



HISTORY OF MENTAL CONCEPTS

A new classification of mental illness based on brain functions

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Classical text from: Miraglia BG. (1847) *Cenno di una nuova classificazione e di una nuova statistica delle alienazioni mentali fondate su principi frenologici considerati nei loro rapporti con la patologia del cervello*. Tipografia del Reale Morotrofito, Aversa.

On occasion of Miraglia's birth bicentennial

The classification of mental disorders based on their phenomenal picture is in crisis and we need a new revolutionary classification primarily based on brain functions: mental disorders shall be derived from dysfunctions of brain circuits performing specific mental functions. This sentence could be taken from a today's paper discussing the crisis of the DSM-5 and the RDoC Project as a possible revolutionary model based on brain/cognitive dysfunctions (e.g., Aragona, 2014). But this same sentence applies very well to the proposal of a new classification and a new statistics written in the 19th century by the South-Italian alienist B.G. Miraglia, entitled "Outlines of a new classification and a new statistics of mental alienations based on phrenological principles considered in their relationship with brain pathology" (Miraglia, 1847).

In his book Miraglia relies on Gall's (1825) phrenological description of the localization of mental functions in the brain structure. He applies these principles to mental illness, deriving his classification from the primary functions that are supposed to be altered. In this way, the description of the syndrome as it presents itself at the phenomenal level is reconsidered as the output of basic alterations in brain functioning, thus deriving a clear, simple and rigorous classification. The increased activity of all mental functioning produces a general hyperactivity called Mania; the increased activity of only a few brain areas produces a partial hyperactivity (Mono-mania), of which several forms may occur depending on the altered brain circuit; the general depression of mental functioning is responsible of a phenomenal picture called Melancholia, while the depressed functioning of only some brain localizations lead to several possible forms of Mono-melancholia; finally, inertia of brain functions may produce Dementia (deep lesion of most or all primary brain functions) or Partial Dementia (only some brain areas), while a deficit of activity due to altered brain conformation is responsible of Idiotism (general deficit) or Partial Idiotism (partial deficit). The reader will probably find odd and funny the names of the functions attributed to discrete brain areas; however, it should be admitted that the procedure is logically cogent and rigorous, and not theoretically so different when compared to contemporary neo-phrenological ideas in 21st century neuroscience. Are we all sure that in the 23rd century our current localizations of brain functions will look very differently?

Keywords: phrenology, alienism, psychiatric classification, brain functions, locationism, neuroscience

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To the medical section of the VIII Congress of Italian Scientists, Genoa

The enthusiasm for the progress of science that brings you here, famous men of Wisdom, encourages me to expose to your judgment a project of new *Classification* and new *Statistics* for mental illness. My experience in studying mad people and the unsatisfactory [*classifications*] existing in asylums, leading to wrong ends, solicited me to elaborate it.

I hope my project will be of your interest and refined by your intellectual observations because I verified it to be useful and convenient for science. [p.1]

All existing classifications of insanity are based on erroneous principles because it is considered:

- 1st That memory, will, attention, etc., in short all the general faculties in insanes may become ill primarily and exclusively, either because these faculties are thought to be primitive or to be centralized, that is placed in a point in the brain;
- 2nd That the shape of madness is absolutely constituted by the nature of causes;
- 3rd That it would be appropriate to classify alienation through simple symptoms; for example, all

the mental fixations belong to the same species;

I ask you, dear Congregants, is a similar classification of mental alienation wrongly grounded more on the principles of a false philosophy rather than of a physiology of the brain?

This terrible disease, affecting the most sublime mental qualities, shrewdly studied by great men for relief of distressed people [*infelici*], was identified only in its appearances; the medical attention was uselessly directed on these personified appearances.

A philosophy determining as primitive and fundamental faculties their [*of the appearances*] general attributes, both taking them in isolation and/or as complexes, necessarily led to false consequences; therefore, to obtain detailed knowledge of the perversion of intellectual faculties it is appropriate to be learned about them, because even if they are part of a principle [*principio*] which is different from organs, they can manifest themselves only through a normal organic function.

My experience and the study of the facts led me to verify what Gall (1825) said:

“It is impossible to have the right idea about mental illness if you have no clear idea of brain functions in an healthy status”

As long as the general faculties of the brain were personified, it was impossible to detect positive principles of physiology of intellect. So it can be said that until diseases of the mind will be based on this ideal classification of human faculties (that is to say that these abstract faculties are imagined to be primarily affected), an *Intellectual Pathology* will never exist.

The faculties of the mind can express themselves only through organic brain functions, each of them must be regarded as joint and dependent on the actions of a special organ; so it is crucially dependent from it. But since each primitive faculty may have some general attributes of his essence either because of its nature or because it acts together with other fundamental faculties, then the human mind by abstraction of these attributes outlines a series of general faculties and sees as simple and original faculty only total or abstract attribute.

So as much it is necessary to admit special organs from which primitive faculties manifest

themselves, as it is absurd wishing to find special organs for the general attributes that are nothing but an abstraction of the human mind. [pp.2-4]

Having made these observations, or illustrious Wise men, does it result easy to see that admitting the possibility for the general faculties of the brain to be primitively sick is nothing else than an intentional personification of the moral symptoms of insanity?

Since I am convinced that it cannot be conceived a real idea of mental alienations without putting them in a relation to the primary lesion of the fundamental faculties of the brain, on the next principles I based my new Classification of insanity and the new Statistics that I call *Moral Statistics* because it measures the degree of injury of the different faculties:

1st Madness is the absolute consequence of the alteration in the functions of the cerebral organs: all of the alterations have to be imagined considering a dynamic or physical change in the basic fibers of the organ itself; it is through their disposition and normal attitude that the primitive functions, called fundamental faculties, are performed;

2nd The disorder of the general or abstract faculties of the brain is nothing but a necessary consequence of the disturbance of the primitive faculties, and that can only be regarded as a symptom indicating approximately affection of the original faculties and, at the same time, of the organs of the brain displaying them throughout their functions;

3rd In case fundamental faculties get primitively sick because of special affection of the organs that make up the brain mass, *one, more than one* or *all* of them can get sick, and then a necessary consequence will be the disorder in either part or all of the similar attributes representing the general faculties;

4th The organs of the brain that may become ill in isolation or in complex get their activities infected through *energy*, or *depression*, or *inertia* or *deficiency*. So the madness can take the appearance of these three characteristic forms; i.e. for *enhanced activity*, or for *depressed activity*, or for *inertia* or *deficiency of brain activities*;

5th Mainly disturbing only one fundamental

faculty, this originates the *species* of madness, which can belong to one of the three great *genres*; 6th The genres of madness categorized in such a way, therefore, give rise to their respective *species* of which own the nature. [pp.18-19]

A NEW PHRENOLOGICAL CLASSIFICATION

First genre: Mania

Lesion of many or all of the primary faculties of the brain for *exalted energy* of activity in the fibro-molecular movements of the cerebral organs. [p.19]

Species: Mono-mania, or mania in the state of mental fixation

That is absolute or primary lesion of one or more limited primitive faculties of the brain for *exalted energy*.

Mental fixations can be innumerable because innumerable can be the functional combinations of each primitive faculty with the others.

It is for this reason that I reduce mental fixations belonging to both this first and the second genre in two classes.

The first contains those mental fixations related to the injury of a single primitive faculty; and the second contains those that, although related to the main lesion of a single primitive faculty, also are complicated by a primary or consensual lesion of one or more other limited faculties. [p.25]

First class of the mono-manias: selected lesion of one fundamental faculty

- Lesion of affectivity
- Lesion of equilibrium
- Lesion of ability to love [amatività]
- Lesion of destructivity
- Lesion of Self esteem
- Lesion of approvability [approbatività, *the examples given are delusions of grandeur*]
- Lesion of veneration
- Lesion of vision
- Lesion of computing
- Lesion of language
- Lesion of comparison [*examples refer to the inability to give different value to opposed ideas*]

Second class of the mono-manias (lesion of some fundamental faculties)

- Lesion of parenting [filogenitura], combativeness and attainment [acquisività]
- Lesion of vision, destructivity and secrecy [secretività, *this last term is difficult to translate, the example refers to a person having an internal dialogue with a spirit*]
- Lesion of veneration, parenting and circumspection
- Lesion of veneration and ability to love

Second genre: Melancholia

Lesion of many or all of the primary faculties of the brain for *depression* of activity in the fibro-molecular movements of the cerebral organs. [p.50]

Species: Mono-Melancholy, or Melancholy in a state of mental fixation

That is absolute or primary lesion of one or more limited primitive faculties of the brain for *depression of activity*. [p.51]

First class of the mono-melancholias: selected lesion of one fundamental faculty

- Lesion of ability to love
- Lesion of veneration

Second class of the mono-melancholias: lesion of some fundamental faculties

- Lesion of eating [alimentatività] and vision with depression of love of life
- Lesion of destructivity, affectivity and love of life
- Lesion of veneration and destructivity
- Lesion of eating and circumspection with abnormal excitation of love of life
- Lesion of veneration, vision and equilibrium

Third genre, 1st: Dementia

Deep lesion of many or all of the primary cerebral faculties for *inertia* of activities in the fibro-molecular movements of the cerebral organs. Ordinarily *Dementia* is the effect of each of the two described genres. And the observation leads me to believe that the *inertia* of brain activity that can be seen in this form of alienation is the result of the infiltration of serum in the Pia [Mater] of the meninges; infiltration which propagate in the brain mass offending fibers and

functions. [p.57]

Species: Partial Dementia

Deep lesion or deficiency of one or more limited faculties for *inertia* of activity of some of the cerebral organs. [p.59]

Third genre, 2nd Idiotism

Deficiency of performing some or all of the primary brain faculties due to *absolute deficiency of activity* by reason of a vicious organic conformation of the brain. [p.61]

Species: Partial idiotism

Deep lesion or deficiency of one or more limited faculties for *deficiency* of activity of some cerebral organs. [p.61]

A CLINICAL EXAMPLE

Not normal [innormale] *exalted excitement of all the primary faculties*. - Consecutive symptoms indicators of the fundamental lesion: *disturbance of their respective attributes, memory, attention, etc.* - MANIA.

Giuseppe Zannella, aged 26, farmer, bachelor, of bilious-sanguine temperament, came in the Morotroffio on April 23, 1843. The occasional cause of his mania was attributed to exalted imagination.

Disturbance of all primitive faculties, which being excited did not correspond in any way to their manifestation, and their attributes showed themselves only in the maximum disturbance. Although his incoherent delusions were furious nevertheless he showed himself shy and fearful. Continuously he shouted execrable blasphemies; and the inconsistency of his ideas was extreme. He had a voracious appetite, swallowing everything was handed him. Pierced a complicated tabes to hydrothorax on January 6, 1844.

Necropsy. - The head is proportionated to the person: high and wide skull at the top-rear, indication of the predominance of moral faculties. It was to be highlighted a strong prominence in the rear of the upper half of the average frontal bone, occupying portion of the parietal bones along the midline; sign of the predominance of certain primitive faculties (*Veneration* and *Firmness*) above all the others.

Cranial bones thin and transparent in the vertex offering therein to the sides of the midline

two cavities, result of great action of the gyri *Veneration* and *Firmness*, which were very prominent. The meningeal vessels in the back are turgid with blood: and between the dura mater and the arachnoid there is a liquid and gelatinous yellowish substance. Infiltration of serum in the pia mater.

In the left posterior lobe of the brain the gyrus [circonvoluzione aggomitolata] corresponding to the back-lower corner of the parietal bones (*combativeness*) was found changed into a bladder containing about an ounce of serum pus-like, and the one that is towards the bottom and back of the temporal bone (*love of life*) very injured in the cortical substance. On the right side the similar gyri were weak and depressed. The left hemisphere was interested by a more sensitive softening than the right one. Little serum was in the ventricles: the brain bulge was softened and of somewhat yellowish color.

In this case, the necropsy findings explained the disorder of the primitive faculties, and also as a necessary consequence [they explained] the lesion of the corresponding general faculties. So the noise and greater excitement had occurred in the abnormal [innormali] functions of the gyri devoted to the feelings *Firmness* and *Veneration*, because these gyri prevailed in volume and in all other activities, such as the deep impression which they have occasioned in the interior of the skull.

The fear and cowardice are related both to the total destruction of the left gyrus (*combativeness*) and also to the lack of active function in the similar [gyrus] in the right hemisphere, interested by a deep lesion, and also to an abnormal excitement of the neighboring gyrus (*love of life*). [p.10-11]

CONCLUSIONS

This classification is totally new because it is based on phrenological principles corroborated by the pathological anatomy; and it has also as its basis the state and degree of the lesion of the organic functions of the brain. [...] I compare the state of perturbation of faculties and the apparent degree of development of brain organs. [...] I'm convinced that uniform *classification* of madness and *moral statistics* could be useful for

the asylums and science itself. For this reason I ask the Presidency to establish a commission of medical doctors - phrenologists in order to consider and relate:

1st If such classification of mental alienations based on phrenological principles and on the state and degree of the lesions of brain organs could be the standard [norma] for a uniform classification.

2nd If the moral statistics I excoigitated by comparing the state of perturbation of the faculties and the apparent degree of development of the brain's organs, assisted by my Classification of madness, could likewise be used as a standard [norma] for a uniform Statistics. [p.63]

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Translation

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Table VI [pp.70-71, modified]
Comparison of the state of the lesions of the fundamental faculties and their organs with the apparent degree of development and attitude [attitudine] of the same brain organs

Faculty Predominance		1 st Genre Mania				2 nd Genre Melancholia				3 rd Genre				Total		
		Genre		Specie Monomania		Genre		Specie Mono melancholia		1 st Demen tia		2 nd Idiotism				
Prevalence, organic or of aggregated faculties	Affective	m	f	m	f	m	f	m	f	m	f	m	f	m	f	
		Intelective	5	4	0	1	1	0	2	0	0	0	0	0	8	5
		Instinctual and Perceptual	16	3	4	0	3	3	6	1	4	4	0	0	33	11
		Moral and Reflexive	4	2	1	1	1	0	2	0	0	0	0	0	8	3
		Instinctual and Reflexive	9	2	0	0	0	1	1	0	0	1	0	0	10	4
		Moral and Perceptual	10	3	3	3	2	0	5	1	3	1	0	0	23	8
		Total	100	29	16	18	14	5	28	7	9	7	1	0	168	66
Total		129		34		19		35		16		1		234		
		163				54				17						
Preponderance, organic or of aggregated faculties	Instinctual	m	f	m	f	m	f	m	f	m	f	m	f	m	F	
		Perceptive	1	1	1	0	2	0	1	1	0	0	0	0	5	2
		Moral	9	1	4	1	3	2	8	1	3	0	0	0	27	5
		Reflexive	2	1	0	0	0	0	0	1	0	0	0	0	2	2
		Total	25	15	6	2	5	2	10	3	5	1	2	3	53	26
Total		40		8		7		13		6		5		79		
		48				20				11						

Legend [p.72] and Figure 2 [p.75]
Phrenological correlation between brain loci and putative mental functions

