

## **“Neuroscience and social change: are we rational beings?”**

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Talk given at the MAPW Annual Council Dinner, University Café, Carlton, Saturday 29th of August 2009.

I've been asked to talk about whether our current understanding of the human brain has any relevance to the process of achieving social change, particularly the abolition of nuclear weapons.

The human brain is the most complex and probably the most interesting object in the universe. It is what makes us human, what makes us an individual, it is the source of our desires, pleasures, joys, sorrows, plans and creativity. The achievements of the human brain, particularly the invention of the scientific method whereby ideas and concepts of one generation are built on by their successors, are truly stunning. The development of mathematics, chemistry, physics, biology and medicine and now neuroscience are extraordinary achievements for a group of mammals.

But there is a paradox. If we are so extraordinarily clever, how is it that we are also unbelievably stupid? When it comes to group behaviour, we often do things that are far from clever. When I watch grainy black-and-white films of trench fighting in the First World War (and there's one each week on cable TV) my jaw drops in incredulity that hundreds of thousands of grown men could spend two years in mud and squalor shooting at each other for no good reason. 18 million soldiers and in all 70 million people died during the First World War. If any more evidence of human stupidity is required, I would point to the belief by sizeable groups in our community that continued population growth is sustainable, that global climate change is not happening, and that millions follow fundamentalist religions that demand killing those who believe in the wrong god.

The paradox arises because we are herd animals that, perhaps more than any other species, are driven by social norms and beliefs, fashion and an intense desire to blend in with the group. During recent evolution, relationships with our fellow humans have probably been a major selection pressure. By far and away the most dangerous animals we might encounter are other humans and conversely our family, friends and clan offer support and protection. Dramatic expansion of our brain's frontal lobes, one of the defining features of Homo Sapiens, has probably been driven by the survival advantage of those who could discern whom to trust and whom not to trust, how to trick enemies and how to build lasting relationships with friends.

Humans, like many other species, show protective concern towards those with whom we share genetic similarity. Parents will willingly die protecting their children and we will fight to protect our immediate family. To a lesser degree this concern extends to the clan and the racial group. The converse is that strangers are met with suspicion and often murderous hostility. Xenophobia is not a recent phenomenon but characteristic of all groups since time immemorial. The recognition of clan depends on such things as familiarity, shared values and history, and conformity to codes of dress, behaviour, speech and belief. It follows that any minority group that looks or behaves differently is at risk from persecution and violence; Nazi Germany provides a chilling example.

There is a converse side to these human interactions - the loving concern we show towards family and clan may often be extended to other groups. In particular, with the extension of news via global information networks, we can see and empathise with the suffering of people around the globe.

People in the peace movement, such as you present tonight, have been able to extend your empathic identification to all of humankind.

It is widely believed that emotions interfere with rational thought. In fact there is evidence of the reverse - namely that our emotions are critical elements that guide our rational choices. There is a famous case of a 25 yr old railway construction foreman, Phineas Gage, who suffered an horrendous accident. In 1848, working on a construction gang in Vermont, he was tamping a charge of explosive into a rockface when an explosion drove the iron rod he was using through the roof of his mouth, through his brain, emerging at the top of his skull. He was taken to a local inn and expected to die, but after a stormy course made a miraculous recovery. Outwardly he appeared to be normal but his personality had changed. Before the accident, Gage was responsible and conscientious. Now he had become aimless and irresponsible. A recent study of his skull indicated that he must have suffered extensive damage to the medial aspects of both frontal lobes. A neuroscientist in Iowa, Antonio Damasio, has studied patients with damage to the same regions of the frontal lobes as suffered by Gage. Damasio found a pattern of aimless and irresponsible behaviour and inability to decide between various life choices. Surprisingly the patients ability reason and to rationally analyse even complex situations was intact, but they lacked the emotional connection that we all use to guide our choices.

In the case of nuclear abolition it is not a cold rational analysis that drives our motivation to continue working towards a nuclear weapons free world. Rather, it is our outrage at the stupidity and grave risk posed by nuclear weapons that impels us to act. We belong to MAPW because we care at an emotional level.

Social change is a nonlinear phenomenon, as are most processes in nature. It is a property of nonlinear dynamic systems that at particular times, small perturbations can have disproportionately large effects. The Berlin Wall was not disassembled in a slow systematic process over 25 years, rather it collapsed dramatically at a critical time in history. The collapse of the Soviet Union did not follow a protracted war with the West, as many had predicted, but happened rapidly and unpredictably to the amazement of historians and political commentators.

We sense that we are close to one of these tipping points for nuclear abolition. The noble aim of abolition that has at times seemed hopelessly idealistic, now appears achievable, essential and urgent.

The idea that nuclear weapons could be held indefinitely without being used beggars belief. If not used by mistake or miscalculation then by misadventure, malice or madness. The risk of one of these calamities rises over time to become near certainty.

The time has now come to abolish nuclear weapons. They have been reduced by two thirds in number since the peak of the Cold War but 23,000 warheads remain ready for deployment in minutes to hours. We now know that even a limited nuclear war would have horrendous effects on cities and disastrous delayed effects on climate. There would be no winners and most think that even contemplating the use of nuclear weapons is madness.

Against this dark background there is great hope. We are at a unique time in world history: President Obama declared the USA 's commitment to seek a world without nuclear weapons in

Prague last April, the Rudd government has set up the International Commission on Nuclear Non Proliferation and Disarmament (ICNNPD), and global concern regarding nuclear proliferation has set the stage for dramatic progress in nuclear abolition. The possibility that nuclear weapons might fall into the hands of terrorists concerns us all, but (valid) arguments that "rogue states" cannot be trusted with these weapons highlights the absurdity of the claim that some states can be trusted never to use their weapons.

What are the implications of our understanding of the human brain for the nuclear abolition movement:

- We have done well at presenting the facts and rational arguments and these remain the essential core of our work, but we should not expect this to be enough to achieve our objectives.
- We must appeal to people's positive emotions using the concept of a liveable world for our children and grandchildren.
- We should emphasise that most people in most countries are on the side of nuclear abolition - National polls show that abolition is supported by 87% of US citizens, 92% of Australians, 69% of Europeans, etc, 127 countries voted in the UN General Assembly for a nuclear weapons convention with 27 against. Nine countries have nuclear weapons, a cause the shame rather than pride, 186 do not.
- Social change is nonlinear. We are near a tipping point regarding nuclear abolition and apparently small efforts now may have dramatic effects.
- To be effective, MAPW / IPPNW needs to partner with a broad coalition of like-minded groups and organisations. The International Campaign to Abolish Nuclear Weapons (ICAN) is just such a coalition and we should be immensely proud of Australia's central role in setting it up. Two people stand out as champions of ICAN - our immediate past President Tillman Ruff and ICAN's National and International Campaign Co-ordinator, Dimity Hawkins. Many other people in this room have contributed very significantly.

For our children and grandchildren we have a responsibility to leave a liveable world, a world free of nuclear weapons that is peaceful and sustainable and in which their brains will be employed creatively to improve the lives of their fellow humans.