Symposium S29. Aspects Of Twentieth Century Neuroscience

The Computer and the Brain

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In this paper I will analyze the shift from a morphological to a symbolic understanding of the brain around 1950, and I will show that the recent developments (neuro-imaging etc.) have inverted the situation: The morphological brain is back on stage and has replaced the understanding of the brain as a computer.

The Production of "Fairly Reliable Data": the Question of Civilian Neurosis in England, 1941-42

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This paper is a case study focusing on the question of 'civilian neurosis' in the English population during World War 2, and on how data in a *Lancet* Report was understood by British medical authorities and used as propaganda in the war effort. The 1942 Report by Maudsley Psychiatrist Aubrey Lewis (1900-1975) offered the startling assessment that while air raids might be expected to cause an increase in the number of neurotic patients, statistics indicated the mental health of the English civilian population was better than prior to the onset of hostilities. An archival exploration of this Report's origins reveal, however, a broader set of international tensions highlighting themes pertinent both to aspects of the neurosciences and the broader context of the international transmission of knowledge. These tensions were between producing reliable scientific data while simultaneously not producing conclusions encouraging to Britain's enemies. The Report was also intended to address American concerns that British physicians were minimizing the psychological impact of the war on the civilian population. Thus, the Report's conclusions were also used to assuage concerns of Britain's allies. The Report's conclusions were thus vitiated by national security concerns. At the same time, research corroboration between the allies required the conclusions of the Report to appear reliable lest the scientific spirit of the Anglo-American research alliance be tarnished by the suggestion of British propaganda. Thus, it seems international, inter-agency research collaborations sometimes shape how scientific knowledge is produced in order to address national and political interests.

The Fessard School of Physiology after the Second World War in France

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The creation of a French CNRS Institute in 1949 by Alfred Fessard in Paris is considered today as a key event in the reconstruction of French post war neurophysiology. Before war in Paris, neurophysiology was dominated by Louis Lapicque. His theory of the Nervous System was centred around the concept of chronaxie and went under attack from the Cambridge school of physiology. The Lapicque school prevented the development of new areas of research before war and progressively lost international recognition. After war, Fessard's research laboratory was devoted to the physiology of the Nervous System based on electrophysiological studies and soon became the leading research centre in France during the 40s until the end of the 60s. The rapid growth of the Institute after war was due to close contacts between Fessard and other leading laboratories in Europe. The birth and development of Alfred Fessard's Institute will be examined in a European context. In particular, we will analyse how Fessard managed to gather

researchers with different backgrounds to create new fields of research in integrated and cellular neurophysiology, psychophysiology and neuropharmacology. The role of the Institute in the shaping of new subdisciplines and the emergence of leading scientists in French neurophysiology will be discussed.

The Rise of Electroencephalography: a Case for National Styles?

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Hans Berger's 1929 publication on electroencephalography kindled only limited interest in Germany, despite great public interest in the electric activity of the human brain. However, when Nobel-prize winner Edgar Douglas Adrian demonstrated the new method to his colleagues in Great Britain and the US in 1934, many groups formed rapidly around specialized explorations of the brain and mind by means of the EEG. The greater availability of electronic amplification technology in the US and the focus of neurophysiology on recording electric potentials appear to have paved the way for the ready acceptance of the EEG there. A comparative analysis of the rise of electroencephalography has certainly to account for such national differences, but the trajectory of the implementation of this technology as well as the dynamics of this branch of neuroscience call for a careful investigation of more restricted local research cultures. Adrian in Cambridge, for example, had already observed surprisingly autonomous and slow rhythmic potentials in the central nervous system before he came across Berger's report, as had Halowell Davis at Harvard when he heard of Adrian's confirmation of the "Berger Rhythm." And the breakthrough of electroencephalography as a tool for diagnosing the epilepsies resulted very much from William Lennox' previously futile research on their physiology. Local experimental cultures provide a richer framework for exploring the trajectory of electroencephalography than the concept of national styles. This leads to the question of what particular circumstances in Germany kindled the EEG's construction there in the first place, in spite of the fact that many other labs appeared, at least in retrospect, to have been much better equipped and positioned to do so.

Sleep Physiology:
A Comparative View of American and French Research, 1955-1995

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In this paper, I will compare the different theoretical backgrounds and the different research programmes of the school of Nathaniel Kleitman and William Dement in the United States, and of the school of Michel Jouvet in France. In dealing with the problem of sleep physiology, these schools reached different conclusions using different methods, thus creating debates which made sleep research a very lively enterprise during the second half of the twentieth century. The major discovery was made in different steps by Eugene Aserinsky, Nathaniel Kleitman, William Dement, and Michel Jouvet in the fifties. This discovery pertained to the electroencephalographic, physiological and behavioral correlates of dreaming. Starting from this discovery, the American school developed a psychophysiological approach based on the Jacksonian scheme of nervous activity, on the basic rest-activity cycle of Nathaniel Kleitman, and of psychoanalysis. The French school developed a physiological approach based mainly on animal experimentation and on neurochemistry. Themes like the validity and scope of psychophysical parallelism, the concept of dreaming as a third state of brain activity, and the serotonergic theory of sleep were the subject of many debates. Recent discoveries provided final solutions for these debates.

Influences des techniques électroencéphalographiques sur la neurologie clinique à Marseille entre 1949 et 1975

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D'une façon générale, l'influence du contexte anglo-saxon après la seconde guerre mondiale est très prégnant en France, pariculièrement sur l'importation des techniques électroencéphalographiques dans le domaine de la neurologie. Cette diffusion est en grande partie effectuée par Henri Gastaut à partir de 1949, année où il co-organise avec Antoine Raymond le second congrès international d'électroencéphalographie de Paris. Ses recherches se déroulent d'abord dans un laboratoire de l'hôpital de la Timone, puis à partir de 1960 au centre Sain-Paul. Dès 1952, des études électrocliniques des symptômes cliniques des différentes épilepsies humaines mettent en corrélation ces signes pathologiques et cliniques avec les modofocation éléctriques enregistrés pendant les crises. Ces recherches contribuent largement aux développements de ces techniques dans le champ neurologique. Le rôle joué par Gastaut dans le rayonnement de l'école neurologique marseillaise est visible à plusieurs niveau: - La formation de nombreux chercheurs étrangers à Marseille. - l'organisation jusqu'en 1980 de "journées Gastaut" où toutes les grandes figures de la neurologie mondiale sont présentes. - la création et le développement d'instances françaises et internationales: l'IBRO (1960), la ligue contre l'épilepsie et la fédération d'EEG. -Développements des études électrocliniques et nouvelle façon de lire les phénomènes neuro-pathologiques. La création en 1960 de l'INP marque un nouveau tournant de l'histoire de l'électroencéphalographie à Marseille. D'importants chercheurs tels que Robert Naquet, Jacques Paillard et Henri Massion y effecturont de nombreux travaux. Dans quelle mesure les travaux de Penfield, Jaspers et Grey Walter orienteront-ils la pensée et les recherches de Gastaut? Quelle est l'étendue du rayonnement international de Marseille dans la neurologie mondiale? De quelle façon l'électroencéphalographie a-t-elle permise de fédérer les signes cliniques et les enregistrements électriques autour de l'épileptologie?

Vittorio Erspamer: from Serotonin to Neuropeptides

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Why Erspamer did not recognize enteramine as a neurotransmitter before Irvin Page? From the skin of frog and toas to the brain. The discovery of new neuropeptidfes and the contribution of Erspamer to the definition of the studies on neuroendocrinology and on neurosecretion. Historical remarks and epistemological considerations.

Le concept d'inconscient chez Eugen Bleuler (1857-1939) et sa postérité dans les neurosciences cognitives contemporaines

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Eugen Bleuler est considéré à juste titre comme le plus éminent représentant de la psychiatrie au 19e siècle. Il s'est rendu célèbre par ses travaux sur la schizophrénie et l'autisme, deux termes qu'il a lui-même forgés. Bleuler est également l'auteur d'un certain nombre d'études théoriques très importantes sur la place et le rôle de l'inconscient dans la vie psychique. Selon lui, l'inconscient doit être considéré comme un mode de fonctionnement de la psyché, au même titre que la conscience : les "fonctions psychiques" (perceptions, actions, etc.), normales ou pathologiques, peuvent s'accomplir aussi bien consciemment qu'inconsciemment. Une fonction inconsciente se distingue seulement par l'absence de "qualité consciente", c'est-à-dire son absence de liaison au moi. Pour Bleuler, la vie psychique inconsciente procède d'une double dissociation

(Spaltung) : une fonction inconsciente est un processus se déroulant indépendamment du moi, mais aussi inédpendemment des autres focntions inconscientes. On insistera sur l'originalité des thèses de Bleuler par rapport à la tradition freudienne, en montrant qu'elles sont l'aboutissement direct d'un certain nombre de traditions de recherches menées tout au long du 19e siècle en contexte allemand. On insistera sur le rôle l'inconscient bleulérien dans le développement du concept moderne de cognitioninconsciente.

Biological treatments in psychiatry (1930 -1960)

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We have analyzed patient records from a Belgian psychiatric hospital "The Jean Titeca Neuropsychiatric Center" (Brussels) in order to understand how physicians were practicing psychiatry in the everyday life of a hospital during the first half of the century. "The Jean Titeca Neuropsychiatric Center" (In short, Titeca) is one of the most important psychiatric hospital in Brussels. We have reviewed the patient records of this period (70 male records and 70 female records/year from 1932 to1959). It gives a global picture of the use of the treatments (malariatherapy, pyretotherapy, insulinotherapy, cardiazol-therapy, ECT, psychosurgery, antipsychotics) and of the development of psychiatry as a clinical speciality between 1920 and 1960. In the 1930s and the 1940s, Randomized Control Trial (RCT) did not exist. The efficiency of the treatment was evaluated through the clinical experience and intuition of the physicians. The "subjective efficiency" of a treatment is the psychiatrist's belief in the efficiency of the treatment. Until the 1950s and the beginning of the psychopharmacology era the main problem for the psychiatrist was to be able to control the restlessness of the patients in the wards. Things changed radically with the introduction of the antipsychotics: chlorpromazine (Delay and Deniker 1953), haloperidol (Janssen, 1958).