[Book review] **Beware of Zebras**

**How doctors think**
by Jerome Groopman
Scribe Publications, Carlton North, 2007, 307 pages including notes 274-91 and index 292-307, paperback, $32.95

[1] At the outset let’s note that this paperback, published locally by Scribe, was available to Australian purchasers months ahead of the US where purchasers had to wait until March 2008 to purchase their paperback version published by Houghton Mifflin. This is a welcome change from the norm where we in Australia have invariably been last cab off the rank.

[2] This is another of the Harvard University professors of medicine, *New Yorker* staff writers and practising surgeons. Groopman has now published this, his fourth book. I have previously reviewed Atul Gawande’s *Complications* and am looking forward to his recently published *Better: a Surgeon’s notes on Performance*. Where Gawande had previously written of the inadequacies of surgery – an imperfect science – his latest is seeking to encourage improvement in the practice of medicine by encouraging the also rans to imitate the leaders. Groopman seeks to show how misdiagnoses occur because of failures of the thought processes of the medical practitioner.

[3] Of interest is the fact that Groopman writes as a healthcare consumer in addition to his role as a provider: a close call with the near death of his firstborn and now, with advancing age and normal wear and tear on his body, Groopman suffers from lower back pain and tendinitis leading to a persistent pain in his right wrist. As with us mere mortals, Groopman consults half a dozen specialists and, for his sins, is the recipient of four different diagnoses – better than economists – as the old joke goes: consult three economists and obtain four different answers.

[4] Similarly, while awaiting the results of a bone scan in relation to his wrist, Groopman receives a ’phone call in the evening from the radiologist – as he relates “as an oncologist, I know it is unlikely my bones would be riddled with tumors without any symptoms. But, at that moment, I was suddenly not a doctor. I was
completely a patient.” After a sleepless night further x-rays showing all clear allowed his panic to subside.

[5] Why the interest in the practice of medicine? This is a legal practitioner’s journal. It’s all decision making under uncertainty. For example, Dr Potchen of Michigan State U has studied decision making under uncertainty in law and in business as well as in medicine. Many of the terms used in Groopman’s book (Bayesian, probability analysis, heuristics, … &c.) and the researchers cited (Kahneman & Tversky, … &c.) also figure in legal decision making texts (and other areas requiring decisions under uncertainty). Kahneman’s research which saw him awarded a Nobel Prize in Economics is relevant in fields outside economics.

[6] Perhaps these books should be entitled something like How humans think and make decisions with particular reference to the medical profession. They are instructive and relevant beyond the area of medicine. These errors are not confined to medicine – the biases in thinking affect us all – in medicine, our health is affected; with other profession it may be our wealth or our liberty that is diminished or enhanced.

[7] Groopman writes of the possibility of mistaken diagnosis. This is not a ‘medical blunder’. If a surgeon amputates the healthy left limb instead of the cancerous right limb, that’s a blunder. Not only has the patient lost a healthy limb, he must further undergo losing the unhealthy one. Groopman is not concerned with blunders.

[8] Cognitive decision making is where the skillful surgeon or doctor falls into error through misdiagnosis. Medicine is not an exact science.

[9] The doctor must think and act – particularly in the emergency room – where leisurely contemplation is not an option. Obviously this is not common throughout all professions. One envisages it being applicable to airliner pilots faced with an emergency while the legal profession and the economists may have the luxury of thinking things through without urgency.
[10] So what are the cognitive errors we may commit? They include *Commission Bias* where we feel compelled to accomplish something by doing something. An early mentor of Groopman during his training, Dr Linda Lewis advised him, “Don’t just do something, stand there.”

[11] Another is *Attribution Bias* – for example, all Negroes are car thieves and all middle easterners are Islamic terrorists. Consequently real illnesses are passed off as alcoholism or other lifestyle choices. It takes a real curiosity on the part of the practitioner to delve sufficiently deep to uncover the real malady.

[12] The first case discussed by Groopman is that of Anne Dodge and her mysterious 15 year illness that had baffled all the specialists. Eventually they settled on a psychological explanation for their failure to diagnose her illness concluding she was wasting away from anorexia nervosa and bulimia. These faulty diagnoses were reinforced by each successive specialist ‘bringing himself up to speed’ by studying the previous reports prepared by the prior specialists. The hero is Dr Myron Falchuk who approached her afresh without the accumulated ‘wisdom’ of her prior diagnoses. He found her to be suffering from celiac disease, an autoimmune allergy to gluten where all the pasta and other bulk she was eating was rejected by her body. Her previous physicians, being unable to solve her problem, had written her off and the diagnosis was transported from one doctor to the next. Falchuck approached his new patient without reading up on her 15 years of accumulated medical reports and determined that her body was rejecting her nutrition rather than she, secretly suffering from bulimia, was purging herself unknown to her doctors.

[13] Whenever Groopman encounters a success yarn, he asks of the ‘wizard medico’ what was his biggest mistake. They all had them. Falchuk permitted his empathy with an elderly patient to miss his gastric lymphoma because he did not want to subject the patient to the discomfort and strain of the endoscopy. Groopman himself committed a similar error when he allowed his empathy with a patient to cut short his rigorous physical exam – “enough for today!” — when, after extensive chemotherapy, his weakened and exhausted patient was not coping well. Consequently Groopman missed the abscess on the patient’s buttock that sent him into septic shock and nearly cost him his life. Similarly, Dr Karen Delgado was brought up short by her patient
who told her “don’t save me from an unpleasant test just because we’re friends” – she had been contemplating not treating his thyroid cancer with radioactive iodine because of the enormous disruption this treatment inflicts on the patient’s lifestyle.

[14] Other errors include Availability – that is, familiarity with certain cases tend to direct the doctor to a similar diagnosis so that during a ’flu epidemic, all new patients present themselves as suffering from the ’flu. And, in most cases, this is correct. But there are the occasional exceptions when the patient is not suffering from the ’flu despite exhibiting similar symptoms.

[15] Anchoring – accepting the first viable explanation and failing to seek out an alternative diagnosis or additional evidence of a multiple problem. This is similar to search satisfaction. In most cases the single problem diagnosis is correct. But not always. The doctor and the patient should always be questioning “is there another possible explanation?” Search satisfaction is the diagnostician’s warm inner glow of having solved the immediate problem that the necessity of looking deeper is not considered.

[16] Outcome bias where the subconscious tendency is to choose the optimistic diagnosis (or best outcome) at the expense of the more pessimistic conclusion.

[17] Zebra retreat: this is a combination of anchoring and availability and involves dismissing the rare and opting for the commonplace while accepting the first viable explanation. Basically, a short summing up of this book is that surgeons and others should be aware that when they hear the thundering of hooves, they should think of horses, not zebras; but they should never forget that zebras remain a possibility. Fortunately for Anne Dodge, Dr Myron Falchuck didn’t mishear the zebra hooves as those of horses.

[18] A welcome feature of the book is the chapter notes with suggested further reading and references to the original sources of much of the material cited in the text for those wishing to dig deeper.