
[excerpted from Greenberg, G. (2012). *Comparative psychology and ethology*. In N. M. Seele (Ed.). *Encyclopedia of the sciences of learning* (pp. 658-661). New York: Springer]

Gary Greenberg
Professor Emeritus of Psychology
Wichita State University

Definition and History

Both Comparative Psychology and Ethology can trace their roots to the late 19th century. Depending on which history one reads the first comparative psychologist was Pierre Flourens, a protégé of Baron Cuvier or George John Romanes, a friend and student of Charles Darwin. Flourens' book title represented the first use of the term, Comparative Psychology (*Psychologie Comparée*, 1864) and predated Romanes' *Animal Intelligence* (1882). Both proposed a science which would compare animal and human behavior, Romanes postulating the existence of a gradient of mental processes and intelligence from the simplest animals to man - the comparative approach much in use today. Romanes strengthened his proposal by a vast collection of anecdotal accounts of clever behavior in dozens of animal species. Though perhaps best known today for the fallacies of his anecdotal method and for his easy assignment of human mental faculties to animals--anthropomorphism--Romanes nevertheless succeeded in establishing his idea of a gradient of mental processes across the animal kingdom as a basic premise of early comparative psychology. Ethology too has a mixed parentage. Isidore Geoffroy-Saint-Hillaire first used the term in 1859, though Oskar Heinroth, a late 19th century German biologist was one of the first to apply the methods of comparative morphology to animal behavior; he is thus considered to be one of the founders of ethology.

Both disciplines had many adherents in the early and middle parts of 20th century: Comparative Psychology in the United States under the influence of the learning psychologists (e.g., Ivan Pavlov, Edward Thorndike), the behaviorists (e.g., Zing-Yang Kuo, John Watson, B.

F. Skinner), and the epigeneticists (e.g., T. C. Schneirla, Daniel Lehrman, Ethel Tobach, Gilbert Gottlieb); while Ethology became firmly established after WWII in Europe under the influence of biologists such as William Thorpe, Nikko Tinbergen, and Konrad Lorenz. The latter two, in fact, were awarded the Nobel Prize in medicine (there is no separate prize for behavioral research) in 1972 for their animal behavior studies (they shared this prize with Karl von Frisch, an early 20th century biologist).

Theoretical Background

Evolution was seen to play an important role in behavioral origins by both disciplines, though in different ways. Comparative psychology, influenced by the 20th century Functionalists, believed behavior allowed organisms to adapt to their environments (i.e., Darwinism); behavior itself was not an evolved phenomenon, though the organism was. Ethologists, on the other hand, understood behavior itself to be an evolved process, the route being genes → instincts, or inherited behaviors. Additionally, while comparative psychology tended to engage primarily in laboratory research, ethology emphasized the significance and importance of studying behavior outside the laboratory, in the natural settings.

These two fundamentally different approaches to the study of behavior lead to a serious intellectual and theoretical “war” around the 1950s. Ethology advocated the position that behavior was a biological phenomenon, *determined*, and not merely *influenced* by the organism’s genotype; much animal behavior was thus believed to be instinctive. The clearest statement of this is found in Tinbergen’s book, *The Study of Instinct* (1951). Comparative psychologists, on the other hand, tended to take an epigenetic approach, stressing the importance of development, experience, and other psychological processes. The differences were summarized in an important paper by Daniel Lehrman (1953), which today still represents one of the best critiques of instinct

theory. While healthy, the ensuing debates settled little. It was an important 1966 book by Robert Hinde (*Animal behaviour: A synthesis of ethology and comparative psychology*) that seemed to resolve the differences between these two opposing views. The two disciplines historically sparred over the nature-nurture issue: Was behavior a biological or a psychological phenomenon? Endless debates over this issue have yet to see it formally resolved.

Current Status

While Comparative Psychology grew in America, ethology remained somewhat stagnant in Europe. Beginning in 1944 with the initiation of the American Psychological Association's divisional structure, comparative psychology had a home in Division 6, *Physiological Psychology and Comparative Psychology*. In the 1990s the division entered into discussion of a name change, retaining "comparative psychology" in the new name, *Behavioral Neuroscience and Comparative Psychology*. Comparative Psychology as a field of study has remained healthy as illustrated by the appearance of several comparative psychology societies in the closing years of the 20th century: The Southwestern Comparative Psychology Association (founded in 1983 by Michael Domjan, Del Thiessen, Steve Davis and Gary Greenberg); the Comparative Cognition Society (founded in 1994 by Ron Weisman, Mark Bouton, Marcia Spetch and Ed Wasserman; and the International Society for Comparative Psychology (founded in 1983 by Ethel Tobach and Gary Greenberg). An even earlier group, the International Society for Developmental Psychobiology, was founded in 1967 by George Collier, Norman Spear, Bryon Campbell, John Paul Scott and others. There are, of course, several other such societies in countries around the world.

The picture was not so rosy for ethology which seemed to languish in the same period. This was likely because, “The simple truth is that ethology never did deliver as a science of comparative behavior...” (Plotkin, 2004, p. 105). Indeed, in 1989 ethology was declared: ...dead, or at least senescent. That is, if you think of ethology in the narrow sense – the study of animal behavior as elaborated by Konrad Lorenz, Nikolas Tinbergen, and Karl von Frisch. It has been quiescent for some time. No exciting ideas were emerging, and data gathering on key issues had lost its direction... [Barlow, 1989, p. 2].

However, the biological study of animal behavior has thrived well into the 21st century. Ethology was reborn in the early 1970s as a new science, that of Sociobiology (Wilson 1975), the goal of which was to biologicize the social sciences. But this blatant attempt at understanding animal and human behavior as a purely biological phenomenon was met with scathing criticism (Hull, 1988; Lustig, Richards & Ruse, 2004) from numerous quarters.

The intellectual sparks flew for years, well into the end of the 20th century which witnessed the appearance of a still new iteration of ethology, Evolutionary Psychology. This approach focuses primarily on human behavior and posited that we owe our universal nature to evolutionary adaptations faced by our Pleistocene ancestors that we have inherited in our genomes. With evolutionary psychology, instincts are once again in vogue. Though popular, evolutionary psychology is not without its critics (e.g. Honycutt & Lickliter, 2003). It is not the application of evolution to behavior that is at question, but the manner in which it is understood to apply to behavioral origins. After all, what serious scientist in 2010 can object to the significance of evolution for psychology?

There has also been new life breathed into ethology and sociobiology. The sociobiological idea of the genetic basis of human altruism has recently been somewhat retracted by one of its earliest proponents, E. O. Wilson. While this is comforting news to many non-reductionistic comparative psychologists and other animal behaviorists, it doesn't sit well with all students of behavior (Marshall, 2010) attesting to the staying power of the classical ideas of ethology. In a recent analysis Salzen (2010) makes a case for interpreting the ideas of ethology in modern neuroscientific terms. There is in fact a discipline known as "Neuroethology," which describes animal behavior in terms of how the nervous system works. As a comparative psychologist, we should take comfort in the staying power of our discipline.

References

- Barlow, G.W. (1989). Has sociobiology killed ethology or revitalized it? In P. P. G. Bateson and P. H. Klopfer (Eds). *Perspectives in ethology. Volume 8. Whither ethology?* (pp. 1-45). New York: Plenum Press.
- Hull, D. (1988). *Science as a process*. Chicago: University of Chicago Press.
- Lehrman, D. S. (1953). A critique of Konrad Lorenz's theory of instinct. *Quarterly Review of Biology*, 28, 337-363.
- Lickliter, R. & Honeycutt, H. (2003). Developmental dynamics: toward a biologically plausible evolutionary psychology. *Psychological bulletin*, 129, 819-835.
- Lustig, A., Richards, R. J. & Ruse, M. (Eds.) (2004). *Darwinian heresies*. Cambridge, UK: Cambridge University Press.
- Marshall. M. (2010). Sparks fly over origin of altruism. *New Scientist*, No. 2780, October 2, 8-9.
- Salzen, E. (2010). Whatever happened to ethology? The case for the fixed action pattern in psychology. *History and Philosophy of Psychology*, 12,
- Tinbergen, N. (1951). *The study of instinct*. Oxford, UK: Oxford University Press.
- Wilson, E. O. (1975). *Sociobiology: The new synthesis*. Cambridge, MA: Harvard University Press.