

A FOOTNOTE TO THE “MYSTIC WRITING PAD”

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In 1925 Freud suggested the following ingenious hypothesis.¹ I quote Freud with a few minor changes. “My theory (is) that cathectic innervations are sent out and withdrawn in rapid periodic impulses from within (the psychic apparatus) into the completely pervious system’Pcpt-Cs’. So long as that system is cathected in this manner, it receives perceptions (which are accompanied by consciousness) and passes the excitation on to the unconscious mnemic systems; but as soon as the cathexis is withdrawn, consciousness is extinguished and the functioning of the system comes to a standstill. It is as though the unconscious stretches out feelers, through the medium of the system Pct-Cs, towards the external world and hastily withdraws them as soon as they have sampled the excitations coming from it. . . . The interruptions . . . (are) attributed by my (Freud’s) hypothesis to the discontinuity in the current of innervation; (and results in a) periodic non-excitabilityof the perceptual system.” (My emphasis)

In another place Freud² says “We believe that the ego periodically sends out small amounts of cathectic energy into the perceptual system and by their means samples the external stimuli, and after every such groping advance draws back again.”

Freud does not give the data on which he constructed this hypothesis of “periodic non-excitability of the perceptual system.” However, modern students of neuro-physiology will recognize in it a striking relationship to certain current conceptions concerning the electro-encephalogram. It is for this reason that I have spoken of Freud’s idea as an “ingenious hypothesis.”

In the normal waking state a wave of electrical energy sweeps across the cortex of the brain approximately 10 times per second, like a beam of light which scans a dark horizon. Let us regard the ego as the observer of this horizon. Certain brief events can occur at a given point on this hypothetical horizon when the scanning beam is elsewhere. In that case the ego fails to perceive them. This represents in effect a “periodic non-excitability of the perceptual system.” Recent studies in perception and learning seem to corroborate the thesis that this scanning system does indeed limit the rate and the quantity of the percepts which can be registered by the ego.² Thus Freud’s theory anticipated by two decades the contemporary description of consciousness as based on neurophysiological data.

Let us pursue this problem a step further. When the individual gets sleepy, the frequency of the scanning rhythm falls. The periods of perceptual blackout grow longer. In Freud’s terminology, the system unconscious sends out fewer feelers towards the external world through the perceptual system and returns therefore with fewer samples of excitation. The number of non-observed events which can transpire on the ego’s horizon increases. As a result the general level of accuracy of perception falls. With sleep the scanning rate falls still further, slowing progressively as sleep deepens. Perception of the external world is still further

impaired. Only occasional stimuli break through and then in a highly distorted form, the distortions following the well-known laws of primary process thinking. When the scanning rate is slowed down in circumstances other than in sleep, as in certain toxic states or in certain cases of organic brain disease, analogous impairments of perception occur and primary process phenomena make their appearance in these conditions too.³

We mentioned before that as sleep deepens the scanning rhythm falls. In certain pathological and pharmacological states unconsciousness deepens still further in which case sleep gives way to coma. The scanning rate falls still further. The individual no longer responds to external stimuli. He responds only to a small group of inner stimuli, stimuli involved in maintaining the vital cardiorespiratory functions. And when finally the scanning rhythm has come to a complete stop, death has supervened. Thus, on the basis of neurophysiological data we can amplify Freud's hypothesis and say that in consciousness not only is there a periodic non-excitability of the perceptual system but that the level of consciousness is determined by the rate of this rhythm.

This material has been described because it represents a suggestive link between the purely hypothetical constructs of Freudian metapsychology and some of the data of contemporary neurophysiology. It is in the quest for such links that we may one day find "how to exercise a direct influence, by means of particular chemical substances, upon the amounts of energy and their distribution in the apparatus of the mind."⁴