

What is needed to fully understand mental processes?

Prof. dr hab. Włodzisław Duch

Cognitive science aimed at full understanding of human behavior and mental processes is the most difficult of all sciences. How can we understand mental events that depend on microscopic physical processes lasting milliseconds, and slow processes related to development, growing and aging? Some questions are best explained by evolution that took billion years, other questions are best answered at psychological level, require understanding of culture and education of person. Neuropsychiatry has attempted to describe the roots of mental disorders at many levels, creating multiscale, multilevel phenomics, from genes to psychiatric syndromes. Cognitive phenomics is even more difficult. "Much there is between the cup and the tip of the lip" (Ancaeus). We can imagine neurodynamics a second before words are spoken and actions done. These events are only one step in a sequence of almost infinite chain of past events, priming and hormone release changing brain states, slower processes due to education and early development that created specific brain structure. Some questions are answered only by referring to evolutionary processes and even cosmological events that enabled creation of life.

Gaps between different levels of explanations should be of our particular interest. I will try to show a few new directions that need to be explored.