

Thomas A. Ban: Neuropsychopharmacology in Historical Perspective  
Education in the Field in the Post Psychopharmacology Era

## **Thomas A. Ban: Nosology in the teaching of psychiatry\***

### **Introduction**

Nosology is the scientific discipline concerned with the study of the organizing principles employed in classifying disease. Classifying is defined as the “ordering of objects into groups on the basis of their relationships” (Sokal 1974).

Classificatory systems, or classifications, the result of classifying, may have far-reaching practical and heuristic implications. If reliable (reproducible), they provide “denomination” and “qualification,” i.e., common names and descriptive features. If valid (meaningful), they provide “prediction,” i.e., probabilistic statements about the expected course, outcome and responsiveness of their diagnostic groups (Feinstein 1972; Kendell 1975).

Psychiatric nosology, the discipline which deals with the organizing principles employed in the classification of mental illness, is one of the main disciplines which provide a foundation for modern psychiatry. Considering that nosologic knowledge allows for an understanding of how different disease categories are derived, without an adequate representation of nosology in the medical curriculum, training in psychiatry, i.e., the learning of when and what to do, cannot be considered psychiatric education, i.e., the learning of why to do it.

There are many difficulties encountered in teaching psychiatric nosology. Included among them are the lack an identifiable biologic substrate of mental illness by traditional histologic and/or neurochemical techniques and the lack of agreement regarding the nature of manifestations in which mental illness is expressed.

Recognition that the differential therapeutic effects of psychotropic drugs are linked to their differential action on the synaptic cleft triggered fundamental changes in the understanding of the biologic substrate and conceptualization of psychopathologic symptoms. Rapid advances in molecular genetics resulted in a shift of emphasis in

nosology from cross-sectional psychopathology to the "dynamic totality" of the psychiatric disease process and "determining structure" of psychiatric illness (Ban 1987).

Within the new frame of reference, psychopathologic symptoms are perceived as manifestations of pathology in the processing of ideas (impulses) derived from experience and nosologic entities as distinct structures determined by the developmental stages of different unfolding psychiatric illnesses. It is increasingly acknowledged that valid nosologic endpoints are essential prerequisites for progress in psychiatry.

### **Separation of psychiatry from neurology**

Development of nosology was triggered by the work of Francois Boissier de Sauvages (1768). By adopting some of the basic rules employed by Carl Linne (1753) in the classification of flowering plants, he classified "diseases as if they were specimens of nature," dividing them into 295 genera consisting of 2,400 species (Garrison 1960). His assertion, that naturally occurring categories of disease can be identified in a manner which would "allow the attribution of each patient to one and only one class" by grouping the symptoms at a particular point in time, opened the path for the syndromic classifications of mental disorders.

The first syndromic classification of illness was William Cullen's (1772). He believed that "life is a function of nervous energy, muscle, a continuation of nerve, and disease is mainly nervous disorder," and contended that "all diseases with their seat in the nervous system are associated with and/or result in mental derangement" (Littre 1877). Introducing the term "neurosis" for this all-embracing disease category, Cullen (1772) classified illness into "fever," "cachexias," "local diseases" and "neuroses."

To shift emphasis from the "nerves" to the "soul" (psyche - perceived as the "corporalized spirit") as the etiologic principle responsible for mental derangement, the term "psychiaterie" was introduced by Johann Christian Reil (1803). His term "psychiaterie" was replaced by the term "psychiatrie" by Johann Christian Heinroth (1818). In the years to follow, the two terms, "neuroses" and "psychiatry," and with them the conceptualization of mental disorders as disorders of the brain and as disorders of the mind, profoundly affected the subject matter of the field to the extent that, to date,

psychiatric opinion has remained divided as to whether psychiatry deals with Cullen's (1772) disorders of the brain or Reil's (1803) disorders of the "soul."

By the 1840's, the term "neurosis," referring to all the diseases of the body which were assumed to have their seat in the nervous system, and the term "psychiatry," or psychiatric disorders, referring to all the disorders of the mind which were assumed to be caused by the "corporalized spirit," were used interchangeably. Recognition that not "every defect of the nervous system is necessarily accompanied by mental disorder," although "every mental disorder implies the existence of a disease of the nervous system" led to the introduction of the term "psychosis" by Ernst Feuchtersleben (1845). In his 1845 textbook Feuchtersleben declared that "every psychosis is at the same time a neurosis, because without the nerves as intermediaries no psychologic change can be exhibited, but not every neurosis, i.e., disorder of the nerves, is a psychosis" - using the term "psychosis" for the first time in the psychiatric literature (Pichot 1983). The new concept opened the path for the separation of the disorders of the nerves which affect the mind, from the disorders of the nerves which have no such an effect. By separating neurologic disorders from psychiatric disorders, the concept of "psychosis" provided the necessary frame of reference for the development of the discipline referred to as "psychiatry" today.

### **Roots of psychiatric nosology**

The most important event which triggered nosologic development was Wilhelm Griesinger's (1845) recognition that not in all mental syndromes described by Pinel (1798, 1801) and Esquirol (1838) are identifiable neuropathologic changes present.

The origin of Griesinger's (1845) unitary concept of psychosis, however, was not in Guislain's (1833) or Zeller's (1838) notions of "unitary psychosis," but in Bayle's (1825) recognition that in chronic arachnoiditis the dementia syndrome was preceded by other mental syndromes during the first and second stages of disease development. Considering that these syndromes corresponded to the second (*delire monomaniaque*) and third (*delire maniaque*) syndromes in Pinel's (1798) and Esquirol's (1838) classifications and the dementia syndrome corresponded to the fourth, the syndrome associated with structural changes of the brain, Griesinger (1845) felt justified in adopting Bayle's (1825) findings derived from the analysis of a neuropsychiatric condition as a

model of mental disease. In the ultimate analysis, it was Griesinger's (1845) unitary concept of psychosis which focused attention on the lack of identifiable neuropathology in some of the mental syndromes; and it was in consideration of the different syndromes without identifiable neuropathology that Neumann (1859), a prominent advocate of the unitary concept, felt justified in acknowledging that mental derangement without identifiable neuropathology might consist of a biologically heterogeneous category. Therefore, to break the impasse of nosologic progress created by the unitary concept, it was Neumann (1859) who first emphasized the need for employing "temporal" and/or "spatial" organizing principles in the identification and classification of these conditions (Lanczik and Beckmann 1991).

### **Nosology: organizing principles**

#### **Individual psychoses**

Attempts to identify and classify disorders subsumed under the all-embracing concept of unitary psychosis began with a purely descriptive phase in which clinical research was restricted to "collecting, recording and faithfully portraying phenomena as they were encountered." In the absence of an organizing principle, the descriptive observations yielded "individual psychoses" in which, according to Birnbaum (1923), "each psychosis was unique and occurred only in the particular form displayed."

This initial approach was "concerned foremost with discovering and recording clinical phenomena from direct observation of patients, and with delineating individual symptoms and the course of the symptoms encountered." However, "by ordering and grouping its data in an exact, systematic and comprehensive manner, it had done more. It "amassed a firm body of clear clinical syndromes and an equally firm body of clinical phenomena which recur in the regular, discrete form and sequence that is usually expected of specific disease categories" (Jablensky 1988).

#### **First primary principle: development vs process**

The first primary organizing principle for the detection and classification of nosologic categories was based on the separation of personality development from disease process (Table 1). Its introduction was intimately linked to the increasing

influence of “psychopathology,” the scientific discipline which deals with the identification, description and conceptualization of signs and symptoms which occur in patients with psychiatric disorders, and to the contributions of Karl Jaspers (1910, 1913).

Instrumental in the introduction of “psychopathology” as an organizing principle in classifying was the separation of contents, corresponding with events and behavior, from forms, corresponding with pathologic experiences and patterns displayed; and the recognition that development is expressed in events, i.e., in the events of the life history, whereas disease process is displayed in pathologic forms, i.e., in the patterns of the case history. The origin of the first primary organizing principle was in the shift of emphasis from the description of events and/or contents, during the different developmental stages of a psychiatric illness, to the recognition of the patterns generated and/or structures affected in a predetermined manner by different disease processes.

The first primary organizing principle received great impetus from the work of Kurt Schneider (1925, 1959). By employing it in his “Clinical Psychopathology,” Schneider (1925) was the first to separate clinically developmental anomalies, i.e., abnormal variations of psychic life displayed in personality disorders, from the effects of illness displayed in psychiatric disorders he referred to as “psychoses.”

### **Second primary principle: course and outcome**

The second primary organizing principle for the detection and classification of nosologic categories (and for the refinement of diagnoses identified by the first organizing principle) was based on the course and the outcome of illness. Its origin is in the work of Thomas Sydenham (1682) who described illness in terms of a process which progresses through a number of different developmental stages; in the observations of Dominique Esquirol (1838) who emphasized that age at onset and course of illness are valuable additions to cross-sectional descriptive definitions (Ban 1990); and in the contributions of Jean Pierre Falret (1854) who was the first to identify an illness (i.e., *folie circulaire*) primarily on the basis of its temporal aspect.

Formulation of the second primary organizing principle of psychiatric nosology dates back to Julius Philippe Falret (1864), the son of Jean Pierre. His contention that “a natural form of illness implies a well-defined predictable course” and/or “a well-defined predictable course presupposes the existence of a natural species of disease with a specific pattern of development,” focused attention on the importance of the natural history of

psychiatric illness in the diagnostic process. Similar to Julius Falret, Karl Kahlbaum (1863) maintained that for a valid diagnosis, “the whole course of illness must be taken into account.”

The second primary organizing principle of psychiatric nosology received great impetus from Kahlbaum's (1874) postulation of a close correspondence between etiology, brain pathology, symptom pattern and outcome picture. Regardless of its validity, Kahlbaum's (1874) “nosologic postulate” decisively influenced Kraepelin's work, especially his shift of emphasis in classifying, from cross-sectional clinical syndromes to progression of clinical manifestations (Kraepelin 1899).

By developing a clinical methodology, i.e., a biographic approach, for the assessment of variables relevant to course and outcome and by employing the new methodology, Kraepelin (1899), in the sixth edition of his textbook, identified and separated two major psychiatric disorders from the multitude of clinical syndromes. One of these two syndromes, which in terms of course and outcome was episodic and remitting, he referred to as “manic depressive insanity”; the other, which in terms of course and outcome was continuous and progressing, he referred to as “dementia praecox.” Since Kraepelin's (1899) original diagnostic concepts were based exclusively on the second organizing principle of psychiatric nosology, his diagnostic concept of manic-depressive insanity embraced the whole domain of periodic or circular insanities and his diagnostic concept of dementia praecox embraced the whole domain of insanities which progressed towards “psychic enfeeblement.” Progress within the one-dimensional “biographic” approach led to the separation of “attacks,” which are of very brief duration, (i.e., minutes to hours - as seen in panic disorder) from “phases,” which are longer lasting (i.e., from days to years - as seen in the phasic psychoses), and from “periods,” i.e., “phases” which recur at regular time intervals (as seen in seasonal affective disorder); and to the separation of “thrusts,” i.e., acute events which lead to lasting changes (as seen in the unsystematic schizophrenias), from “continuous process,” which leads to highly differentiated “end-states” (as seen in the systematic schizophrenias) and from “progressive deterioration” which leads to increasingly severe “dedifferentiation” (as seen in the chronic organic dementias).

**Third primary principle: Polarity – monomorphous vs polymorphous**

The third primary organizing principle for the detection and classification of nosologic categories and for the refinement of diagnoses identified by the first and the second organizing principles) was based on the separation of pure monomorphic from multiform-polymorphic disease pictures. Its introduction was intimately linked to the recognition of the importance of “polarity” in both cross-sectional syndromes and course of illness in disorders based on a psychopathology process.

The origin of the third primary organizing principle of psychiatric nosology was in the work of Karl Leonhard (1957) who was the first to distinguish between “polymorphous (multiform)-bipolar” and “monomorphous-unipolar” psychiatric disorders. Leonhard (1957) emphasized that “the bipolar form of illness displays a colorful appearance” because “it varies not only between the two poles, but in each phase it offers different pictures,” whereas the unipolar form “returns in a periodic course with the same symptomatology.” Further, in case of unipolar illness, “every individual form is characterized by a syndrome associated with no other form and not even related transitionally to any other forms,” whereas in case of bipolar illness no clear syndromes can be described since there are many transitions between various formations and the picture may even be distorted during one phase.” In view of these considerations, Leonhard (1957) maintained that “one can generally recognize a bipolar form of illness during the first phase” and “one is in the position to recognize as bipolar those forms which only accidentally swing toward one pole, but which contain the potential toward the other pole.” Consequently, he suggested that “the differentiation is better made between polymorphic and pure forms” than between “bipolar” and “unipolar” forms.

Within Leonhard's (1957) frame of reference, the concept “bipolar” refers primarily to a “multiform,” continuously changing clinical picture and only secondarily to the potential to display both mood extremes, i.e., hyperthymia (elation or mania) and dysthymia (sadness or depression), whereas the concept of “unipolar” refers primarily to a “pure,” consistent clinical picture and only secondarily to the restricted potential to display only one or another mood extreme, i.e., hyperthymia or dysthymia. Furthermore, for Leonhard polarity is not restricted to mood but extends also to activity and emotions.

By developing a clinical method for the assessment of polarity, Leonhard (1957) undertook the task of re-evaluating Kraepelin's (1899) classificatory scheme. On the basis of polarity - with consideration to Kleist's (1921, 1928) contributions - he separated within Kraepelin's (1899) manic-depressive insanity, the “unipolar-phasic psychoses” from

“bipolar-manic-depressive disease”; and within dementia praecox or schizophrenia, the “pure-systematic” forms of illness from the “multi-form-unsystematic” forms. Furthermore, considering the fine distinction between “bipolar” and “polymorphous,” he separated “polymorphous cycloid psychoses” from “bipolar manic-depressive disease”; and with consideration of the first organizing principle in association with “polarity,” he separated “polymorphous cycloid psychoses,” i.e., disorders with “full remissions” between episodes, from “polymorphous unsystematic schizophrenias,” i.e., disorders with partial remissions between episodes.

### **First secondary principle: spatial organization**

The first secondary organizing principle for the refinement of diagnoses identified by the first, second and third primary organizing principles was based on the recognition of the importance of the spatial organization of the disease, i.e., the structures affected in terms of Wernicke's (1899) “psychic reflex” by the psychopathologic process.

The origin of the first secondary organizing principle was in the extension of the physiologic concept of “reflex” - by embracing all activities including the “psychologic” - into a psychophysiologic concept, first by Sechenov (1866) and later on by Pavlov (1927); and by the description of a wide variety of clinical syndromes on the basis of their “spatial” instead of “temporal” aspects, first by Wernicke (1899) and later on by Kleist (1921, 1928).

By emphasizing the first secondary organizing principle in his “classification of endogenous psychoses,” Leonhard (1957) distinguished among disorders on the basis of the prevailing affected structure of the “psychic reflex,” and separated disorders with prevailing “perceptual-cognitive” psychopathology (intimately linked to pathologic processing in the “afferent” structures) from disorders with prevailing “relational-affective” psychopathology (intimately linked to pathologic processing in the “central” structures), and from disorders with prevailing “adaptive-psychomotor” psychopathology (intimately linked to pathologic processing in the “efferent” structures). Accordingly, on the basis of the “spatial” organization of psychopathology, he separated within the “systematic schizophrenias” three categories of illness, i.e., “systematic paraphrenias,” “systematic hebephrenias” and “systematic catatonias”; within the “unsystematic schizophrenias,” “cataphasia,” “affect-laden paraphrenia” and “periodic catatonia”; and



within the “cycloid psychoses,” “confusion psychosis,” “anxiety - happiness psychosis” and “motility psychosis.”

### **Second secondary principle: totality**

The second secondary organizing principle for the refinement of diagnoses identified by the first, second and third primary and first secondary organizing principles was based on the recognition that in some mental disorders the pathologic process does not involve the totality of the mental apparatus, but remains “partial,” “abortive,” “selective” and/or “incomplete.”

The origin of the nosologic concept of “partial insanity” was in Lasegue's (1852) description of “persecutory delusional psychosis,” the predecessor of Kahlbaum's (1874) diagnostic concept of paranoia, and Serieux and Capgras' (1909) diagnostic concept of non-hallucinatory interpretative delusional psychosis. The term “partial insanity” implies that in variance with “total insanity,” the personality remains preserved in the psychosis which follows a chronic continuous course.

The origin of the nosologic concept of “abortive insanity” can be traced to Westphal's (1878) description of “obsessional neurosis,” the predecessor of the current diagnostic concept of “obsessive compulsive disorder.” The term “abortive insanity” implies that patients with “abortive insanity” (in variance to patients with “true insanity”) are cognizant of the pathologic nature of their condition.

The origin of the nosologic concept (but not the term) of “selective insanity” was in Wernicke's (1899) recognition of the “selective” impairment in the integrating function of consciousness regarding the external world, i.e., “allopsychic” integration - in “acute delirium,” the predecessor of Bonhoeffer's (1909) diagnostic concept of “exogenous psychosis” (and the diagnostic concept of “acute organic psychosis”). The term “selective insanity,” however, is not restricted to the “selective” impairment of “allopsychic integration” but includes the “selective” impairment of the integrating function of consciousness regarding one's “body” - i.e., “somatopsychic” integration - as seen in the “somatoform disorders,” and the “selective” impairment of the integrating function of consciousness regarding one's “self” -i.e., “autopsychic” integration - as seen in the “dissociative disorders.”

Finally, the origin of the nosologic concept of “incomplete insanity” was in Leonhard's (1957) description of “pure depressions” and “pure euphorias” and in the separation of these disorders from “pure melancholia” and “pure mania (Pethö and Ban 1988.) The signal difference between the two is that in variance with “complete insanity,” such as “pure melancholia” and “pure mania,” in “incomplete insanity” the psychopathologic process does not involve all three components of the “psychic reflex.”

### **Validation of diagnoses**

By employing the primary and secondary organizing principles outlined above, “individual psychoses” have been integrated into a limited number of forms and a substantially greater number of sub-forms of disease. This, however, does not imply that any of the “forms” and/or “sub-forms” of disease (derived by such an arbitrary procedure) represents a meaningful category (or subcategory) of disease, i.e., an entity with properties which cannot be reduced to and/or understood from the sum of the properties of its individual components alone. Nor does it imply that the new categories (i.e., diagnostic concepts) have any heuristic value and/or practical significance.

### **General principles**

Demonstration of validity is an essential prerequisite for accepting a new nosologic category for inclusion in any classification. The procedure by which this is achieved is referred to as “validation,” i.e., the demonstration of the “scientific truth,” the “utility” and the “stability” of the category in question (Klerman and Hirschfield 1981).

In terms of “scientific truth,” validation implies the demonstration that the category consists of a sufficiently homogeneous population, whereas in terms of “clinical utility,” validation implies the demonstration that the category is sufficiently well-defined and can be reliably identified to serve as a means of clinical communication. In terms of “stability,” validity implies the demonstration that the category can be repeatedly identified on the basis of the same characteristics. This, however, does not necessarily mean a similar clinical display from one testing to another, since, in case of a “bipolar disease,” “multiform-display” is one of the essential characteristics of the disorder. The same applies to disorders in which the circadian rhythm is disturbed.

## **Statistical approaches**

There are a number of different approaches used in the validation of nosologic categories. Among them, one of the most frequently employed is the statistical.

In spite of the considerable differences in opinion of whether “factor analysis” (Eysenck, White, Eysenck 1976), “cluster analysis” (Eysenck, White, Eysenck 1976) or “multiple discriminant functions analysis” is the more suitable technique in the validation of nosologic categories, “signs and symptoms comprising a nosologic class should cluster together in the population more frequently than would be expected by chance”; and that “many of the multivariate approaches, and especially factor analysis, can be used to test the internal consistency” of nosologic construct (Kleist 1923).

When employing a statistical approach, however, extreme caution must be exercised regarding the nature of the data (manifestations) on which the statistical analyses are performed. Since nosologic entities are primarily based on the relative frequency of different pathologic subjective experience, the inclusion of variables relevant to abnormal objective performance and/or deviant social behavior may dilute the data pool and is counterproductive in the validation process. This explains why in the study of Pethö, Tolna and Tusnady (1974) “the diagnoses of the index psychoses were valid (in terms of predictive validity) to a considerably greater extent (in a stepwise discriminant function analysis) with psychopathologic variables alone or with psychopathologic and personality variables combined, than with all three types of variables, i.e., psychopathologic, personality and social adjustment, together;” and why (in a cluster analysis), “the clusters based on social adjustment variables did not prove to be valid at all (Pethö 1984; Pethö and Ban 1988).

## **External correlates**

Another frequently employed approach in validation is “correlation with external factors” (Guze 1978). Klerman and Hirschfeld (1981) maintain that “by far the most important determinants of validity are the existence of correlates of a nosologic class from domains of variables other than those that were used to define the disorder.”

The origin of the use of external correlates as validators was in the work of Robins and Guze (1970, 1972). Their list of “external validators” was expanded by Kendler (1980, 1991) to include “antecedent validators” (such as “family history” and “demographics”), “concurrent validators” (such as “clinical variables” and “biologic variables”) and “predictive validators” (such as “treatment response” and “outcome”). A considerably more comprehensive list of “external validators” was proposed by Klerman and Hirschfeld (1981). Although one might argue that the employment of “antecedent validators” (e.g., familial and genetic variables, developmental factors, psychosocial background) is based on preconceptions, and that the variables employed as “concurrent validators” (e.g., biologic measures, psychometric performances) are state dependent and have little relevance to the disease process, at present "external correlates" are the most extensively employed “validators” of psychiatric illness.

### **Importance of validation**

In spite of all their shortcomings, the importance of validation studies cannot be overemphasized, because “what the creative eyes of outstanding clinicians see can easily become blurred by the objective and impartial analysis of large series of unselected case” (Hoenig 1980). Nevertheless, the fact remains that in the ultimate analysis, the validity of a diagnosis is judged by its “fruitfulness as a source of hypotheses regarding etiology, course and treatment response” and the extent to which the syndrome has proven to a distinctive constellation or cluster that could be identified by others” (Roth and Barnes 1981).

### **Etiologic considerations**

It is a commonly held view that any attempt to classify mental illness is “premature” because nosologic classes should be based on “causation” and “the etiology of the majority of psychiatric disorders is unknown” (Klerman and Hirschfeld 1981).

In spite of the lack of etiologic knowledge, “psychoses” are frequently divided into “reactive” and “endogenous.”

## **Endogenous vs reactive**

The concepts of “endogenous psychosis” (also referred to as “autochthonous psychosis”) and “reactive psychosis” (also referred to as “psychogenic psychosis”) are etiologic concepts. Endogenous psychosis implies that the psychosis is the result of inner causes, i.e., an innate-genetic biologic defect (Morel 1857), or, if one accepts the “endogeny theory” of Moebius (1893), the result of a “constitutionally determined predisposition,” whereas “reactive” or “psychogenic psychosis” (Wimmer 1916) implies that the psychosis is the result of external causes, i.e., conflictual experiences and/or stressful life events. However, in the absence of distinctive clinical features between the two categories of disorders, neither the concept of “endogenous psychosis” nor the concept of “reactive psychoses” yielded testable etiologic hypotheses and/or provided a new organizing principle for the classification of mental illness.

The origin of the diagnostic concept of “reactive psychosis” is in the work of the Danish psychiatrist Wimmer (1916) who defined “psychogenic psychosis” as a group of “clinically independent psychoses” which “usually on a predisposed foundation are caused by mental agents” in a manner that the mental trauma “determines the moment for the start of the psychosis, the fluctuations of the disease” and “very often also its cessation.”

From the time of its inception, “psychogenic psychosis” has been a controversial concept. This is best exemplified by the simple fact that Jaspers (1913) himself - who set the criteria for the concept of “reaction” - did not consider “reactive psychosis” as a diagnostic category and “has not assigned a nosologic position to it.” He insisted that such reactions may occur in anyone, regardless whether “a psychopath, a schizophrenic or organically ill”; and considered the causal factor responsible for the psychosis to be strictly separate from the meaningful connection operating in a reaction (Hoenig 1985). In spite of this, the diagnostic concept of “reactive psychosis” has persisted with a reported frequency of occurrence ranging from 2% (Faergeman 1963) to 15-20% (Pauleikhoff 1969). Furthermore, Strömgen (1968) maintains that it is an undeniable fact that there are psychoses which would not have arisen if the mental trauma would not have occurred. Nevertheless, his emphasis on predisposition and his regret “that no extensive study of the genetics of psychogenic psychosis has been published as yet” indicate that Strömgen (1968), similar to Jaspers (1913), does not believe that a “mental illness can be explained by a psychic cause alone.”

### **Organic and exogenous**

Independent of the “endogenous-reactive” dichotomy, psychoses are frequently divided into “organic” and “exogenous.” In variance with the concepts of “endogenous” and “reactive,” however, the concepts of “organic” and “exogenous” are intimately linked to distinctive clinical features, i.e., the syndrome of “dementia” and the syndrome of “delirium,” respectively.

The concept of “organic psychosis” implies that the “psychosis,” i.e., “dementia syndrome,” is intimately linked to a neuropathologic process, whereas the concept of “exogenous psychosis” implies that the “psychosis,” i.e., “delirium,” is intimately linked to a physical illness. Nevertheless, neither “organic psychosis” nor “exogenous psychosis” is an etiologic concept because they are non-specific in so far as the causal factor is concerned. In spite of this, both “organic psychosis” and “exogenous psychosis” are valid nosologic concepts because of their potential to yield testable etiologic hypotheses.

### **Separation of nosology from psychopathology**

Development of psychiatric nosology, as an empirical discipline with the potential to yield etiologic hypotheses, began with the contributions of Jaspers (1913).

Jaspers (1913) perceived nosology as an integral part of general psychopathology and defined nosology as the discipline which is concerned with the “synthesis of disease entities” from psychopathologic symptoms. Nevertheless, for Jaspers (1913) “the idea of disease entity” was “an idea in Kant's sense of the word, the concept of an objective which one cannot reach since it is unending,” but which “indicates the path for fruitful research and supplies a valid point of orientation for particular empirical investigations.” Because of this, he maintained that “in nosology one does not secure a single, definite disease-entity, but guided by the idea of disease-entity, gives preference to certain particular elements (of the disease) and isolates for diagnostic purposes the relative disease entities as best one can.”

Jaspers' (1913) notion of “relative disease entities” and the “conceptual continuum of disease entities” led to empirical studies. These, in turn, yielded increasingly “more

developed disease pictures,” such as the “psychopathologic disease entity” of Pauleikhoff (1969), the “etiologic-syndromatologic disease entity” of Vie (1940), the “small disease entity” (from syndrome through course to outcome) of Schneider (1925, 1932) and the “full (complete) disease entity” of Pethö (1990). By rendering the “relative disease entities” accessible for direct investigation, Jaspers (1913) opened the way for the detection of “natural disease entities” and for the development of a valid nosology in psychiatry (Paykel 1971).

### **Psychopathologic approach**

Within the traditional (symptomatic) psychopathologic frame of reference, the elementary units which serve as the building blocks of mental illness are psychopathologic symptoms. Each psychopathologic symptom is a concept, based on pathologic (abnormal) mental (psychic) experiences (phenomena) which can be communicated to others; and each psychopathologic symptom has a content (derived from past experience) and a form (characteristic of the illness).

In traditional psychopathology-based classifications, it is the relative frequency of pathologic forms of experience at a particular point of time that provides the clinical syndrome or syndromic diagnosis. Recognition, however, that for the characterization of a nosologic entity information on the cross section of an illness does not suffice, led to the gradual replacement of the traditional cross-sectional approach with a disease-oriented psychopathologic approach, in which each disorder is defined on the basis of the formal characteristics of the disease in its subsequent developmental stages, i.e., sudden or insidious onset, episodic or continuous course and recovery or defect at the outcome. Within this disease-oriented psychopathologic approach, it is in terms of its “dynamic totality” (Ban 1987) that each mental illness is defined; and it is in terms of its specific structure created by the adding of each single element of its “dynamic totality” that mental illness is perceived.

### **Nosologic approach**

Introduction of therapeutically effective psychotropic drugs led to the replacement of the psychopathologic with a biologic conceptualization of mental illness. This,

however, does not imply that with the new conceptual framework biologic measures replaced psychopathologic symptoms as the language of communication about psychiatric disorders.

Within the new biologic frame of reference, psychopathologic symptoms are perceived as manifestations of pathologic processing of experience and psychopathologic symptoms are separated into two major categories, i.e., “productive” and “non-productive,” on the basis of the presence or absence of pathologic integrations (such as false perceptions and content disorders of thinking displayed in hallucinations and delusions, respectively). Recognition, however, that for the characterization of a nosologic entity, information on the “dynamic totality of an illness does not suffice because the “whole” (illness) is more than the sum of its component “parts” (psychopathologic symptoms), led to the separation of psychopathology, the discipline which deals with the words, i.e., phenomena which constitute the language of psychiatry, from nosology, the discipline which deals with the laws (rules) which provide the principles relevant to the organization of the words into meaningful sentences, i.e., nosologic entities with biologic homogeneity and predictive validity.

In variance with the analytic-psychopathologic approach employed in the identification and classification of mental illness which is based on the detection and scrutiny of the different psychopathologic symptoms displayed, the nosologic is a holistic approach to the identification and classification of mental illness. It is based on the identification of the relevant primary and secondary organizing principles which determine the illness, with an attempt to protect the decision-making process from the confounding effect of the idiosyncratic and/or cultural characteristics of the person affected by the illness.

It should be noted that the disease categories identified by employing the primary and secondary organizing principles of psychiatric nosology correspond with the disease categories identified by the traditional psychopathologic approach. The same, however, does not apply to the endpoints provided for the of the underlying mechanisms of these conditions.

### **Summary and conclusions**

1. Nosology is the scientific discipline which deals with the study of the organizing principles employed in classifying disease.



2. Development of nosology was triggered by the work of Boissier de Sauvages (1768) who, by adopting some of the basic rules employed by Linne (1753) in the classification of flowering plants, classified disease into 295 genera consisting of 2,400 species.
3. The first among the syndromic classifications was that of Cullen (1772) who believed that “all diseases with their seat in the nervous system are associated with mental derangement” and classified illness into “fever,” “cachexias,” “local diseases” and “neuroses.”
4. The origin of psychiatry as a discipline independent from neurology was in Feuchtersleben's (1845) recognition that not every brain disease is associated with mental derangement.
5. Griesinger's (1845) acknowledgement of the lack of identifiable neuropathology in three of the four mental syndromes described by Pinel (1798) and Esquirol (1838), coupled with a firm adherence to the biologic tradition of Cullen (1772), led him to believe that in mental syndromes in which neuropathologic changes are absent, such changes will become detectable at a later stage of disease development.
6. Neumann (1859), a prominent advocate of Griesinger's (1845) unitary concept, acknowledged that mental derangement without identifiable neuropathology might consist of a biologically heterogeneous category and emphasized the need for employing “temporal” and/or “spatial” organizing principles in the identification and classification of these conditions.
7. In the absence of an organizing principle, the descriptive observations yielded "individual psychoses" in which, according to Birnbaum (1923), “each psychosis was unique.”
8. The first primary organizing principle for the detection and classification of nosologic categories was based on Jaspers' (1913) separation of personality “development,” expressed in behavior and life events of the life history, from disease “process,” displayed in pathologic forms and the patterns of the case history.
9. The second primary organizing principle, introduced by Kraepelin (1899), was based on the “course” and “outcome” of illness.
10. The third primary organizing principle, “polarity,” was introduced by Leonhard (1957) who distinguished between “polymorphous bipolar” and “monomorphous unipolar” disorders.

11. The first secondary organizing principle was based on the recognition of the importance of the spatial organization of the disease, i.e., the structures affected in terms of Wernicke's (1899) "psychic reflex" by the psychopathologic process.
12. The second secondary organizing principle was based on the recognition that in some mental disorders the pathologic process remains "partial," "abortive," "selective" and/or "incomplete."
13. The concept of "partial insanity" is based on Lasegue's (1852) description of "persecutory delusional psychosis" in which, in variance with "total insanity," the personality remains preserved.
14. The concept of "abortive insanity" is based on Westphal's (1878) description of "obsessional neurosis" in which, in variance with "true insanity," the patient is cognizant of the pathologic nature of their condition.
15. The concept of "selective insanity" is based on Wernicke's (1899) recognition that in "acute delirium," in variance with the "unselective" impairment in "chronic dementia," there is a "selective" impairment of "allopsychic" integration while "somatopsychic" and "autopsychic" integration remain preserved.
16. The concept of "incomplete insanity" is based on Leonhard's (1957) description of "pure depression" and "pure euphoria" in which, in variance with "complete insanity," the psychopathologic process does not involve all three components of the "psychic reflex."
17. Demonstration of validity is an essential prerequisite for accepting a new nosologic category for inclusion in any classification.
18. Klerman and Hirschfel (1981) pointed out that "signs and symptoms comprising a nosologic class should cluster together more frequently than should be expected by chance" and "multivariate statistical approaches, and especially factor analysis, can be used to test the internal consistency" of nosologic constructs.
19. External correlates, including "antecedent," "concurrent" and "predictive" validators as proposed by Robins and Guze (1970, 1972) and also by Kendler (1980, 1991), are the most extensively employed "validators" of psychiatric illness.
20. Roth and Barnes (1981) pointed out that the validity of diagnosis is judged by its "fruitfulness as a source of hypotheses regarding etiology, course and treatment response" and "by the extent to which the syndrome has proven to be a distinctive constellation or cluster that could be identified by others."

21. It is a commonly held view that any attempt to classify mental illness is premature because the etiology of the majority of psychiatric disorders is unknown.
22. Etiologic concepts, such as “endogenous psychosis” and “reactive psychosis,” have neither yielded testable etiologic hypotheses, nor provided a new organizing principle for the classification of mental illness.
23. Diagnostic concepts, such as “organic” and “exogenous,” are intimately linked to distinctive clinical features, i.e., “dementia” and “delirium,” and yield testable etiologic hypotheses.
24. Jaspers’ (1913) notion of the “conceptual continuum of disease entities” rendered “relative disease entities acceptable for direct investigation” and opened that path for the development of a valid nosology in psychiatry.
25. Within the traditional psychopathologic frame of reference (in which psychopathologic symptoms are the building blocks of mental illness), the relative frequency of pathologic forms of experience at a point of time provides the clinical syndrome.
26. Within the disease-oriented psychopathologic frame of reference, it is in terms of its “dynamic totality” that each mental illness is defined; and it is in terms of its specific structure created by the adding of each single element of its “dynamic totality” that mental illness is perceived.
27. Introduction of therapeutically effective drugs led to the replacement of the psychopathologic with a biologic conceptualization of mental illness.
28. Within the new biologic frame of reference, psychopathologic symptoms are perceived as manifestations of pathologic processing of experience and nosologic entities are seen as distinct structures determined by the developmental stages of different unfolding psychiatric illnesses.
29. In variance with the analytic-psychopathologic approach which is based on the detection of psychopathologic symptoms displayed, the nosologic is a holistic approach which is based on the identification of the relevant primary and secondary organizing principles of mental illness.
30. The disease categories identified by employing the primary and secondary organizing principles correspond with the disease categories identified by the traditional psychopathologic approach, whereas the endpoints provided for studying the underlying mechanisms of the different conditions differ.

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