



Maternal deaths in South Africa

The Saving Mothers report 1999 - 2001 was launched on 8 March 2003. It has been driven by a desire to improve maternity care in South Africa.

This report on maternal deaths for the years 2001, 2000 and 1999 is the first triennial report by the National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD). Although the weakness in reporting of the previous (1998) report still exists, the numbers of deaths are again large enough to show trends and to evaluate avoidable factors, missed opportunities and substandard care. Further, while the maternal mortality ratio (MMR) cannot be calculated for the whole country, the NCCEMD believes that a realistic estimate of the MMR is between 175 and 200/100 000 live births. This indicates either an increase in the number of deaths over the previous figure of 150/100 000 live births, or an improvement in reporting. It is likely that both reasons apply. The increase in the number of deaths is largely due to an increase in deaths from non-pregnancy-related infections, mainly AIDS, and is likely to continue because of the natural history of the HIV epidemic.

It is important to note that there has been no epidemiological study of maternal deaths in developing countries equivalent to what is being attempted by the NCCEMD in South Africa. The only benchmark we have is the Confidential Enquiries in the UK. The notable successes achieved by the UK Committee occurred in a developed country, against a background of improving socioeconomic conditions, including the inception

of a National Health Service. Any possible impact of the NCCEMD of South Africa therefore needs to be set against the effect of the AIDS epidemic and the socioeconomic conditions in a developing country. Socioeconomic development is occurring in South Africa, but has as yet had little impact in the rural areas where most of the maternal mortality originates. Furthermore, although urbanisation has made access to health care facilities available to a larger proportion of the population, much more effort needs to be focused on public health education, in particular the benefits of proper maternity care.

All health professionals committed to maternal and child health must continue to obtain the necessary data required to build a sustainable evaluation capacity for reliable measurement of maternal mortality in our country. Only in this way can input be made to government to make informed decisions on the allocation of scarce health resources. Furthermore, every woman who becomes pregnant and continues with her pregnancy does so in the expectation of delivering a healthy child and the joy and satisfaction of watching the child grow. Surely it is the duty of society and the health care profession to do the utmost to fulfil this expectation?

J Moodley

R C Pattinson

For: National Committee on Confidential Enquiries into Maternal Deaths

The social sciences, the human genome and human nature

Adapted from a Graduation Address, University of Cape Town, 13 December 2002

The core function of the human and social sciences is critical enquiry concerned with questioning, analysing, interpreting and deconstructing human society and all its works. These disciplines deal with language, imagination, orderly thought, culture, creativity and emotion. They are the conscience of society and define its essential humanity.

Yet one great discovery of the 21st century, namely the deciphering by two large research teams of the near-complete chemical structure of the human genome,^{1,2} has been a largely ignored — and perhaps even unwelcome — non-event for most of the scholars who work in the humanities.

This paper does not seek to indulge in the scientific technicalities of the human genome, but rather to reflect on the

reasons for the indifference of the non-molecular biology community towards this discovery, to sketch the conceptual content of the human genome in order to explore its role in human behaviour.

An analogy can be drawn between a conventional book and the human genome, with the latter representing a (very long) book that encodes the possibilities and potentialities of a human life. This book is written in a language that has only 4 letters and leaves no spaces between words. You could say there are 1 million pages in the human book of life, equivalent to 1 000 volumes of 1 000 pages each. Actually, there are 23 chapters called chromosomes which — in the case of the human female — are each repeated once; males leave out one



of these repeats and replace it with a short chapter that encodes their maleness.

Only 1% of the whole text of the human book of life makes sense in terms of direct coding for components of the living body. The rest constitutes what has rather carelessly been called 'junk', although the only resemblance to junk is its organisation as in a junkshop. But in fact the 'junk' represents a vast collection of bits and pieces assembled during the process of evolution, many already known to be needed to 'make life work', with others biding their moment in evolutionary time.

In the simplest possible way, we could say that all humans differ from each other only in having different letters at particular positions in their otherwise identical books of life. The differences occur on average only once in every 1 000 letters. This is what makes each of us different, as shown by the identifiable individuality of our voices, our fingerprints and especially our faces. Black, yellow, brown and pink, our books of life, our 'blueprints', are 99.9% the same. The human genome therefore debunks racism or similar unscientific horrors.

The determination of the entire human book of life has opened vistas of discovery that are already being vigorously explored all over the world. A new archaeology has appeared in our genomic history, an intriguing example being that of the 'black Jews' of Venda who have been shown to be genetically related to the Jewish priestly clan of the Cohens.³ Intense searches are being carried out for genes that cause or are associated with diseases, especially interacting genes involved in complex disorders such as drug addiction.⁴ A new science has arisen called bioinformatics, for which the University of the Western Cape has an internationally recognised Institute.

Returning now to my earlier statement that the greatest discovery in biology since the double helix was a non-event in the human and social sciences, or, at best, a cause for concern that biologists would henceforth seek to explain human behaviour solely in terms of the genetic model, it is worth noting that social scientists have always been wary of the natural scientist's perceived reductionist approach to human experience and behaviour.

An article on the recent solar eclipse in a prominent South African business newspaper quotes D H Lawrence as saying that the world of science (meaning natural science) was a dry and sterile one, inhabited by people with an abstract mind. Scientists had killed the sun, he said, making it nothing other than a hot gas ball with spots. Coming from the other side, the American cognitive scientist Steven Pinker has published a book called *The Blank Slate: the Modern Denial of Human Nature*,⁵ in which he decries the so-called Standard Social Science Model which holds that all of a single person's characteristics are generated by that person's experience since birth. This he derides as obviously absurd, on a par with the amazing belief of Northern Europeans in the 19th century that tomatoes were

poisonous to eat, even as they travelled extensively in Italy and other Mediterranean countries and saw the locals happily consuming vast quantities of this dangerous fruit with no apparent ill effects.

Yet the same Steven Pinker previously wrote a book called *Words and Rules*⁶ which began to delineate a clear boundary between hard-wired, evolved and genetically determined instinct (regular verbs) on the one hand, and learnt aspects of human language function (irregular verbs) on the other, showing that a rational position can be found for those parts of human nature and capacity that are largely determined by the genes and those that are properties of complex systems made possible by genes but not determined by them.

Patrick Bateson, a biologist, in a hostile review of Pinker's *Blank Slate* book entitled 'The corpse of a wearisome debate',⁷ has criticised the way in which Pinker argues his strong case against the Standard Social Science 'blank slate' model. Proving the existence of in-built rules that underlie and generate aspects of human behaviour, he argues, does not mean these rules are the basis of 'real' human nature. Chess, he argues, has clear rules that can be explained to a child, but the actual game of chess is infinitely more than its rules. The interest and richness of the game lie in what can be generated on the basis of these rules.

The argument is exactly the same as in the example of the regular and irregular verbs, but the fact remains that the rules are actually there, and they are necessary for the whole behaviour. Human nature is not determined from a blank slate, where everything is the result of personal experience. Some of the basic features of particular components of human behaviour will be determined by genetic factors (often as a reaction to particular environments), as will some of the variations between individuals. Working out the genetic component will greatly facilitate working out the complex, 'top-down' aspects that make up the wonderfully rich possibilities of consciousness, and all of learnt human behaviour and social life.

So the great human genome discoveries ought to be of interest to the social scientist. Alexander von Humboldt saw the natural world as a unified whole whose structure was best understood through the human imagination.⁸ Most scientists share this enthusiasm for the revealed secrets of Nature; their lives are not dry and sterile, in D H Lawrence's terrible phrase, nor does the fact that the sun is in fact a giant hot ball of gas with spots make it less mysteriously magnificent to the receptive human spirit, least of all the natural scientist.

Edward O Wilson in his book *Consilience*⁹ put it as follows: 'Scientists should think like poets, work like bookkeepers, and write like journalists.' Consilience is what binds all disciplines in a great continuous matrix of human understanding, of Nature and of our place in it as humans. The reason why the concept of consilience is so important is that the problems we



have to deal with as a society are not divided into disciplinary domains such as philosophy, social anthropology, sociology, psychology or literature. They confront us with all these dimensions simultaneously, and require a consilient scientific approach that can bring together understandings from all domains of knowledge and enquiry, focused on the reality of the human condition.

There is no need or intention to diminish the worth of scholars in the social sciences and humanities, far from it. They are the people who study and penetrate the great world of the human capacity for love and hatred, for magnificent achievement and for criminal spite, for peace and for war. But they should not ignore the fact that the rules for the game of human life have a biological dimension which, if ignored or derided, may greatly limit one's ability fully to understand. One easily becomes a speculative observer of a chess game who does not actually know how the game has to be played and by what rules. (Alternatively, one becomes dangerously like a Russian guest who watched his first game of rugby in South Africa, and was heard to ask, after an intense attempt to figure out what was happening, 'Why don't they give each man a ball?') Surely we are now ready to accept the biological nature of our species, and the fact that we have become what we are through evolution? The human genome is the direct proof of our membership of a great human family that is 99.9%

identical under the skin, at the level of our genome; that has innate rules for behaviour that underpin and generate a basis for marvelously complex mental functioning; that has sufficient variation, most of which does *not* map with what we call race, to make us a very interesting lot; and that provides a great deal of what we need to understand ourselves much better, including the reasons why we sing and dance, love and fight, weep and laugh, make money and waste it, sometimes alone in the world, but mostly together with others, the essential nature of *ubuntu*.

Wieland Gevers

*Institute of Infectious Disease and Molecular Medicine
University of Cape Town*

1. International Human Genome Consortium. Initial sequencing and analysis of the human genome. *Nature* 2001; **409**: 860-921.
2. Venter JC, Adams MD, Myers EW, et al. The sequence of the human genome. *Science* 2001; **291**: 1302-1357.
3. Thomas MG, Parfitt T, Weiss DA, et al. Y chromosomes travelling South: the Cohen modal haplotype and the origins of the Lemba — the 'Black Jews of Southern Africa'. *Am J Hum Genet* 2000; **66**: 674-686.
4. Nestler EJ, Landsman D. Learning about addiction from the genome. *Nature* 2001; **409**: 834-835.
5. Pinker S. *The Blank Slate: The Modern Denial of Human Nature*. London: Allen Lane-Penguin Press, 2002.
6. Pinker S. *Words and Rules: The Ingredients of Language*. London: Weidenfeld and Nicolson, 1999.
7. Bateson P. The corpse of a wearisome debate. *Science* 2002; **297**: 2212-2213.
8. Bowler PJ. Climb Chimborazo and see the world. *Science* 2002; **298**: 63-64.
9. Wilson EO. *Consilience: The Unity of Knowledge*. London: Little, Brown and Co., 1998.