

Preface

At the end of the nineteenth century Sigmund Freud proposed his “Project of scientific psychology” and wrote: “The intention is to furnish a psychology that shall be a natural science.” Freud started this project with the aim to study mental functions and applied general thermodynamic concepts of energy exchange and its distribution in the mental apparatus. In this context he used the term psychodynamics as an analogy to thermodynamics to emphasize the common principles of all phenomena in nature that as its part involve also mind and its rules. In his ‘thermo-dynamics’ of mind Freud postulated that neuronal activities tend to move towards states with minimal energy and lower levels of mental ‘tension’ reflecting intrapsychic ‘potential’ energy. Based on this postulate mind and brain like any other physical or chemical systems that have ‘free’ energy tend to move and create structures with lower levels of energy. If in a thermodynamic process the energy is not bound or used as the moving energy, it is transformed into increased disorder in the system characterized by its entropy. The entropy quantifies a level of disorganization and based on this principle also mind and brain may be disorganized as a consequence of lost ‘intentional’ energy which leads to an increase of the disorder and entropy of the mind manifesting as increased psychological tension, intrapsychic conflict, mental disorganization and other stress manifestations.

In agreement with general thermodynamic principles, mind and brain transform the free energy into mental and behavioral activities and focus it on a target in the process of projection or transference which enables that the free psychic energy is ‘bound’. Based on this principle mind and brain tend to prefer dynamic activity patterns related to feelings of balance with lowest possible level of free energy. In this context, Freud suggested that mental integration as a potentiality of the ‘balanced’ state of the mind without a conflict might be linked to ‘neural unity’. In agreement with this basic postulate currently there is evidence that deficits in neural connectivity integrating distributed neural activities are related to perceptual and cognitive states producing disintegration of the mind and ‘intrapsychic’ conflict. These conflict related activation patterns create stress experiences and produce neural interference, temporal disorganization and deficits in functional integration of distributed neural activities, which in principle might be explained as disturbed ‘neural unity’.

But on the other hand, certain internal disunity of the brain is a necessary condition to experience the world because mind senses the outside world through differences of its own states that enable recognition and awareness of the external world and also self-reflective experience of internal processes. This form of internal disunity of the brain and mind likely presents basic code that defines relative differences and enables their recognition in mental and physical space and through this process specific observers may define reality and create observer-specific cognition and experience of the space and time.

Based on these principles space and time observations are mediated through differences among the brain states that enable to process the physical observations. Von Neumann proposed that physical theory for its description of basic laws of the universe requires the existence of a conscious observer whose mental activity is not independent and as a part of this process influences physical measurements. Based on the observer role von Neumann divided the world into three parts. Part one of this division is everything up to the senses of the observer, part two includes the observer's perceptual systems, nerve tracts, and the brain, and part three is the observer's abstract "mind".

From this point of view the abstract mind as a basis for self-reference and integrative mental experience is the same in all observers because all differences may be compared only with respect to unity that creates background and reference for all these changes. But when consciousness as an abstract mind creates background of unity for all possible changes is it possible that it can be 'divided' into plurality of minds or it is the same mind in everyone? Schrödinger called this problem "arithmetical paradox" representing antinomies of dividedness and unity of the conscious egos and thought: "but, inconceivable as it seems to ordinary reason, you—and all other conscious beings as such—are all in all ...".

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Freud's Omega

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