



SPECIAL REVIEW

GERIATRIC AT AGE 30

Michael Rolfe

A Beautiful Mind, by Sylvia Nasar. London: Faber & Faber, 1998. ISBN 0-571-21292-1.

The movie 'A Beautiful Mind' won Oscars for Best Picture, Best Director, Best Supporting Actress, and Best Screenplay. Hollywood typically does spectacularly badly in representing specialist knowledge to the movie-going public. This movie, which is about paranoid schizophrenia and the sort of mathematics it takes to win the Nobel Prize in Economics, did better than the poor average. However, it remains a Hollywood movie designed for a general audience. It fudged the core medical and mathematical issues for the sake of visual appeal. The biography that inspired the movie, however, is a blockbuster. It does a notably good job of presenting these issues to a general audience. It was a worthy Pulitzer Prize finalist and won the 1998 National Book Critics Award for Biography. Thanks to the movie, the bookshops are currently stocking the biography.

Alfred Nobel reputedly hated mathematicians. On his death in 1894, his famous will did not endow a Nobel Prize in mathematics. The salacious stories of sexual and professional jealousy behind this omission are disappointingly apocryphal. Neither, though, did Nobel endow a prize in 'the dismal science'. Only in 1968 did the Bank of Sweden controversially create the 'so-called Nobel Prize in Economics'. In 1950, therefore — when the 21-year-old John Nash submitted his 27-page PhD thesis — the prize it was to win him in 1994 did not yet exist.

The 'mathematics Nobel' is the Fields Medal, the ultimate distinction a mathematician can win. It is arguably harder to win than a Nobel. Nobels come every year but Fields Medals are awarded at the International Congress of Mathematicians, held only every 4 years. Furthermore, strong tradition demands that recipients be younger than 40 years of age. Even Andrew Wiles, who made newspaper headlines worldwide when he plugged a 350-year-old gap and proved Fermat's Last Theorem, missed out on the Fields Medal. His 41st birthday crept past as he made the final corrections to his proof.

The age restriction both encourages young researchers and acknowledges the shortness of a mathematician's creative life.

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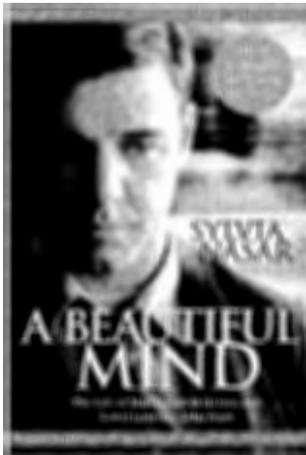
Compared with the general population, creative mathematics is overwhelmingly a young man's game. John von Neumann, polymath *wunderkind* of 20th century mathematics, used to say that 'the primary mathematical powers decline at about twenty-six', after which the mathematician must rely on 'a certain more prosaic shrewdness'. It is strikingly improbable that any mathematician, even the most spectacular of child prodigies, will produce groundbreaking work after reaching maturity.

The hubristic, ambitious, super-competitive Nash characteristically went after big problems. As a graduate student at Princeton, he approached Einstein to propose a correction to the Theory of Relativity. The great man listened politely and gently suggested that the young mathematician should study physics first. Instead, Nash turned to Game

Theory and dramatically extended the work of the god-figure von Neumann. He went on to solve some impressively difficult problems that might well have won him the Fields Medal. Colleague and rival John Milnor, who was dazzled by Nash's 'keen, beautiful, logical mind', wrote, 'To some, the brief paper, written at age 21, for which he has won a Nobel prize in economics, may seem like the least of his achievements.' Part of his latter work was independently duplicated, however. This sufficed, he suspected, to deprive him of recognition. At the age of 30, with no Fields Medal, he faced the prospect of becoming a mathematical geriatric.

'It is not bearable to contemplate a brief distinction and burgeoning of activity... followed by a lifetime of boredom,' wrote Norbert Wiener, ex-child-prodigy and creator of the science of cybernetics. Seeking the recognition he craved, Nash desperately tackled the biggest plum of all: the proof of the Riemann Hypothesis. He failed. It remains today the most important unsolved problem in mathematics. He also addressed a criticism of Einstein's, that quantum mechanics and relativity, although both well established, are incompatible. He made no breakthrough there, either, and Einstein's criticism has yet to be answered.

The beautiful mind then wandered into paranoid schizophrenia. When his family could no longer cope, they had him committed to the health care treatments of the day. The maths geek who craved solitude was assigned a serial number and lived locked in a room with 30 to 40 other inmates. The beautiful mind underwent sixties-style drug therapy, insulin coma therapy, and electroshock — treatments that always lacked convincing evidence of efficacy. By refusing to take antipsychotic drugs after 1970, though, Nash may have saved himself from tardive dyskinesia and the mental deadening that, when remission eventually came, would have barred him from the world of mathematics. Very little of this, or of the mathematics, comes through in the movie. The book is incomparably better.





one actually have an influence? (I'd be delighted to be proved wrong on this, but I would suspect that the current position in South Africa, for example, where there is gross stigmatisation of mental illness, with abysmal under funding of psychiatric services and of psychiatric research, is unlikely to improve in the near future.)

There is also the risk of insufficient emphasis being placed on the evidence-based approach. This volume certainly attempts to be scientific, referring to some evidence e.g. p109 and emphasising the need for further research e.g. p112. But is this enough? Any new medication that comes to the market is required to undergo rigorous controlled trials in order to demonstrate efficacy and safety. Surely at least the same degree of rigor is necessary before new socio-political policies, which may require enormous resources and have the potential for inflicting tremendous harm, are blithely introduced. The Cochrane Collaboration is not referenced in the index; a notable omission given the valuable contribution of this important effort to emphasise the value of an evidence-based approach towards assessing pharmacological treatments and other kinds of intervention. How good, really, is the evidence behind the proposals in this report?

On this point, I noted at least some points in the report that flew in the face of the evidence-base – including the suggestion that PTSD is culture specific, overdiagnosed or 'invented'; the assertion that antidepressants are for depression while anxiolytics are for anxiety; the argument that new generation antipsychotics are not more effective than older ones; and the minimisation of the value of pharmacotherapy in attention deficit disorder.

Another risk relates to the WHO's particular interest, for example, in matters such as government policy, notwithstanding that many of the psychiatric advances noted here have been driven by the private sector. The resources and power of the pharmaceuticals are enormous; the report ignores this rather than thinking through the crucial question of how best to engage pharmaceuticals to achieve its own objectives. It fails to debate fully contentious issues in mental health policy such as prescription by psychologists, working with traditional healers, or the prevention of and response to social violence. It predictably lauds the value of treatment in primary care but arguably fails to tackle the real conceptual and practical difficulties this involves.

This report will be a valuable resource for those fighting the good fight to promote awareness of mental disorders and to prevent stigmatisation of those suffering from these most disabling of medical conditions. In serving that purpose it is a useful addition to the literature (although everything in it can likely be found in other sources, the imprimatur of the WHO is perhaps uniquely valuable). Whether this volume itself will in fact significantly advance this good fight, is another matter.

Dan Stein

NEUROPATHIC PAIN

Pathophysiology and Treatment. Progress in Pain Research and Management Volume 21. Edited by Per Hansson, Howard Fields, Ramond Hill and Paolo Marchettini. Pp x +277. US\$79. IASP Press. 2001. ISBN 0-931-092-38-8.

The management of chronic pain remains a difficult challenge. Our lack of understanding of the pathophysiology of chronic painful conditions has led to our inability to develop new, more effective treatments for these conditions.

An enormous amount of pain research has been undertaken over the last decade or so, and this book aims to summarise the progress that has been made. Each chapter examines a particular aspect of neuropathic pain. In each, an expert reviews the evidence and explains the current controversies and lines of future research. The chapters are well referenced and the references are up to date.

This is not a book for someone seeking an introduction to the subject. It is aimed at an audience wishing to keep up with the latest developments in the field. In this respect it succeeds admirably and I would recommend this book to anyone dealing with chronic pain patients. However, with a list price of \$80 for a relatively slim volume, it is hardly a bargain.

Stephen Rous

ACUTE AND PROCEDURE PAIN IN INFANTS AND CHILDREN

Edited by A Finley and Patrick McGrath. Pp. x +183. US\$70. IASP Press. ISBN 0-931092-39-6.

This book has an unusual approach to the subject of paediatric pain in that it touches on basic science, clinical practice and ethical issues. The editors are well-known international experts in the field, as are the contributing authors, and this makes for a powerful combination in providing this reference on paediatric pain. It is published under the auspices of the International Association for the Study of Pain and is reasonably priced at US\$70.

The articles are carefully and thoroughly researched, well written and referenced, and form a cohesive collation of subject matter. A theme evident throughout the book is the awareness of how poorly pain in children of all ages has been managed in the past, and how this is currently being addressed. Understanding basic sciences, the neurobiology of pain and being informed of all modalities available for improving pain relief, improve the management of the child for painful procedures and postoperative pain, not to mention the appropriate treatment of chronic pain.

Regional and local anaesthesia is becoming increasingly popular, and the chapter by Woolf has interesting perspectives