

Evolutionary view of nuclear weapons

Michel Duguay, 21 August 2019

Introduction

The evolution of homo sapiens over the last million years can now be glimpsed thanks to important findings in anthropology, paleontology, archeology, evolutionary biology, history, philosophy, sociology and in the new genomics scientific discipline (refs. 1-2). In a 2019 book (ref. 2) evolutionary social scientist and Yale Professor Nicholas Christakis has come up with a new view of human society by relying on findings from several scientific disciplines and from extensive experiments carried out by his research team in a few countries. Christakis's view is that our ability to establish friendships with non-kin persons and to collaborate on a small scale, as well as on a large scale, is rooted in our genes. His claim is that pressures from the environment and from society have made our genome evolve over millions of years in a direction favorable to the emergence of "a good society".

Despite his effort at painting a broad picture of contemporary society, Christakis has refrained from addressing the problem of nuclear weapons. Since his book comprises 419 pages of text, plus 81 pages of references and notes, one can understand that the author did not want to add remarks about the complex topic of nuclear weapons and their claimed justification. But given the prevalence of evolutionary forces, we are encouraged to think that human evolution will soon lead to the implementation of international security without nuclear weapons. In this brief article I wish to point out that the overall functioning of the world community supports Christakis's

optimistic view of society and moreover justifies promptly taking concrete steps towards international security without nuclear weapons.

The planetary economy

After a few thousand years of evolution a planetary economy has come into being. Large numbers of companies have acquired an international status and a great many institutions, notably in science, have also acquired a planetary character. The United Nations, along with affiliated institutions, have played a central role in promoting international collaboration in many fields and almost always a peaceful resolution of conflicts. In addition, science and the arts are social sectors that involve extensive international collaboration and that overwhelmingly bring benefits to all humankind.

As an example of a successful planetary collaboration let us look at the aviation industry. Every day about ten million people fly on airliners to various destinations on our planet. The aviation industry and related government agencies have worked very hard to increase the level of safety with the result that the probability of your dying on your next flight is only one chance in ten million. The aviation industry provides a beautiful example of people from almost all countries successfully collaborating to enable passengers and merchandise to safely reach desired destinations. This supports Christakis's key observation that people can readily collaborate with non-kin persons. Another key feature of the aviation industry is this: doing whatever is necessary to save lives, even sometimes only one life, when a passenger becomes severely sick and the airliner has to land at the nearest airport to save his/her life.

Relevance to nuclear weapons

What is true of the aviation industry is also true of most sectors of the world economy and of social activities. If billions of people worldwide can peacefully work together to assure the life and well-being of human beings almost everywhere, where is the argument that the same peaceful and collaborative philosophy of life cannot be applied to the nine nuclear weapons establishments? The evidence from genomics is that the human genome, i.e. the set of all genes in a population, is close to 100% the same in all countries, including the nine nuclear powers. The fundamental ability to collaborate in order to achieve international security without nuclear weapons is therefore present. Given this new result from social and genomic science, the leaders of the nuclear-armed countries have an unavoidable responsibility to do what their countries promised to do when the Nuclear Non-proliferation Treaty (NPT) was signed in 1968, namely to work towards nuclear disarmament.

In his preface Christakis wrote the following paragraph which supports the idea that all countries can work together:

“My vision of us as human beings, which lies at the center of this book, holds that people are, and should be, united by our common humanity. And this commonality originates in our common evolution. It is written in our genes. Precisely for this reason, I believe we can achieve a mutual understanding among ourselves.”

How does such a statement conform to United States military policy, or “doctrine” to use Pentagon language? One worrisome expression of the prevalent U.S. military mindset can be found in the 2015 book by defense establishment managers Andrew Krepinevich and Barry Watts (ref. 3). These

authors had had Andrew Marshall as their boss. On page 258 the authors refer to research on the human genome by anthropologists Lionel Tiger and Robin Fox and they conclude:

"Given all this evidence, Marshall agreed with Fox's conclusion that the human race is as likely to have a future of peace and nonviolence as one of chastity and nonsexuality..... Hence Marshall's belief that war is an integral part of human nature. The use of military force might be controlled but never banished."

Another author who has looked into genomics is science writer Matt Ridley. His 1996 book is entitled 'The Origins of Virtue, Human Instincts and the Evolution of Cooperation' (ref. 4). He wrote on pages 6 and 7:

'It is the claim of this book that the answer to an old question – how is society possible? – is suddenly at hand, thanks to the insights of evolutionary biology. Society was not invented by reasoning men. It evolved as part of our nature. To understand it we must look inside our brains at the instincts for creating and exploiting social bonds that are there. We must also look at other animals to see how the essentially competitive business of evolution can sometimes give rise to cooperative instincts.'

Genomics on a personal scale

Given that professor Christakis's has more credibility in social matters than defense analyst Andrew Marshall, how can we convince large numbers of people to join the effort towards nuclear disarmament? There are surely many ways, but the one suggested by Matt Ridley is worthy of close consideration. As quoted above, Matt Ridley urged us to "look inside our brains at the instincts for creating and exploiting social bonds".

Exploring one's instincts or feelings, and reasoning on the basis of modern scientific findings, one can decide for him/herself if the genomic roots of

society point predominantly towards aggression or towards collaboration. There has been times in history, of course, for example during World War II (WWII), where both aggression and collaboration were on center stage. In the case of WWII extensive collaboration among the Allies gave them the benefits and the responsibilities accompanying their victory in 1945. When it comes to the use of nuclear weapons, professor Nina Tannenwald of Brown University has argued convincingly that a "nuclear taboo" (or humanitarian instinct) is what has been largely responsible for the non-use of nuclear weapons in conflicts since August 1945 (ref. 5). The defense establishment tends to rely on the concept of nuclear deterrence, which surely has also played a role in the non-use of nuclear weapons, but which is far from an ideal means of defense (ref. 6). Professor Tannenwald's concept of a nuclear taboo finds solid support in professor Christakis's optimistic view of humankind.

The rapid progress of genomics, already frequently publicized in the media, offers the possibility of changing one's way of looking at others, especially across borders. The overlap of genetic information in the DNA of two unrelated (non-kin) individuals is about 99%. Everyone has a set of genes which is included in the holistic concept of the human genome, so that seen from a genetic/genomic point of view we are all part of the human genome, and we all belong to one planet-wide family.

This new fact from science could help eliminate the "us/them" categorization strongly going on in some military and other circles. Currently, the writings of some defense analysts are frightening everybody with their focus on potential nuclear attacks originating on both sides of a conflict between nuclear powers (ref. 7). These analysts should remember what U.S.

president Ronald Reagan and Soviet Premier Mikhail Gorbachev had declared on 19-20 November 1985. They had declared that the two sides “have agreed that a nuclear war cannot be won and must never be fought”. (ref. 6, p. 63). Are some defense analysts now seeking to contradict this historic joint Reagan/Gorbachev 1985 declaration?

Conclusion

Books by Nicholas Christakis and Matt Ridley, as well as from other authors in genomics, have insisted on the importance of taking an evolutionary approach in attempting to understand humankind and its history. The word “evolutionary” refers to evolution over millions of years, which scientists have some access to through paleontology and through sequencing (reading out) and mathematically analysing the genomes of many animals and plants.

The secret of life has been revealed by science over the last two centuries. DNA is at the core of life, and the information it carries is of a digital nature through the use of four molecules labeled A, T, G, and C. In humans, DNA reproduces itself with an error rate of only one letter error per 100 million replications. Only about ten to twenty single-letter mutations are transmitted to the next generation when our three-billion letter genome is replicated. If evolution has developed this level of precision in DNA replication, it’s probably because it is needed. One of the many disadvantages of nuclear weapons is producing radio-active fall-out that causes mutations in DNA. These can lead to cancer and other health problems, and to congenital malformations. These would affect the present generations and the yet-unborn ones.

To eliminate the enormous threat of nuclear weapons we could ask more people to strengthen their level of commitment to all of humankind. Nearly every individual has some level of commitment to oneself and to humankind. Integrating the human genome into one's picture of oneself could make people feel more united and committed to humankind. In order to solve humankind's current problems, including the nuclear threat, many authors have urged us to increase our level of commitment to humankind. Looking at oneself as deeply connected to the human genome is a way of participating more fully in humankind's history over past and future generations and can be psychologically very rewarding.

References

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