

SUMMARIES IN ENGLISH

Jesper Mogensen: The Dynamic Brain – The Plasticity of the Brain

In the »general population« as well as in many scientific circles one frequently finds an »implicit model« of the brain as a structurally »static« organ. According to this - incorrect - model only purely »organic« stimuli are able to modify the structure of the adult brain. Consequently, according to the »implicit model« the structure of the brain cannot be influenced by inputs of a »psychological« and »social« nature. Such a »static« model of the brain can easily cause misinterpretations of scientific results – e.g. those obtained within the neuropsychological areas. For instance, the demonstration of structural differences between the brains of schizophrenic patients and non-schizophrenics is interpreted as an indication that »psychological« factors cannot contribute to the development of schizophrenia. And the identification of a »neural substrate« of »personality« is interpreted as being equivalent to the claim that »personality« is exclusively determined by genetic factors. This »implicit model« is incorrect. Throughout an individual's entire life-span the brain is both functionally and structurally dynamic and the present day »architecture« of a particular brain structure is at least partly a product of experience, learning, problem solving and other »psychological« and »social« factors. The bulk of the paper is a review of some of the scientific results on which the model of a »dynamic« brain is based. In the concluding paragraphs of the paper it is emphasized that the »plasticity« and functional as well as structural dynamics of the brain continue to be of importance if the organ is hit by traumatic injury. It is emphasized that the neural processes which form the substrate of functions such as learning and problem solving probably are closely related to the »neural substrate« for rehabilitation and functional recovery upon brain injury.

Axel Larsen & Anders Gade: Brain and Cognition

Cognition is brain activity. Cartesian ideas of a discontinuity between soul and body, between consciousness and matter, or between cognition and brain seem untenable. Drawing on examples from sensation and visual perception, working memory, and attentional control, we seek to demonstrate how an empirical multidisciplinary approach to classical problems with methods from neurobiology and cognitive psychology increases our understanding. The long-term goal of this approach is to provide systematic explanations for the realization of mental representations and processes in brain tissue.

Anders Gade: The Brain and Emotions

Structures in the limbic system constitute the primary cerebral basis for emotions (Gade, 1997), and epileptic activity in these structures results in seizures with emotional content (part 1). These limbic mechanisms have come under increasing cortical control during the phylogenetic development, and two neuropsychological examples of this are provided. Part 2 describes emotional changes in patients with lesions of the right cerebral hemisphere. Part 3 is a review of recent research with analyses of the consequences of lesions in the orbital part of prefrontal cortex. This cortex is closely connected to limbic structures. Emotional changes after lesions of orbitofrontal cortex are accompanied by a deficit in the ability to make sound decisions. Such findings strengthen the view that our ability to make decisions on a purely rational basis is limited, and that emotions play an important role in normal decision making.

Bobby Zachariae: Brain and immunity

While the immune system previously was viewed primarily as an autonomous bodily defense mechanism, it is increasingly recognized as a system, which interacts with and is, at least partly, regulated by the central nervous system. Psychoneuro-immunological research has documented the existence of a number of bi-directional pathways, through which the brain and the immune system may communicate and interact. Such neuro-immune pathways may provide the mechanisms that allow psychosocial factors to influence immune and inflammatory processes, and also the mechanisms by which psychosocial factors may affect the development and course of immune related diseases.

Alice Theilgaard: Body-Image and the Brain

The varied nomenclature: body-image, body scheme, body-concept, somatopsyché etc. reveals the difficulties in describing and defining the phenomenon. The body-image is a synthesis of the tactile, kinesthetic, sensory representation of the body, the posture and motion, the skills and strength of the body, and the body-image tends to fluctuate throughout life in an ongoing process of differentiation, integration and regression. It is postulated that a primitive core latently exists with its dispositional, steering power, and that the antecedent levels of symbolization of the body-image are co-existing at any given time. It has not only a conscious representation, but operates also on an unconscious level. – Body-image is topographically represented in the posterior part of the right parietal lobe and the underlying thalamic substratum, but also other parts of the brain are of importance. Various neuropsychological aspects of body-image are described, and illustrated with examples from as well organic as psychopathological cases. Also psychoanalytic, phenomenological and developmental viewpoints are discussed, and the role of body-image in the development of identity and sense of self is underlined. Finally methods of measuring body-image are reported and exemplified.

Ralf Hemmingsen: Brain and Skizophrenia

Schizophrenia develops gradually over the course of several years or decennia. The fundamental signs pertain to selfconsciousness and concepts within the domain of cognition. Hypotheses can be formulated concerning the interaction between neurodevelopment, cognitive physiology and clinical course of disease. With a genetic/early exogeneous biological predisposition the course of disease may be disentangled into secondary pathogenetic mechanisms of a neuroplastic, a clinical and a social nature.

Raben Rosenberg: Depression: From Clinic to Gen

A short review of neuropsychiatric research of affective disorders is presented to illustrate major search activities within the Year of the Brain. Psychological processes are conceived as emergent phenomena requiring scientific analyses at different theoretical and conceptual levels. Examples are given from current basic psychiatric research of affective disorders and the therapeutic implications are stated. It is underlined that modern neuropsychiatric research requires a multidisciplinary approach as evidenced by the application of a bio-psycho-social disease model with an empiristic epistemology.

Keyword: psychiatry; neuropsychiatry; affective disorder; neurobiology; neuropsychology; psychopharmacology; psychotherapy.

Birgitte Bechgaard: The Position of the Psychiatry as regards Psyche and Soma

After a general introduction of the perception of psyche and soma in Danish psychiatry, these aspects are compared to those in American psychiatry. In USA and Denmark, the »Year of the Brain« has clearly disclosed the reductionism in the psychiatric perception of the psyche, – as illustrated by changing the term »psychic disease« to »brain disease«, without any evidence. It is further argued that the phenomenological-hermeneutical tradition in the Danish psychiatry has impeded the development of a psychic pathogenesis and etiology of psychic diseases, – in contrast to USA. In Danish textbooks on psychiatry, psychology is only considered as a system of description and as techniques of therapy. In contrast to the reductionistic view, an emergent model of psychic phenomena is applied to the psychiatric reality. In draft, with a specific psychiatric disease as an example, empirical data are considered in relation to a reductionistic and an emergent perspective, of the relation between psyche and soma.

Bo Møhl: Sex and cognition – a discussion of sex related differences of brain and behavior:

This article starts off presenting traditional gender differences. In all cultures gender and sex play a major part in structuring society and psycho social environment. Lately the interest in brain structures connected with sex has been focused on morphological basis of cognitive gender differences. It seems that there is consensus of the fact that males are superior to women in visuospatial abilities while women appear superior in linguistic capacity. Following a discussion of cognitive differences related to sex, a survey of the most important differences of brain morphology are presented – that is differences seated in hypothalamus and corpus callosum. Finally the connection between brain and cognition is discussed. It is emphasized that the brain is a plastic organ which implies that understanding the connection between sex and cognition includes study of the brain as well as the social environment.

Christian Graugaard & Preben Hertoft: Brain and sexual deviance – historical and modern trends.

Ever since sexuality became a matter of medical interest in the middle of the 19th century, numerous hypotheses have been put forward as to the relationship between 'sexual deviance' and biology. The earliest fase of sexual biology (approximately 1800-1910) had its main focus on the central nervous system, and today – more than a century after launching the first neuropsychiatric theses – the brain has once again attracted attention as a possible biological substrate of (deviant) sexual behaviour. This article sums up the history of brain-centered sexual science, and the neurobiological sex research of our day is presented and problematized.

Helmuth Nyborg: Molecular Man in a Molecular World

All psychological explanations of (human) nature involve by definition references to psychic or mental qualities, presumed to exist above the material world. They come principally in three different versions, none of which are in accord with a proper scientific approach, however. The chapter therefore first illustrates some of the insurmountable problems that face the psychological approach, and then suggests an alternative solution in form of a physiological research program. (Human) nature (and society) is, according to this program, better described in terms of the underlying molecular processes that carry them. Examples of application of the physico-

logical analysis are demonstrated, one via a molecular model for genius, another by a critical discussion of various forms of consciousness and moral. The chapter finally touches on relevant aspects of thermodynamics, on how traditional physics relates to psychology, and on why the mentalist critique of psychology as reductionism totally misses the point.