

Athenian Symposia: Cerebral Instantiation of Memory, Under the auspices of the Hellenic Clinical Neurophysiology Society, Athens, March 30-31, 2018

Guest Editors: Andrew C. Papanicolaou, Ioannis Evdokimidis, Theodoros S Constantinidis

## Lecture

# Storage-independent memory of concepts

Andrew C. Papanicolaou

### Abstract

That memories in general and concepts in particular are represented in the brain by mnemonic traces, such as Hebbian neuronal circuits, is a nearly universal notion. Consequently, past and current models of memory, especially recognition memory, are based on the principle of “matching” external sensory inputs to stored representations of concepts. Yet a careful review of the literature on the effects of focal brain lesions on memory as well as the functional neuroimaging literature do not reveal any credible evidence in support of the notion of storage of concepts in the brain. On the contrary, the empirical data appear to favor the hypothesis, made popular some decades ago by Bartlett (1932) that at least episodic memories are not stored and retrieved but are created each time they emerge in consciousness. In this essay, having made the case for the lack of evidence for concept storage and having commented on some theoretical difficulties this notion entails, I discuss the possibility of a storage-free model of concept memory and draw the outline of its essential features.

Andrew C. Papanicolaou is professor Emeritus of the University of Tennessee, College of Medicine, visiting professor of Neurology at the National University of Athens, Greece and chairman of Center for Applied Neurosciences of the University of Cyprus. Until 2017 he was chief of the Division of Clinical Neurosciences and professor in the Department of Anatomy and Neurobiology of the University of Tennessee, College of Medicine, Co-Director of the Neuroscience Institute of the Le Bonheur Hospital of Memphis and a member of the Board of Regents of the University of Ioannina, Greece. He began his academic career in the School of Philosophy of the National University of Athens, Greece. After receiving his doctorate in Psychology in 1978, he joined the faculty of the University of Texas Medical School, where he directed the Center for Clinical Neurosciences holding professorships in the Departments of Neurosurgery and Neurology and adjunct professorships in the Department of Linguistics of Rice University and the Department of Psychology of the University of Houston. Since 2012 he joined the faculty of the University of Tennessee. In 1993 he established the clinical service of intraoperative electrophysiological monitoring at Hermann Hospital, the teaching Hospital of the University of Texas Medical School. In 2002 he founded and until 2006 directed the Summer Institute of Advanced Studies of the International Neuropsychological Society, in Greece. In 2005 founded and in 2008 became the second president of the International Society for the Advancement of Clinical Magnetoencephalography. In 2008 he designed the curriculum and until 2014 he directed the graduate program in Clinical Neuropsychology at the Neurology Department of the National University of Athens (Aeginition Hospital). He is a Fulbright Scholar, an honorary member of the Hellenic Society of Clinical Neurophysiology and the Hellenic Society of Neuropsychology and the recipient of several distinctions and National Institutes of Health (NIH) grant awards for his research in epilepsy, developmental disorders and brain plasticity and in imaging the brain mechanisms of cognitive and affective functions. He is the author of over 250 peer-reviewed articles in Clinical and Experimental Neuroscience topics, 45 book chapters and several books ranging from technical manuals (e.g. Handbook of Functional Brain Imaging in Cognitive Neurosciences. Oxford University Press; Clinical Magnetoencephalography and Magnetic Source Imaging. Cambridge University Press); textbooks (e.g. The Amnesias: A Clinical Textbook of Memory Disorders, Oxford University Press); to philosophical works both in English and in Greek (Plato: Critique of Pragmatism,-- Ρεόντων Έλεγχος-- Αθήνα. Εξάντας; Bergson and Modern Thought: Towards a Unified Science. New York: Harwood Academic Publishers).