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Author: Dr. Denise Herzing
Wild Dophin Project and Florida Atlantic University, United States

PROFILING NONHUMAN INTELLIGENCE: AN EXERCISE IN DEVELOPING UNBIASED TOOLS FOR DESCRIBING OTHER TYPES OF INTELLIGENCE ON EARTH.

Abstract

Defining intelligence has historically been studied by comparing nonhuman cognitive and language abilities with human abilities. Primate-like species, which show human-like anatomy and share evolutionary lineage, have been the most studied. However, when comparing animals of non-primate origins our abilities to profile the potential for intelligence remains inadequate. Historically our measures for nonhuman intelligence have included a variety of tools: 1) Physical Measurements - brain to body ratio, brain structure/convolution/neural density, presence of artifacts and physical tools, 2) Observational and Sensory Measurements - sensory signals, complexity of signals, cross-modal abilities, social complexity, 3) Data Mining information theory, signal/noise, pattern recognition, 4) Experimentation memory, cognition, language comprehension/use, theory of mind, 5) Direct Interfaces one way and two way interfaces with primates, dolphins, birds, and 6) Accidental Interactions human/animal symbiosis, cross-species enculturation. Because humans tend to focus on "human-like" attributes and measures and are often unwilling to consider other "types" of intelligence that may not be human equated, our abilities to profile "types of intelligence that differ on a variety of scales has been weak. Just as biologists stretch their definitions of life to look at extremophiles in unusual conditions, so must we stretch our descriptions of types of minds and begin profiling, rather than equating, other life forms we may encounter. COMPLEX (COmplexity of Markers for Profiling Life in EXobiology) offers a new approach to help profile a variety of organisms along multiple dimensions (Encephalization Quotient, Communication Signal complexity, Individual Complexity, Social Complexity, Interspecies Interaction). Because Earth species are found along various continuums approaching an intelligence profile along these different trajectories, rather than compared only to human intelligence, may give us insight into a potential tool for quickly assessing unknown species. Two potential exercises using Earth species will be discussed including 1) an exercise with COMPLEX for a variety of Earth species and 2) a real-time sensory human/dolphin interface in the wild as an example of cross interdisciplinary tools and techniques for biological explorations. The application of profiling nonhuman species, off-world, will be both observational and potentially interactive in some way. Using profiles and indicators gleaned from Earth species to help us develop profiles and using pattern recognition, modeling and other data mining techniques could help jump start our understanding of other organisms and their potential for certain types of intelligence.