

MIND, MEANING, AND THE BRAIN

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A SYSTEMIC VIEW OF THE MIND

PROGRESS IN BRAIN RESEARCH over the past two decades demonstrates the power of the neurobiological paradigm. However, this progress is connected with a restricted field of vision typical of any scientific paradigm. The psychiatrist should be aware of this restriction, because, unlike the brain scientist, he deals with patients, not with brains. The restricted view may be described by the terms of (1) reductionism, (2) reification, and (3) isolation.

Reductionism: Neurobiology tends to regard subjectivity as a mere by-product of the brain's activity as a symbol-manipulating machine or an information processor. Consciousness becomes an epiphenomenon of the neuronal machinery that, operating behind our back, creates the illusion of a continuous self and of an autonomous will (Churchland 1995; Roth 1996).

Reification: Mental or subjective states seem to be localizable in the brain; thoughts or feelings, it appears, may be observed in the colored illumination of cortical and subcortical structures. This results in the belief that brain images could also show the cause of a mental illness, or even the illness itself, which then manifests, for instance, in a reduced metabolic activity in certain areas of the cortex.

Isolation: As a further consequence, this view isolates the individual patient and considers his illness separated from the interconnections with his environment. However, on these interconnections his personal experiences and dispositions are founded, and it is the actual interpersonal situation that has triggered his present illness.

Walter Glannon's paper successfully counters these tendencies toward a neurobiological reductionism with an extended view of the mind: "... the mind is not located in any one place but is distributed among the brain, the body, and the environment." Of course, who observes someone's brain will never see his thoughts, his pain, or his anxiety. For consciousness is not a localizable object or state at all but a *process of relating to something*: a perceiving of, remembering of, wishing for, aiming at, and so on. Thus on the phenomenological level, there is nothing like a "mental event" that could be isolated from the world and from the stream of conscious experiences. The mind exists only embedded in the world and in the temporal process of life.

The same applies to the biological level: Consciousness is based on the continuous interaction of the brain with the organism, and of the organism as a whole with the environment. The role of the brain for mental phenomena is thus comparable to the role of the heart in the circulatory system or of the lung in the respiratory system. Of course, the lung is the central organ of breathing, but respiration may not be restricted to the

lung, nor to the organism as a whole. It means constant exchange with the environment, and there is no sense in asking whether the air taken in still belongs to the surroundings or already to the organism. The same systemic unity is found in the circle of perception and action mediated by the brain: When I am writing a letter, there is no place in the unity of action where my “self” ends and the “world” begins, no border that separates inner and outer worlds.

There is another argument to be raised against the reification of the mind if we consider the aspect of a *historical biology*. From birth on, our mind as well as the correlated brain structures are essentially formed by social and cultural influences. The brain is not inserted into the world as a prefabricated apparatus but through its plastic development in and from the world. Thus it adapts epigenetically to its specific natural and social environment like a key to a lock. This complementarity makes it impossible to restrict one’s view to the anatomic organ and requires an interdisciplinary approach to brain-environment investigation, as for example, under the heading of a “social cognitive neuroscience” (Ochsner and Lieberman 2001).

As Glannon goes on to argue, to overcome neurobiological reductionism, more is required than a defense of subjective consciousness and its irreducible intentional or qualitative aspects; for this impregnable refuge of subjectivity would also remain sterile. An adequate theory of mind rather ought to grasp its function in the systemic unity of organism and environment; and an adequate theory of the brain should be able to represent not single objects, events, or states but *relations* and *interactions*.

However, Glannon’s teleological explanation of the mind seems not quite sufficient. Certainly its adaptive function amounts to more than the mere enhancement of survival by adequately reacting to threatening stimuli, triggering a fight-or-flight response, and so on. The decisive progress brought about by the evolution of the mind is not just an improved reaction to stimuli (this could better be performed by a mindless brain alone) but *gestalt* formation; that is, the grasping of complex wholes or situations. Be-

cause the human organism itself is an integrated whole, it has to act and react as such, which presupposes an integrated or *gestalt*-like representation of itself (*the body*), the environment (*the world*), and its own relation to the environment (*meaning*). This is mainly brought about (1) by a synthesis of sense experiences, creating our *embodied being in the world*; (2) by an integrated evaluation of the meaning and the options of a given situation, which we experience as *emotion*; and (3) by the iconic and symbolic representation of the world, that is, by *ideas* and *language*. The mind creates wholes, such as *body*, *feeling*, *self*, *ideas*, and *concepts*. This allows the human organism to internally model its relation to the environment, and thus to act not merely in an automatic, but in a meaningful way.

THE BRAIN AS AN ORGAN OF TRANSLATION

If we now try to describe the role of the brain on this systemic basis, we may conceive it as an organ of *transformation* or *translation*, which translates the relations between single elements of a given situation (stimuli) into wholes or *gestalt* units. The constantly changing patterns of synchronized neuronal excitations correspond to the wholes emerging in subjective experience. We may illustrate this transformation by the synthesis of single letters to a word (such as *book*), which we grasp immediately through its components, without even being aware of the letters. Of course, we once had to learn this word letter by letter (*b-o-o-k*), but by stabilizing the pattern or picture in our subjective experience, our brain was induced to form a corresponding neuronal pattern (in systems theory, an *attractor*) in such a way that the constellation of single letters received the new meaning of *book*.

Following this line, we cannot regard subjective experience as a merely epiphenomenal picturing of underlying neuronal processes. On the contrary, it plays an essential role in the systemic interaction of organism and environment. For it is only by conscious experience that the organism is able to enter into a relationship with the environment on the higher level of meaning, of integrated perceptive and cognitive units or *ge-*

stalten; and these subjective, meaningful units in turn influence the plasticity, the structuring and functioning of the brain. A historical biology implies the continuous formation and reconstruction of the brain via subjective experience. The constraint that the mind in a nested hierarchy (Feinberg 2001) exerts on the lower-level properties of the brain and the body consists mainly in forming, maintaining, and connecting meaningful units of experience that stabilize corresponding neuronal activity patterns and thus trigger, accordingly, physiologic reactions of the organism as a whole.

As Glannon rightly points out, there is no dualistic causality involved here: The brain transforms configurations of single elements or events into higher-order patterns or units, and vice versa. It may be addressed by input on the different hierarchical levels and translates them into each other. This means that any process concerning the etiology and symptoms of mental illness is of a biological as well as psychological nature. The translation only runs top-down in the one case—from subjective experience (e.g., a perceived social situation, a psychotherapeutic intervention) to the level of neuronal and biochemical processes, and it runs bottom-up in the other case, for example, from pharmacologic effects on transmitter metabolism to a change in emotional experience.

DEPRESSION AND SUBJECTIVITY

Obviously this systemic concept of the brain is opposed to any biomedical reductionism operating in claims like “depression really is a chemical imbalance,” or “responsible psychiatrists should focus on the real causes of psychiatric illness, i.e., damaged brains.” The bottom-up explanation of mental disorders as products of specific genetic or physiologic etiologies is inadequate to the causal complexity of most disorders. Whatever the genetic basis of, as an example depression is, it can be only one precondition of a complex, interactive process that ends up as a psychiatric disorder. The final disorder is the product of a cascade of subjective, neuronal, social, and environmental interactions in which the brain acts as a mediating, translating, and amplifying “relay station,” but not as the cause.

Glannon regards depression as a “psycho-neuroimmunologic disease” involving psychological as well as physiologic stress responses. In a similar approach, I have described depression as a psychophysiologic *desynchronization* (Fuchs 2001): a perceived backlog or gap between one’s expectations and achievements is translated by the brain into a neurobiochemical pattern associated with depressed mood. It also entails an uncoupling of rhythmic physiologic (e.g., endocrine) processes otherwise synchronized to each other and to the environment. In the course of this desynchronization, the production of stress hormones and, subsequently, immunologic processes may become autonomous and inadequate, resulting in negative feedback loops and, in turn, increasing depressed mood. Thus the subjective reactions to the disorder become intertwined with the disorder itself. Psychosocial and physiologic desynchronization influence each other.

As we can see, subjective experience is more than a mere by-product of an underlying real or brain depression. Depressed mood, distorted thinking, or perceived insufficiency, are not just accidental or epiphenomenal symptoms whose only importance is to give cause to consult a psychiatrist (who actually is rather a brain doctor). Depression, on the contrary, is triggered by the subjective perception of meaningful, mainly interpersonal situations, and it is also to a high degree maintained or worsened by negative feeling, thinking, and interacting with others.

Finally, given the inadequacy of monocausal accounts that invoke specific brain abnormalities, it would be inappropriate for the psychiatrist to treat the brain exclusively. Instead, a therapeutic pluralism is required. One could argue here that because the brain translates input in both directions, a biochemical or bottom-up treatment suffices to attain the desired purpose. However, in view of the limited effectiveness of pharmacologic treatment, it would be imprudent to neglect the top-down options on the psychotherapeutic level. But what is more important, we do not have any biochemical means to change the maladaptive dispositions of perception and behavior that have led to depression and may lead to relapse in the future. Such dispositions

are only accessible to change by new and repeated *subjective experiences*—emotional, verbal, and interpersonal processes of learning that stabilize new attractors of perception and behavior in the brain. Only conscious experience is able to correct the corresponding dysfunctional patterns of neuronal activity. Because the brain is a historical organ, there will probably—and hopefully—never be a way to create new views of the self and the world by brain manipulation.

CONCLUSION

I have briefly outlined a systemic view of mind and brain as embedded in the relation of organism and environment. There is no such thing as a brain for itself, as long as it is not separated from the living organism by autopsy. Its role may be seen in the mutual translation of single elements of a given situation into higher-order units that are experienced as meaningful wholes and vice versa. Only subjectivity contains the *gestalt*-like wholes that for the organism represent an integrated model of reality. And it is only subjective experience that is capable of gradually changing the dysfunctional patterns of perception and behavior that may lead to mental disorders.

A psychiatry of the brain, when adequately understood, would have to become a “systemic” or “ecological psychiatry” (Fuchs 2002). Psychiatry needs an “ecology of the brain” to better grasp the interconnection of psychological, social, and pharmacologic approaches adequate for its subject. For this subject is not the brain, but the mentally ill patient.

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