
CONTEMPORARY ISSUES IN MODELING PSYCHOPATHOLOGY

NEUROBIOLOGICAL FOUNDATION OF ABERRANT BEHAVIORS

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PREFACE

In the Hans Christian Andersen story, 'The Nightingale', a royal court was treated with disdain for judging a mechanical model superior to a live bird. One might wonder why? After all, the analogue model did sing. The number of songs was certainly limited, but they were predictable, replicable, and easy to trigger. Their 'preprogrammed' character would have even offered certain advantages for planning some experiments with the real birds, if needed. Those who have been humbled by the efforts to produce animal models of psychopathology may understand the sentiment of the royal court.

Despite considerable progress in clinical and basic neurosciences the cure of psychiatric disorders is still remote, little is known about their prevention, and the etiology and molecular mechanisms of mental disorders are still obscure. Psychiatry is not high on signs and markers, so that diagnoses are still guided by the patients' stories. The mission of animal models is to bridge the gap between "the story and the synapse". The questions to this approach are, What good might come from such a model? Are we wasting our time? How far can we carry results from model animals, like rats or mice without practicing what Dennett (1995) called "greedy reductionism" and causing a highly distorted view of the field and its goals? The answers are not easy to come by. As Susan Iversen wrote in 1987, "A decade ago it was a satisfying experience to prepare a review chapter relating to animal models of schizophrenia. At that time it seemed that everything was beginning to fit together and that the answers to the remaining problems would fall into place quite soon. This situation is rather different now" (p. 171)...

Actually, in 1987 life was still easy. The Diagnostic and Statistical Manual of Mental Disorders (DSM) included then 272 disorders. The DSM-IV, published in 1994 had already 297 disorders and still counting. Assuming that the Wernicke-Kleist contribution to psychiatric nosology will finally regain its scientific respectability, the number of psychiatric diseases would easily go well over 300 items. That does not mean that our taxonomic order would be identical to the realities of nature or that mental disease would be promptly identified according to its anatomy and cause. As the 'library' of mental disorders keeps expanding, their diversity will never be matched by that of the 'library' of models. Clearly, our models are not intended to teach us much about rebellious adolescents, deficiency of moral judgment, altered insight or rationality, delayed identity formation, traumatic flashbacks, concentration on depressive ideas, and rumination of past faults, and much more of all that is neatly packaged in DSM. Psychiatry has yet to acquire the power of neurology, where the nosological borders are more solid and are determined by a cluster of signs or markers which converge on specific brain sites, mechanisms, or genes so that even *Drosophila's* locomotion becomes a key to Parkinson's disease (Feany & Bender, 2000). That is why the library of animal psychopathology models has to be written in the language of orienting responses and startle, deficient memory, aberrant drives, sleep disturbances, fear, or changes in some acquired or innate behavioral patterns.

Should then the nosological labels so liberally applied to the experimentally reproduced phenomena be taken seriously? Are we generalizing too far from our models?

The present book is a sampler of some themes that reflected explicitly or implicitly these concerns and questions during a meeting on psychopathology modeling in Tel-Aviv in 1998. Collectively, they provide various perspectives on psychopathology suggested by targeted neurotransmitter changes, brain lesions, developmental manipulations, selective breeding, transgenic and knockout techniques, and experimental behavioral aberrations. Its contributors are active neuroscientists of the US, Canada, UK, and Israel. The list was limited due to space considerations and our ability to identify appropriate contributors able to complete the chapters within a narrow time window. The book provides, however, adequate evidence that animal models have become an integral part of psychiatry research. This reflects an irreversible turn to the biological bases of mental illness which psychiatry was nudged to take since the early 1950's. It was initiated and lead by Dr. Seymour Kety, then the first scientific director of the National Institute of Mental Health. Among many other things, we owe it to him that not many psychiatry purists throw hands up in mock display of dismay at the limitations imposed by the method of scrutiny of mental disorders. This great scientist and a unique man died in May 2000. My sad privilege is writing these lines to a book that we were hoping he would be able to introduce.

Before closing, I have several debts to acknowledge. My thanks and recognition goes to Dr. Doug Jones from NIMH who designed the cover for the book which alone will certainly prod many to thumb it. I am extremely grateful to Mary Panarelli at Kluwer Academic who gave valuable assistance at a number of crossroads, when we were about to run a red light. Last, but not the least, Mike Williams' enthusiasm and vision makes this book an opening volume for a series, *Neurobiological Foundations of Aberrant Behavior*. The aim of the series is to serve the growing community of neuroscientists and research psychiatrists who are engaged in the study of aberrant behavior and psychopathology. We hope that it will provide a crossroad where readers from every discipline can find something of value.

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