

Science or bio-piracy? A sociological examination of genetic research into the ‘warrior gene’ in modern Polynesians

Lena Rodriguez

PhD Student

University of Newcastle

Email: Lena.Rodriguez@newcastle.edu.au

Abstract

Advances in genetic testing and research have led to a proliferation of studies of indigenous people in an attempt to understand issues of ancestry, migration, susceptibility to specific diseases and predictability of behaviours. This paper questions the assumption that the ‘new genetics’ is value free and argues that this science is subject to a range of social constructions as part of the post-colonial discourse. In this paper I wish to discuss the selection of Polynesians as exemplars of the ‘Warrior’ or ‘Violent’ gene. A small study of seventeen Maori men has become the centre of an international controversy regarding the application and evaluation of genetic studies which seek to attribute determinist conclusions in the absence of other sociological data. This paper focuses on the genetic debate concerning Polynesians, and explores the extent to which the interpretation of these findings may be ethnocentrically formed.

Keywords: Indigenous, Maori, Genetics, Cultural Safety, Ethics

Why Polynesians?

The exponential rise in genetic studies, has generated a demand for more subject populations to examine. In the case of Polynesians¹, they have been singled out as allegedly being host to the ‘Violent’ or ‘Warrior’ gene. The physical makeup of Polynesians, and their history, has been incorporated into the fundamental thinking of geneticists seeking to piece together the ‘human genome puzzle’. Why Polynesians have been selected for this particular role, and the controversial interpretation of their genetic status, form the subject of this paper.

Polynesian means ‘people of many islands’. Having successfully traversed and occupied all the habitable islands from Hawai’i on the Tropic of Cancer, Stewart Island in the south, almost the sub-antarctic, Tonga in the west and Rapanui in the

East, Polynesians have proved to be the most successful navigators and sailors in human history (Davis 1992; Finney 2007). When early European sailors discovered how many islands were occupied and regularly re-visited by Polynesian craft, they were quite simply stunned. These early European sailors themselves conceded these were the greatest maritime voyagers the world had ever seen - 'the Vikings of the Sunrise' (Belich 1996). It is now acknowledged by Collingridge (2008) and others, that it is highly unlikely James Cook would have survived the great ocean crossings he did without the navigational knowledge, linguistic talent and diplomatic skill of Tupaea, a Tahitian priest and navigator. As the great voyages stopped around 800 years ago, Polynesians settled into culturally and linguistically defined archipelagoes.

In recent times, the sheer distances represented by these voyages has prompted interest by scientists as to what constitutes the genetic inheritance of Polynesians. In turn, this pursuit of ancient genetic codes, has given rise to the hypothesis that Polynesians were motivated to undertake these long sea voyages, impelled by the 'Warrior' gene. It has also been alleged that the aggressive impulses associated with this gene are in some way responsible for violence enacted by modern Maori men. This paper is an attempt to examine the ethnocentric bias underlying this theory, and questions the social construction of interpretations of Polynesian behaviours to fit the theory.

How the Warrior allele became the Violent Gene

Authors Stephen Oppenheimer (2003) and Jared Diamond (1997) have both had blockbuster success with their books on how the world was populated, when and by whom, using genetic technology and extrapolating interpretations of their findings.

Both subscribe to the theory that Polynesians were ‘genetically programmed’ to survive long canoe voyages, wars and unfavourable environments. The unparalleled feats of sailing, and successful occupation of islands in the South Pacific, have led one New Zealand research team to the conclusion that Polynesians have the ‘Warrior’ gene. With its implications of adventure, fearlessness, and aggression, it is this gene which these geneticists think may not only have inspired the great migratory fleets, but also be responsible for violence in contemporary Maori communities.

This gene, MAO-A (monoamine oxidase), which controls the production of an enzyme associated with the breakdown of several neurotransmitters in the brain, is currently at the centre of a scientific storm. In 2006, Dr Rod Lea, genetic epidemiologist at the Institute of Environmental Science and Research in New Zealand, delivered a non-peer reviewed conference paper to the International Congress of Human Genetics, based on a sample of 17 Maori men. The conclusions of the research team led by Lea (Lea, Hall, Chambers and Griffiths 2006) espoused the determinist view that the ‘Warrior’ gene, led to poor impulse control and violence in Maori men. In an address before his presentation, Lea stated: ‘Obviously, this means they are going to be more aggressive and violent and more likely to get involved in risk-taking behaviour like gambling ...’ (Lea 2006).

He further linked the same gene to high rates of alcoholism and smoking. Lea continued to make provocative announcements in subsequent media interviews, for example: ‘It is controversial because it has implications suggesting links with criminality among Maori people’ (Lea 2007). While New Zealand newspapers ran with sensational headlines, the Maori community was outraged (see below). The scientific community immediately moved to challenge Lea’s results and conclusions, condemn the team’s methods, and criticise the Ethics Committee which allowed the

testing and irresponsible release of conclusions. Researchers have also challenged the relevant Ethics Committee about whether participants were advised this research included the hypotheses of linking the ‘Warrior gene’ with contemporary violence and antisocial behaviour, and further, that such generalizations would be extrapolated to the entire Maori population (Crampton and Parkin 2007).

The scientific rebuttal

Given that these ‘findings’ were released at an international conference by a government researcher, there appears to have been an assumption that the link between the MAO-A gene and aggression in Maori, was based on robust scientific evidence. However the New Zealand scientific and medical community were quick to distance themselves from the claims of Lea’s team and further launched an extensive critique of the study in the New Zealand Medical Journal and other sources (Merriman and Cameron 2007).

Scientists critical of the study argue that on the genetic data available, MAO-A itself is not associated with aggression, despite Lea and colleagues’ claim of a ‘strong’ association.

There is no direct evidence to support the claim that the MAO-A gene confers ‘warrior’ qualities on Maori males, either modern or ancestral...(while) generalizing from a sample of 17 individuals not representative of the general Maori population; and the lack of scientific investigative journalism have combined to do science and Maori a disservice. (Merriman and Cameron 2007: 1252)

Merriman and Cameron (2007) also examined previous overseas experiments which had been conducted with Caucasian participants (see Caspi et al. 2002; Kim-Cohen et al. 2006). These reveal an association with the high activity variation of the gene, and males who were neglected or abused in childhood, exhibiting a higher risk of anti-social behaviour in later life. This appears to be evidence of a gene/environment

interaction, and the trigger for such behaviour having to be externally induced. In other words, the variant was dependent on the environment – analysed in isolation, the gene variant says nothing about aggression in male carriers. Spatz-Widom and Brzustowicz (2006) also regarded the racial link as insubstantial, and were critical of linking the MAO-A gene to antisocial or aggressive behaviour in contemporary Maori men without any explanation of socio-economic causalities.

From a Maori perspective, MP Hone Harawira said he had been hearing such things for decades: ‘Maori had a natural inclination to play the guitar, to play rugby, Maori were good on bulldozers etc... I’ve stopped listening to all that sort of carry on’ (Harawira 2007). He asserted the main factors contributing to Maori violence were high unemployment rates, poor health, lower life expectancy, poor educational achievement and in many cases severe poverty. Maori spokeswoman and co-leader of the Maori Party, Tariana Turia, was also interviewed regarding Lea’s findings and implications of violence. Turia contends, in response to the ‘Once Were Warriors’² stereotype of Maori, domestic violence in particular is the result of spiritual poverty, lack of opportunity and economic stress. She further argues, in relation to accusations of child abuse amongst Maori, that anthropological evidence and historical records document the rearing of children in pre-colonial Polynesia being described as socially inclusive, ‘indulgent’, and free of corporal discipline or punishment (Turia 2008; 2006; see also Levy 1973).

What’s in a name?

In his data and discussions, Lea used the term ‘Violence’ or ‘Violent’ gene. New Zealand and international researchers also failed to find any reference to the term ‘Warrior gene’, used interchangeably with the term ‘Violence’ gene, as applied to

humans in other studies (Merriman and Cameron 2007). They concluded that it was Dr Lea and colleagues, who extrapolated from a small sampling of men, that this variant occurred during the Polynesian migrations, and it was Lea's decision to refer to the gene as the 'Warrior allele' and also the 'Violent' gene. This raises another question in relation to this debate: to what extent was Lea influenced by living in New Zealand and being surrounded by highly visible 'warrior' imagery associated with the masculinity of Maori and Pacific Island men?

In order to understand the social construction of Lea's attitude to the naming and descriptive qualities of this gene, it is necessary to briefly examine the perception of Maori as 'Warrior' in the New Zealand context. Maori courage, resourcefulness and skills at war had left the British with little option but to compromise in the form of the Treaty of Waitangi in 1840. Although reluctant to commend Maori as superior strategists and soldiers, and possibly in order to explain their lack of a clear cut victory, the British were forced to acknowledge the Maori as 'Warrior' (Walker 1990). In the newly forged colony, Maori men were highly regarded for their 'warrior-like nature', physical prowess and nobility – all traits that were regarded as 'manly' and acceptable to the colonial masculine mindset (Hokowhitu 2004). These qualities were soon coopted in the national interest, firstly as soldiers, and subsequently, as sportsmen:

In the nineteenth century Maori masculine physicality was, like the untamed countryside, something to be conquered and civilized, in the twentieth century it was something to be harnessed to provide manual labour for New Zealand's developing colonial nation; in the twenty-first century it has become a spectacle played out by the overachievement of *tane* (Maori men) on the sports field. (Hokowhitu 2004:259)

Over time, New Zealand revelled in the accomplishments of the national rugby union team, the All Blacks, and celebrated the internationally recognised haka, Ka Mate. It was the haka, performed by both Maori and non-Maori players, which set the New

Zealand team apart from all others. ‘Haka’, most often simplistically translated as a war dance, does not do justice to the complexity and inspiration of the many hundreds of hakas that are performed by Maori. However, the sheer intimidation of the Ka Mate haka, imbued the All Blacks with an iconic ‘warrior’ status. This ‘warrior’ identity, associated with Maoridom, has been symbolically and shamelessly used in the national interest by serving to shape New Zealand’s national identity, yet at the same time being used by Lea and others to condemn Maori behaviour.

Hokowhitu (2004) argues this inflated, disproportionate praise of Maori as Warrior, has greatly diminished the recognition of more complex, compassionate and diverse behaviours that were evident in the pre-colonial Maori male identity. Matheson (2001) shares this view and argues that the same characteristics which were ‘allowed’ Maori men in the immediate post-colonial era, have been brought together in a form of hegemonic masculinity around labour, and particularly sport, that leaves little interpretation for young Maori men who are not drawn to the sporting arena, to find a cultural identity. In the study under discussion, the social construction of naming, the ethnocentric interpretation of data, and the dubious ethics surrounding this case have fuelled negative stereotyping of Maori and has had widespread repercussions:

It is harmful because it risks diverting attention from social and economic conditions which, by contrast, are amenable to change, no matter how challenging the processes of policy development needed to effect sustained improvement (Crampton and Parkin 2007: 1253).

So, although Lea has been roundly criticised for a lack of scientific and academic responsibility, to a large extent, the damage has been done. Maori masculine identity has been defined in the public mind, by its *inherently* aggressive, unpredictable and violent nature.

Who funds the research?

The bias and values of scientific endeavour are evident at every step of the research process from selection of what will be funded, to the final stage of recommendations and implementation of findings (Ehrenreich and English 2005; Smith: 1999). Consequently, discovering who benefits from these studies can be revealing. Large pharmaceutical companies are keen to enter government partnerships in order to have access to clinical research facilities, and ultimately stand to gain enormous profits from the sale of particular products, techniques and procedures. The agreement whereby the scientist (and/or their academic institution) claimed the patent on a technological process or findings, i.e. ownership of research output, has now largely been superseded by corporate funding of research and resultant corporate ownership (McNeill1993). Science journalist, Frank Gaglioti (2008) estimates that three million gene related patents may have already been issued in the United States alone (Gaglioti 2008).

By the 1990's The Human Genome Project had become the most expensive biological project ever undertaken. Dr Craig Venter was the team leader in the isolation of the genome and 'poster boy' for the commercialization of this research. Turning to a handbag manufacturer - come private investor - Frederic Bourke, Venter succeeded in creating a nexus between science and capital - the twinning of a non profit institute with a commercial company. Despite criticism from other research scientists in the late 1990s for corrupting the basis of 'free and open science', Venter was unapologetic: 'This is one of those crusades that only works if it becomes really profitable' (Venter in Shapin 2008: 8).

Conclusion

In our modern search for the quick fix, or ‘magic bullet’ solution, genetic research has been trumpeted in the mainstream media as the potential solution for many existing health problems and also, critically, to eliminate any ‘faulty’ genes for the future. The desirability of being able to ‘improve on nature’ has captured the public imagination. The science of genetics has an elevated, even iconic status, and is regarded as the saviour and solution for present and future biological malfunction. This privileged status is:

...one that has assisted in the production of powerful images that endow the gene with a complexity of meanings that have altered the way we think about ourselves (Love 2001:112).

This gung-ho commercialised approach, without social or political constraints, has led to what Professor Paul Zimmet, director of the International Diabetes Institute at Monash University, describes as ‘biopiracy’ from ‘hit and run’ research teams (Zimmet 2000).

Given that western science is premised on the search for difference (distinction), reliability and replicability of results, it can only be disappointing that it appears genes themselves play a comparatively small and unpredictable role in how a disease will manifest in a particular body (Clayton 2002). Only three percent of human genetic material is involved when coding for protein, and even Venter himself describes the other 97 percent variously as ‘DNA fossils, rusting hulks of old genes, repetitious sequences and mysterious stretches of who-knows-what’ (Venter 2008 in Shapin 2008:6). It may therefore be argued that an inordinate amount of research funding is being allocated, and expectations raised, in regard to what can actually be achieved by genome science, in a climate of social and ethical isolation.

The public discussion is muted by the cultural assumption that genetic science is too complicated for lay people to understand, and is reinforced by the notion that those

doing the science are scientists and doctors and therefore beyond ethical query. Far from being 'pure' science, the work of Lea, and others making such radical claims, risks putting the modern study of genetics in the same class as some of the early 'sciences' such as phrenology, whereby the inevitable criminality of people was determined by head shape and dimension. The lack of systematic social research accompanying this and similar studies, has further implications for Cultural Safety, which foregrounds respect for indigenous people, as a legitimate paradigm in health research. It is indeed ironic that Cultural Safety was pioneered by health workers in New Zealand in the 1990's, and offers practical guidelines and a theoretical perspective which acknowledges other cultural perceptions and ontologies in relation to indigenous health. The parameters of Cultural Safety are employed widely in New Zealand's health and research institutes and it is unlikely Lea would not be aware of this. Further he has offered no apology to Maoridom, nor demonstrated any particular concern about the international furore surrounding his work. It would therefore appear to fall to the social sciences to offer a critique of such endeavours.

Notes:

- 1 For the purpose of this paper, 'Polynesian' refers to New Zealand Maori, Cook Island Maori, Samoans, Tongans and Niueans.
- 2 Reference to the 1994 film 'Once Were Warriors' on the subject of Maori domestic violence.

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