

Chapter 21

Do You Still Maintain That the Only Significant Difference Between Waking and REM Sleep-Dreaming Is Due to the Subtraction of Sensory Input in REM? What Is Your View of the Aminergic Demodulation Hypothesis That Derives from AIM?

Rodolfo R. Llinás

It is a pleasure to briefly address the very thoughtful lectures given by my esteemed colleague, Professor J. Allan Hobson. We have discussed, over the years, the issue of to what extent, from a brain function perspective, is dreaming different from the cognitive events we know as “being awake.” To me, the posterior brain mechanisms involved in both dreaming and wakefulness are fundamentally similar. The important difference, from my viewpoint, resides in the fact that intentionality (a frontal lobe function) is not operant, i.e. we cannot guide our dreams in the same fashion we drive our thoughts and motricity when we are awake. Dreams simply happen to us in a willy-nilly fashion. This, by the way, is something we have determined experimentally in humans using magneto-encephalography.

The question then remains, given that this “hypo-frontality” may be the main difference between dreaming and wakefulness, what is the mechanism by which such difference is enacted? The explanation give by Professor Hobson is very attractive indeed. It makes sense that it should be the lower brainstem that dictates such a fundamental functional difference. Most particularly that it should be a chemical transmitter moiety, the aminergic system that normally enacts action, rather than contemplation, is a very provocative view. Thus a shutdown of such system could *de facto* result in imagery devoid of intention.

R.R. Llinás, M.D., Ph.D. (✉)

Department of Physiology and Neuroscience, NYU Medical School, New York, NY, USA
e-mail: rodolfo.llinas@med.nyu.edu