

## **CONTROVERSIES IN NEUROLOGY – THE "POINTING FINGER" OF OMAR KHAYYAM: BRAIN CONNECTIONS, DISCONNECTIONS, MISCONNECTIONS AND RECONNECTIONS**

**P. Roper**

*Canada*

Disconnections in the neural circuits of the brain occur during the unconsciousness of normal deep sleep. This breakdown of 'cortical effective connectivity' has recently been likened to the 'cognitive unbinding' reported under anaesthesia (1,2.). The lack of consciousness can be accompanied by a restless stage in anaesthesia and by somnambulism in stage 4 sleep. These symptoms can be viewed as misconnections in the neural circuitry.

Convulsive movements in epilepsy are a result of such misconnections and symptoms of other conditions such as Parkinson's disease, Catatonic Schizophrenia and Psychotic Depression can be viewed similarly as neural misconnections without the same disturbance of consciousness. .

To keep within the themes of this Congress, rehabilitation can follow effective treatment results by the correct reconnection of disconnected or misconected circuits. An example would be the short lived pentothal anaesthesia therapy for fugue states. Other treatments, such as sustained sleep treatment, coma insulin, convulsive therapy, and pharmacotherapy, have been likened to the carpet bombing of military objectives or chemical warfare over a wide area. Hypnosis, cognitive behaviour therapy and the various forms of psychotherapy including 'psychic driving' can have more specific targets that they try to pin-point. Even more specific are such treatments as Deep Brain Stimulation (DBS), Repetitive transcranial magnetic stimulation (rTMS) and Cingulotomy where the actual brain circuits are targeted.

The manipulation of brain circuitry with the use of drugs and persuasive techniques goes back a long way. Marco Polo described the methods of the assassin sect in the 16th century and modern religious and other sects use similar methods (3).

Neuroscience is able to put forward an explanation of unconsciousness as a lack of cortical integration involving the cortico-thalamic system (4), but an explanation of consciousness remains unclear. Hypnosis and abreactive methods can be used to retrieve unconscious material and there are signs of residual consciousness in Chronic Vegetative States (CVS), Sleep Paralysis, Locked in Syndrome, extended comas, Minimally Conscious State (MCS).

Going back to 1964, the use of ECT combined with hypnosis demonstrated that both conscious and unconscious memory could be erased by ECT (5) and in somnambulism actions could be taken whilst unconscious that had been determined in the previous waking state (6).

One recent case is presented as an example of the clinical controversy evident with Paradoxical Temporal Lobe Epilepsy (PTLE).

The physical signs during a Jacksonian convulsion can be an indication of the neural connections involved. This possibility has also been remarked upon in psychiatric patients during ECT when a "pointing finger" sign served as a reminder of the lines of Fitzgerald's version of the Rubaiyat of Omer Khayyam (7).

We are still, however, beset by a situation where the balance is heavily weighted on the side of the questions against the answers, but this with its consequent emerging controversies can lead to stimulation of our efforts to find solutions. Let us hope that this congress may help to do this.

### *References*

1. *Massimi M et al Science, 30 Sept.2005.p2228*

2. *Mashour.G. Science 16 December 2005.p1768*

3. *Sargent.W.(1957). Battle for the Mind, Doubleday and Comp. Inc, Garden City, N.Y.*

4. Alkire. *Met al Science*. 7 November 2008, p876.
5. Roper P. *Proceedings VI World Congress of Psychiatry*. 1966 p1294
6. Roper. P. *The Lancet*, September 30, 1989 p796
7. Roper. P. *Grad. G. CMAJ* 26 Oct. 1968, p. 798