



Cutting the Mind

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Editorial

When you cut the brain you are probably cutting the mind too. Current evidence suggests that the brain and the mind are both physical, two causally linked systems that are unified and inseparable. It may well be that anesthesia permits invasive neurosurgery but it should not be assumed that nothing happens to the mind when sensation and memory are suspended. Consciousness is lost but what about the unconscious from which consciousness draws most of its internal information. With the decline of Freudianism. A major paradigm shift to a cognitive unconscious is at hand.

Many of the findings leading to this conceptual reintegration of neurosurgery, neurology and psychiatry derive from the discovery of REM sleep and dreaming by Aserinsky and Kleitman in 1953. Since then, intensive study of the subjective experience of dreaming has proceeded hand in hand with objective cellular and molecular level studies of the brain. Waking and dreaming both share brain activation but are characterized by very different kinds of consciousness. The differences are due to the fact that in sleep the activated brain is cut off from the outside world and the chemical microclimate is simultaneously altered from aminergic dominance in waking to the cholinergic dominance of REM sleep.

Among the activated brain structures of REM sleep dreaming are: the reticular formation, the thalamus, the basal forebrain, the frontal and occipital cortices to name few. Are we correct to assume that no such activation occurs under operative anesthesia? You are probably more confident than I in answering yes to this question. And you are probably more confident in dismissing patients' claims that they felt pain and even heard you discussing your sailboat when you thought they were analgesic and deaf while lying motionless on the table.

For neurosurgeons, the take home message is that the anesthetized patient may be unresponsive and amnesic but not necessarily entirely mentally obtunded. Subjective experience may be sustained at what we are used to calling unconscious levels. Our new view of the unconscious raises unwelcome questions about procedures whose benign nature we have taken for granted since the middle of the 19th century.

Colleagues who wish to learn more about the new science of consciousness may consult the author's website {Allan Hobson.org}.

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