



## Evolution of Critical Thinking

The human brain is the product of millions of years of evolution. Through a process of natural selection, Darwinian forces have acted on the brain to produce a highly complex organ. Hard-wired patterns of behaviour selected millions of years ago remain today. This is the gist of evolutionary psychology, a discipline founded in the latter part of the 20<sup>th</sup> century.

- System 1 thinking drives activity to achieve basic needs (appetitive behaviours). The emergence of many of these behaviours as well as emotions occurred in the very distant past. Much of System 1 is anatomically located in our older reptilian brain.
- All animals exhibit instinctive behavior. Significant parts of modern System 1 have been refined by evolution from basic instincts through successive stages of *primitive* to *sophisticated* processing.
- Evolutionary psychologists refer to the time when many decisions and behaviors were selected as the environment of evolutionary adaptedness (EEA). These decisions had survival value then and determined whether or not your genes went into the next generation. Today some of these hard-wired decisions made in System 1 are described as “biases” For example, “search satisficing” is a known cognitive bias.
- Modern human thinking, reasoning, decision making and behavior (System 2) is the calibrated product of contemporary influences interacting with our ancestral brains designed in the EEA (System 1)
- System 2 processing has emerged relatively recently. One of its intrinsic properties is that it requires abstract thinking around operations that can be verbalized. It seems highly likely that it underwent significant development simultaneously with the emergence of language –within the last 100,000 years.
- Decision making in System 1 can also be achieved through relegation of over learned patterns originally experienced and processed by the very recently evolved System 2.
- The emergence of critical thinking dates back to before the ancient Greek philosophers (over 2000 years).
- Below is an overall schema for the developmental stages in human cognition. H indicates when hominids first began to appear. L indicates the emergence of language. Note the recent emergence of System 2.

