

Education

August 6, 2015

TOWARDS EDUCATION IN THE HISTORY OF NEUROPSYCHOPHARMACOLOGY

Part 5

Fundamentals of the Wernicke-Kleist-Leonhard Tradition

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In 1956, Fritz Freyhan, a German born American pioneer of neuropsychopharmacology focused attention on the heterogeneity in responsiveness to neuroleptics in patients with the diagnosis of schizophrenia and called for a pharmacological re-evaluation of Kraepelin's diagnostic concepts (Bleuler 1911; Freyhan 1956; Kraepelin 1899). One year later, in 1957, Karl Leonhard, a German professor of psychiatry, presented his "classification of endogenous psychoses", in which Kraepelin's diagnoses, "dementia praecox" and "manic-depressive insanity" were split into several forms and sub-forms of diseases (Leonhard 1957).

In 1959, Christian Astrup, a Norwegian professor of psychiatry was first to report that patients with "slight paranoid defect" and "periodic catatonia", i.e., those with a diagnosis within the class of "unsystematic schizophrenias" in Leonhard's classification, responded more favorably to "neuroleptics" than patients with "severe paranoid defects", "hebephrenic defect", and "systematic catatonia", i.e., those with a diagnosis within the class of "systematic schizophrenias" (Astrup 1957; Ban 1990; Leonhard 1957). Astrup's observations were further substantiated in the mid-1960's by Frank Fish, a British professor of psychiatry, who found significant differences in responsiveness to neuroleptics in the different forms and sub-forms of schizophrenia (Fish 1964; see also Part 4).

In spite of Astrup's observations and Fish's findings, Leonhard's classification remained unrecognized during the "neurotransmitter era", the first epoch in the history of neuropsychopharmacology. Moreover, by the dawn of the 21st century, a whole tradition of psychiatry, the Wernicke-Kleist-Leonhard (WKL) tradition (of which Leonhard was the last prominent representative), has become a "forgotten language of psychiatry" (Ban 2013).

Outline of Development: From Griesinger to Wernicke

The roots of the WKL tradition are in the mid-19th century, in Wilhem Griesinger's contributions (Griesinger 1845). Stimulated by Sir Charles Bell's discovery and François Magendie's recognition of the importance of the "reflex arc" that links sensory input with motor output in the functioning nervous system (spinal cord), Griesinger was first to perceive mental activity as "reflex" activity (Bell 1811; Magendie 1822). He was also first to describe, in 1843, "psychic reflex actions" (psychische Reflexactionen) (Griesinger 1823).

The role of the "reflex" in mental activity was further elaborated about 20 year later, in the 1860's, by Ivan Mihailovich Sechenov, a Russian physiologist, while studying "nervous inhibition" in the central nervous system of the frog, in Claude Bernard's laboratory in Paris. In his monograph, *Reflexes of the Brain*, Sechenov concludes that all activity in the brain, including the "psychological", is reflex (activity) and as such follows fixed laws determinable by investigation (Sechenov 1863, 1935; Wells 1956).

The structural underpinning of "reflex" was established between the 1870's and the early years of the 20th century by: Camillo Golgi (1874), an Italian histologist, who described with the employment of silver staining multi-polar (Golgi) cells in the "olfactory bulb"; Santiago Ramon y Cajal (1894), a Spanish histologist, who established that the "neuron" is the morphological and functional unit of the nervous system and Sir Charles Sherrington (1906), an English physiologist, who demonstrated that the "synapse" is the functional site of transmission from one neuron to another (Cajal 1894; Golgi 1874; Sherrington 1906).

Griesinger's notion that mental activity is reflex activity was adopted in the late 19th century by Carl Wernicke, the professor of neurology and psychiatry in Breslau (Germany at the time) (Wernicke 1899b). He classified "psychoses," i.e., psychiatric diseases, on the basis of "hyper-functioning," "hypo-functioning, or "para-functioning" in the "psycho-sensory", "intra-psychic" and/or "psychomotor" components of the "reflex arc" and postulated that the substrate of mental pathology was in the "transcortical area" between the motor and sensory "projection fields" in the cerebral cortex (Franzek 1990; Wernicke 1881-3, 1889, 1900, 1906). Wernicke divided consciousness into consciousness of the body (somoatopsyche), consciousness of the self (autopsyche) and consciousness of the external world (allopsyche) and argued, in the 1890's, that mental pathology should be identified by "elementary symptom" (elementarsymptom) from which all other symptoms of the pathology were derived. Pursuing his approach, Wernicke

identified clinical entities, such as “anxiety psychosis” and “hallucinosis” (Krahl 2000; Wernicke 1893, 1895).

Outline of Development: From Kraepelin through Kleist to Leonhard

Emil Kraepelin’s division (“dichotomy”) of the “endogenous psychoses” into “manic depressive insanity”, a disease that follows an episodic course with full remission between episodes, and “dementia praecox”, a disease that follows a continuous deteriorating course, distracted attention from Wernicke’s contributions, on the basis of “temporal characteristics”, i.e., “course” and “outcome,” towards the end of the 19th century, in the 6th edition of his textbook, (Kraepelin 1899). Thereafter, in the 1920’s, Kraepelin’s dichotomy of “endogenous psychoses” was re-evaluated by Karl Kleist (1921, 1923, 1928), a disciple of Wernicke, and subsequently by Karl Leonhard, a disciple of Kleist. (Kleist 1921, 1923, 1928; Leonhard 1936, 1957).

In his re-evaluation, Leonhard employed Edna Neele’s concept of “polarity” and Wernicke’s concept of “mental structure” in classifying patients (Neele 1948; Wernicke 1881, 1899). With the employment of “polarity”, he divided the population already separated by “course” and “outcome”, into “bipolar” and “unipolar diseases”, and separated within both, several subpopulations on the basis of the site of the dominant psychopathology, i.e., the afferent-cognitive (“psychosensory”), central-affective (“intrapsychic”), or efferent-motor (“psychomotor”) component, in Wernicke’s “mental structure” (Leonhard 1936, 1957, 1979 1986).

In Leonhard’s classification, “bipolar diseases” are characterized by a continuously changing, “polymorph” (multiform), disease picture with a potential to display both extremes in mood, thinking, emotions and/or motility, whereas “unipolar (monopolar) diseases” are characterized by a consistent, unchanging, “monomorph” (simple, also referred to as pure) disease picture with no variation of mood, thinking, emotions and/or motility.

On the basis of “polarity”, Leonhard splits Kraepelin’s “dementia praecox” and Bleuler’s “schizophrenias”, into two classes of disease: “(bipolar) unsystematic (non-systematic) schizophrenias” and “(unipolar) systematic schizophrenias”; and on the basis of Wernicke’s “mental structure”, he divides “unsystematic schizophrenias” into three diseases, i.e.,

“cataphasia”, “affect-laden paraphrenia” and “periodic catatonia” (Bleuler 1911). Similarly, on the basis of Wernicke’s “mental structure”, he divides the “systematic schizophrenias” into three groups of diseases, i.e., paraphrenias” (with six psychopathology-based sub-forms: hypochondriacal, phonemic, incoherent, fantastic, confabulatory and expansive), “hebephrenias” (with four psychopathology-based sub-forms: silly, eccentric, insipid or shallow and autistic), and “catatonias” (with six psychopathology-based sub-forms: parakinetic, affected or manneristic, proskinetik, negativistic, voluble or speech prompt and sluggish or speech inactive).

On the basis of “polarity”, Leonhard also splits Kraepelin’s “manic depressive insanity” into “(bipolar) manic depressive disease” and “(unipolar) phasic psychoses”, and with consideration of Wernicke’s “mental structure”, he separates from “manic depressive disease” the “cycloid psychoses”, and divides the “cycloid psychoses” into “excited-inhibited confusion psychosis”, “anxiety-happiness psychosis”, and “hyperkinetic-akinetic motility psychosis”. Furthermore, on the basis of “totality”, the organizing principle introduced by William Cullen, he separates “pure mania” and “pure melancholia” from the “pure euphorias” (unproductive, hypochondriacal, enthusiastic, confabulatory and non-participatory) and “pure depressions” (harried, hypochondriacal, self-torturing, suspicious and non-participatory), each displayed in five distinct psychopathology-based forms (Cullen 1769, 1772, 1776).

Within the “bipolar-polymorph” diseases, the signal difference between “manic depressive disease” and the “cycloid psychoses” is that in “manic depressive disease”, the “polarity” primarily is in mood, whereas in the “cycloid psychoses”, the “polarity” primarily is in thinking (“excited-inhibited confusion psychosis”), emotions (“anxiety-happiness psychosis”) or psychomotility (“hyperkinetic-akinetic motility psychosis”); and within the “unipolar-monomorph” diseases, the signal difference between “pure mania/melancholia” and the “pure euphorias/depressions” is that in “pure mania” and in “pure melancholia”, the entire “mental structure” is affected, whereas in the “pure euphorias” and “pure depressions” only parts of the mental structure is involved.

Leonhard’s classification of “endogenous psychoses” was first published in 1957, just about the time when neuropsychopharmacology was born (Ban 2013).

Objectives

The primary objective of the INHN Program on the Fundamentals of the Wernicke-Kleist-Leonhard Tradition is to contribute to the educational program in the history of the field by generating the necessary information for an understanding of the conceptual framework of the WKL tradition. Another objective is to provide orientation points for employment of clinical end-points, based on “differentiated nosology” for research in neuropsychopharmacology and molecular genetic research in psychiatry (Ban 2002; Beckmann and Lanczik 1990). In order to achieve its objective, the Program, directed by Marcelo Cetkovich-Bakmas, will generate vignettes on diagnostic and other concepts introduced by Wernicke, Kleist and Leonhard; biographies and profiles with photos on its major representatives; and essays that would open up controversies related to the WKL tradition, as well as essays that would help to place the contributions of the WKL tradition in a historical perspective.

References:

Astrup C. The effects of ataraxic drugs on schizophrenic subgroups related to experimental findings. *Acta Psychiatrica Scandinavica* 1959; 34 (supplement 136): 388-93. :

Ban TA. Clinical pharmacology and Leonhard's classification of endogenous psychoses. *Psychopathology* 1990; 23: 331-8.

Ban TA. Neuropsychopharmacology the interface between genes and neuropsychopharmacology. In : Lerer B, editor. *Pharmacogenetics of Psychotropic Drugs*. Cambridge: Cambridge University Press; 2002, pp. 36-56.

Ban TA. Neuropsychopharmacology and the Forgotten Language of Psychiatry. INHN. E-Books. 11. 14, 2013.

Beckmann H, Lanczik M, editors. Leonhard Classification of Endogenous Psychoses. Cycloid Psychoses, Differentiated Nosology, Differentiated Therapy and Historical Aspects. *Psychopathology* 1990; 4-6: 189 – 342.

Bell Ch. Idea of a New Anatomy of the Brain. London; Strahan 1811.

Bleuler E. Dementia Praecox oder Gruppe der Schizophrenien. Leipzig: Deuticke; 1911.

Cajal SR. La fine structure des centres nerveux. Proc R Soc London 1894; 55: 444-67.

Cullen W. Synopsis Nosologiae Methodicae. Edinburgh: Kincaid & Creech; 1769, 1772.

Cullen W. First Lines of the Practice of Physics. Edinburgh: Kincaid & Creech; 1777.

Fish FJ. The influence of the tranquilizers on the Leonhard schizophrenic syndromes.

Encephale 1964; 53: 245-9.

Franzek E. Influence of Carl Wernicke on Karl Leonhard's nosology. Psychopathology 1990; 23: 277-81.

Golgi C. Sulla fine struttura dei bulbi olfattorii. Riv Sper Freniatr Med Leg Alienazioni Ment 1874; 1: 405-25.

Griesinger W. Über psychische Reflexactionen. Archiv für Physiologische Heilkunde 1843; 2: 76-112.

Griesinger W. Die Pathologie und Therapie der Psychischen Krankheiten. Braunschweig: Wreden; 1845.

Kleist K. Autochthonous Degenerationpsychosen. Z gen Neurol Psychiat 1921; 69: 1-11.

Kleist K. Die Auffassung der Schizophrenien als Systemkrankheiten. Klinische Wochenschrift 1923; 2: 962-3.

Kleist K. Über zyklische, paranoid und epileptische psychosen und über die Frage der Degenerationspsychosen. *Schweiz Arch Neurol Psychiat* 1928; 13: 1-35.

Kraepelin E. *Lehrbuch der Psychiatrie*. 4 Aufl. Barth: Leipzig; 1893.

Kraepelin E. *Lehrbuch der Psychiatrie*. 6 Aufl. Barth: Leipzig; 1899.

Krahl A. Carl Wernicke's elementary symptom. In: Franzek E, Ungvari G, Ruther E, Beckmann H, editors. *Progress in Differentiated Psychopathology*. Würzburg: Wernicke-Kleist-Leonhard Society; 2000, pp. 43-8.

Leonhard K. *Die Defektschizophrenen Krankheitsbilder*. Leipzig: Thieme; 1936.

Leonhard K. *Aufteilung der endogenen Psychosen*. Berlin: Akademie Verlag; 1957.

Leonhard K. *Classification of Endogenous Psychoses* (translated from the 5th edition of the German original by Berman R.) New York: Irvington Press; 1979.

Leonhard K. *Aufteilung der endogenen Psychosen*. Berlin: Akademie Verlag; 1986.

Magendie F. Expériences sur les fonctions des racines des nerfs rachidiens. *Journal de physiologie expérimentale et de pathologie* 1822; 2: 276-9.

Sechenov IM (1863) Reflexes of the Brain. In: *Selected Works*. Moscow: Foreign Language Publishers; 1935.

Sherrington CS. *The Integrative Action of the Nervous System*. London: Scribner; 1906.

Wells HK. *Ivan Pavlov. Toward a Scientific Psychology & Psychiatry*. New York International Publishers; 1956.

Wernicke C. Lehrbuch der Geisteskrankheiten für Aerzte und Studierende. Vol. 2. Berlin: Theodor Fischer Kassel; 1881 – 1883, pp 229-42.

Wernicke C. Diskussionsbeitrag auf dem 59. Treffen des Vereins ostdeutscher Irrenärzte, Leubus, 19, Juni 1892. Allgemeine Zeitschrift für Psychiatrie und psychisch-gerichtliche Medizin 1893; 1: 484 - 9.

Wernicke C. Fallbeschreibung anlässlich des 66. Treffens des Vereins ostdeutscher Irrenärzte, 24, November 1894. Allgemeine Zeitschrift für Psychiatrie und psychisch-gerichtliche Medizin 1895; 3: 1016-21.

Wernicke C. Über die Klassifikation der Psychosen. Breslau: Schletter; 1899.

Wernicke C. Grundrisse der Psychiatrie. Leipzig: Thieme; 1900, 1906.

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