Order From Chaos

By Donatella Marazziti, MD

Psychiatry research and practice are undergoing a process of profound change sustained by neuroscientific data. On one hand, this has permitted great advancements in the fields of diagnosis, pathophysiology, and treatments of mental disorders. On the other hand, it has raised new doubts and problems. Nosological categories are subject to continuous definitions and refinements, the cutoff points and limits of each entity move from one part to another. New concepts such as comorbidity or spectrum disorders are introduced to accommodate clinical observations and findings; therefore, diagnostic criteria have become more reliable, but still are not universally applied and not paralleled by adequate instruments for assessment.

Similarly, the emergence of biological theories in psychiatry, triggered in the beginning by psychotropic drug discovery, are now more autonomous and based upon neuroscientific paradigms. They are further strengthened by our increased knowledge of the pathophysiology of mental disorders. However, no real causality model or mechanism has been identified and we continue to describe biological correlates of mental disorders, without touching their secret nature. Therefore, it seems reasonable to devote another issue of CNS Spectrums to open questions encountered in psychiatric practice, such as those related to obsessive-compulsive disorder or mixed states, and to methodologies that might be helpful to psychiatrists, although current applications of such methodologies are not yet clearly visible.

In fact, psychiatry has reached a critical point: We know where we left off and the subsequent steps, but the current accumulation of data are growing at such a pace that it is sometimes difficult to follow even single topics—to orientate oneself in the “jungle” of inputs and findings. This process appears in some way senseless or too chaotic to be approached by traditional methods. Certainly, this peculiar situation should force us to be more creative than in the past, to reshape our minds, to try “new ways of thinking about the brain,” as Crick stated nearly 20 years ago. This attitude is urgent and necessary if we want to proceed and to cope with the terrific growth of neuroscience and its impacts on psychiatry.

If revised, even traditional approaches, such as those provided by neuroendocrinology, may constitute instruments that shed a new light on brain mechanisms. Computer applications in psychiatry, as is easily predicted, will become broader in the next years. We should be aware, however, that they are only aid instruments and certainly not objectives. Also, we must have a certain degree of courage, and maybe even madness, to initiate new pathways.

With bold extrapolations, Einstein shaped a new vision of the cosmos and of natural phenomena that gave rise to the profound changes in modern physics whose development could not be predicted and whose future achievements cannot be easily envisioned. In order to give an idea of the methods used in modern physics, this issue of CNS Spectrums contains a paper on the problems connected with the study of complex systems such as the brain (“Complexity in Science” by Dr. Arecchi), a paper that might appear difficult to non-specialists, but I believe it merits a careful reading because of the suggestions it provides.

It is really interesting that chaotic phenomena may be subjected to mathematical analyses and described in terms of equations. It is even more intriguing that increased chaos does not always destroy order, but creates a new type of order that is able to transform the multitude of the constitutive elements in a coherent whole. Therefore, order and chaos cannot be considered total opposites.2 And what is more suitable than this model to explain the complexity of the brain and mental disorders? According to these concepts, the difference between physiological and pathological phenomena is not net, since a disease may be considered as a consequence of physiological variability. “Order from disorder sprung,” the great writer Milton wrote, and I fervently believe that the human brain has the possibility and the skills to find the principles governing its apparent chaos.

REFERENCES
INTRODUCTION

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