Challenges to Peace in the 21st Century: Working towards a Good Information and Communication Society

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Abstract. This short *reflection paper* emphasises the need for contemporary society to focus on the positive, the beneficial and the humane. There are considerable challenges to peace in the 21st century. People are increasingly concentrating on war and violence. To counter this preoccupation with the negative, the authors explore a number of avenues that may – from a psychological, sociological or societal perspective – help human beings to think and act in a more peaceful, non-violent manner. The ideas covered are contained within an overall framework that emphasises the need to work together towards a Good Information and Communication Society. The focus is on action, education and study that have an international orientation rather than simply being undertaken on the local or national levels.

Keywords: action, education, good information and communication society, electronic violent games, information and communication technologies, international, peace

1 Introduction

Conference panels often provide opportunities to explore difficult and sensitive subjects in much more open and flexible ways than do standard conferences tracks and themes. Hence, they often contain not only academic papers but also reflection and position papers. This panel on information and communication technologies (ICT) for peace and war, and the imperatives of achieving cyber peace, to which this paper is a contribution, is no exception.

Opportunities and threats related to ICT have been classic themes of many ICT gatherings, conferences and workshops over the past decades. This reflection paper – on issues pertaining to war, ICT, cyber warfare and infrastructure – may well provide a contrast in its freedom of thought and approach to other more academic pieces. It proposes a deliberate focus on the study of ICT and its constructive use in the fields of democracy, education, effective organisation, equity, enhancement, human devel-

opment, justice, learning, and sound policy development. Overall, ICT can help to reduce risks by enhancing discussion between people. The ultimate goal is to build a Good Information and Communication Society. As this conference panel intends, it can do so by "taking into consideration [people's] mutual interests in living a peaceful life".[1]

This paper is structured in the following way. It introduces the background to ICT use in peace and war in a very general way (Section 2). It covers the relationship of ICT with vulnerable ICT critical infrastructures, and it emphasises the way in which ICT can be used in terms of aggression, violence and war whether directly as an instrument or as a support structure. It introduces (in Section 3) the growth in institutions, investigation, and studies relating to violence and war and their links with ICT: for this, it draws especially on the European and Scandinavian contexts. It also highlights current trends in the investigation of the relationship between use of violent electronic games and behaviour. As a result, several potential possibilities for areas of study are listed (Section 3.4). A plea is then made for alternative thinking and acting in many more positive directions (Section 4). The authors have brainstormed a list of issues that researchers who seek to examine the positive dimensions of ICT might wish to explore (Section 5): the four principal domains are those of awareness-building, education and development, software and games, and adopting an international perspective. Some emerging conclusions are highlighted (Section 6).

This approach does not yet constitute an agenda for a programme of action. Nevertheless, it is hoped that it may provide a helpful set of possibilities to those networks, organisations and institutions that are already working in this field of activity or may go on to do so in the future.

2 Some Observations on War, ICT, Cyber Warfare and Infrastructure

War is scarcely a new phenomenon although, in its early stages, it has been associated more simply with tribal raids. Yet many of the most destructive wars in human history took place in the last century. This growth in destructiveness is assumed to be due directly to the expansion and the efficiency of the technologies used, including – at the end of the Second World War – the use of the atomic bomb.[2]

Two approaches appear to have become necessary. It is now imperative to study not only how war takes place, and with what methods, but also how to resolve war and grow beyond its basis in conflict: nations can thereby be restored to conditions under which they respect and honour peace [11].

Even if war is state-based organised violence, there are many other examples of potential and actual violence that are coming to the fore today. Many *ad hoc* groups

[1] Text of Human Choice and Computers 10 (HCC10) Conference Call.

[2] These reflections were concluded after a reading of texts located in Wikipedia on, for example, peace-building, pre-requisites for peace, and war.

are involved in the use of violence whether for "need, greed or creed" [21][3]. While violent actions may come from individuals, loosely-organised groups or organised crime, they can also emerge from autocratic – and other types of – states. There will always be countries and regimes interested in exploring the fragilities of other nations.[4]

2.1 ICT and Infrastructure

Critical information infrastructures can be used to avoid engagement in war, but are also implicit in supporting engagement in warfare. Security aspects that support this infrastructure, which can be called "cyber security", can help to maintain national and international security. However, cyber security can also be used to effect in both espionage and sabotage.

Some uses of ICT pose threats of quite new dimensions whether as a result of conscious intent, error or ultimately through the very vulnerability of ICT [2]. It is all too horribly easy to imagine an extreme, and potentially final, catastrophe that could result, for example – whether deliberately or *ad hoc* – from today's combination of ICT and nuclear power. Indeed, while it can be said that nuclear power is only usable and controllable through the use of ICT, ICT's shortcomings can lead to errors, failures and disasters not only in the nuclear domain but also in many other fields [12]. Of course, atomic – and other – crises may occur as a result of natural and unanticipated phenomena: environmental disasters can happen as a result of solar flares, earthquakes or *tsunami*. In contemporary society, particularly in developed countries but also increasingly in emerging economies, critical infrastructures based on ICT can be conceived as being fundamental to the capacity to live in peace and prosperity. Society is so reliant on the use of ICT and its critical infrastructures that the collapse of these systems could leave whole populations without structures, services and applications. Sheer demand, resulting from the expected growth in consumption, may have dire consequences for the capacity to continue to provide energy supplies [19]. Almost all domains of people's lives are dependent on ICT: a situation that we may wish to avoid or at least to counterbalance [6], [7].

This generalised movement towards complete ICT dependency is perceived as meaning that entire societies and nations could collapse with great speed if there were ever to be a massive failure in their ICT infrastructures. Whole societies and civilisations and their infrastructures could quickly be destroyed or rendered inoperable. Societies, communications and people could be left without sustenance and support. Such a crisis could affect the capacity to use any form of ICT, and thereby compromise the financial, business, and public sectors as well as people's working lives (for example, in the fields of health services and public health [20]). It could inhibit the ability to communicate among family members, friends and acquaintances. It could

[3] This expression was first used by Professor William Zartmann, Jacob Blaustein Professor of International Organizations and Conflict Resolution, Paul H. Nitze School of Advanced International Studies, Johns Hopkins University. It was the title of a public event entitled Civil War: Need, Creed and Greed which took place on October 21, 2004.

[4] Text of Human Choice and Computers 10 (HCC10) Conference Call.

also impair the continuity of human existence in those communities that are located in either very hot or very cold climates or countries that experience both extreme heat and cold. The implications for peace and harmony, in general, are considerable, since many of these threats could lead to complete societal breakdown.

ICT is directly implicit in these risks. This challenge is perhaps particularly hard for people and politicians to envisage.

3 A Growth in ICT and War Research, Study and Action

At some level, it is to be acknowledged that developments in ICT-related research, study and action around warfare, and cyber warfare particularly, are occurring both quantitatively and qualitatively.

There are more and more institutions dealing with combating warfare and building peace. The trend is very much also to an international and national focus on cyber warfare. However, various broadcasting and other media are also playing a role in this domain in terms of the ways in which they present developments to the public. More than that, they are influential in the manner in which they encourage children, young people and adults to view – and even potentially get involved in – violence, aggression, and even war.

These developments are reviewed before a set of potential research questions is laid out for possible investigation by traditional peace institutes.

3.1 Contemporary Developments in Peace and War Research

To take the Scandinavian countries as just one example, they now have a variety of peace research institutes: a few are mentioned here. On the global level, it can be assumed that each nation has its own similar institutions that research these challenges on some level or in some aspect, and that the United Nations are working on such tasks [8].

In Norway, there is the Peace Research Institute Oslo; Sweden has the Stockholm International Peace Research Institute and, in Uppsala, there is the Uppsala University Department of Peace and Conflict Research, and its Peace Research Programme. The first is known for both its basic research and its policy-relevant research and the way in which it has engaged itself in promoting peace through the resolution of conflict by means of dialogue, reconciliation, public information and policy-making. The second is an internationally-renowned think-tank. As an independent international institute dedicated to research into conflict, armaments, arms control and disarmament, it bases its work on openly-available data sources. The third has a research programme on governance, conflict and peace-building. It concentrates on internal, state-based peace-building in weaker regions and countries around the globe, with a focus on Africa, and the relationship between governance and resources.

The daily press shows that new collaborations are being initiated with the purpose of defending nation states and preventing new potential catastrophes. In the *Svenska Dagbladet*, a major Swedish broadsheet newspaper, headlines announced that Sweden

and the United States of America (US) are collaborating on strategies related to cyber warfare [16]. These kinds of efforts are also being pursued at European and international levels.

3.2 Expansion of European and International Focus on Cyber Crime

Peace depends at least to some extent on investing in cyber security.

On the very day of finalisation of this reflection paper, the European Commission launched a proposal for a European Cyber Crime Centre to tackle cyber crime [10]. Cyber crime is essentially seamless or borderless. Its perpetrators prefer to ignore deliberately the locations and countries of the victims of their crimes. This centre will gather together some of Europe's brightest minds in cyber security. Its task will be to warn the Member States of the European Union about any major cyber threats on the horizon and any weaknesses in their online performance. It will identify crime through discerning patterns, for example, in virus attacks. The centre will be located in The Hague in the Netherlands, and will be run by Europol. In the Swedish broadsheet newspaper, the *Svenska Dagbladet*, European Commissioner Cecilia Malmström stated that knowledge about cyber crime is fragmented throughout the authorities of the Member States of the Union, and – to this time at least– co-operation across borders to fight this crime is infrequent [16].

Groups of Scandinavian (and other) investigators have also explored, for example, the growth in profiling by corporations, tracking of suspects, electronic tagging of prisoners at work, and the monitoring of paedophilia, money-laundering, information warfare, and cyber crime as well as assessed the benefits and costs of surveillance, and its future developments [1].

3.3 A Growth in Research on Aggression and Violence in Childhood

Research developments are always in process, and benefit from dynamic discussion in order to progress [14].

A Swedish Media Council report [17] examines decade-long work on the part of several international expert bodies (including the US Department of Health and Human Services and children's medical associations in Australia, Canada and the US). Collectively, these take the position that very violent games increase the likelihood of aggressive behaviour.

In a recent article in the *Dagens Nyheter* [15], three researchers further debate these issues. They agree that it is not easy to distinguish violent games as the unique factor that generates violence and aggressiveness in young people. Among the stronger predictors of violence are family relationships, genetic disposition, personality, and socialisation. For children who grow up in an environment where inter-personal violence is normal, violent games are yet another source of learning aggressive behaviours and stifling empathic development.

The notion of "game dependency" has to be considered in depth through research, study and discussion on the relationship between violent computer games and aggressive behaviour.

Similarly, research indicates a gradual loss of empathy alongside extreme use of mobile phones [13], [22]. It too is a subject deserving of in-depth investigation.

3.4 Proposals for a First set of Questions to be Explored

Work to reach peace is now increasingly institutionalised. There are surely plenty of theoretical questions that can be studied in the fields of research on war, peace, and violence. Many of the issues raised and questions posed in these fields, and their institutes, are based on experiences with conflicts involving weapons that have either occurred or are on-going.

Based on discussions first initiated in July 2011 in Rome, Italy at the International Association for the Development of the Information Society (IADIS) ICT, Society and Human Beings conference [5], we propose a first set of questions to experts who work within the field of study on ICT and warfare. An attempt has been made to formulate a number of questions that can help analyse issues that are threatening peace in the "here and now". The topics listed strike us as ones that are already deserving of intellectual coverage. The extent to which these issues are currently under investigation in actuality is, however, unknown to us.

It is our hope that these kinds of ideas can help to strengthen the many commendable efforts that are already taking place throughout the globe (not simply in the US, Europe or the other countries of the Organisation of Economic Co-operation and Development), an example of which is under the leadership of the International Telecommunications Union [18].

- **Same or different:** Is cyber warfare different from orthodox or classic warfare? Or is it – even if apparently "non-violent" – just a form of war, adapted to the conditions of contemporary society? Does it require special actions to combat it? What are the "small" or "limited" experiences of cyber attacks that have taken place, for example, in Estonia [9]?
- **Traditional concerns transposed into modern society:** What kind of relationship exists between "attack" and "defence" in various political systems? How do the hierarchies that exist in traditional military domains correspond to the relative lack of hierarchy that exists in cyber warfare? How much does the variability in control of the Internet influence the networks that operate across national borders (i.e., its apparent lack of centralised control or its relative freedom from control)? How do traditional hierarchies complicate these matters?
- **New fields of warfare**: Are there any comparisons to be made between country-based attacks and attacks on global financial systems? What parallels are there between cyber warfare and attacks on international trade? What about attacks that can be made on specific infrastructures such as utilities or energy systems? How similar to each other are threats connected to nuclear power and those associated with cyber warfare?
- **Play versus actuality:** What degree of influence is there on developments in aggression and violence through playing electronic war games and electronic games of extreme violence?

These are, we assume, somewhat classic questions that enable an analysis of the field. However, concern and consideration for these issues can become the starting-point for alternatives in terms of both thinking and acting. From the perspective of the authors, it is a major challenge *not* to restrict such questioning purely to the military domain.

4 A Need for Growth in Alternative Thinking and Acting

A "nonviolence movement" against non-violent cyber warfare is needed: this would be a form of grass roots movement – or network of networks – that shares the same vision of reaching the Good Information and Communication Society.

Historically, advocates of activist philosophies of nonviolence have used a range of methods in their campaigns for social change. These have included critical forms of education and persuasion, civil disobedience and nonviolent direct action, and social, political, cultural and economic forms of intervention. In recent centuries, and also within the first decade of the twenty-first century, nonviolent methods of action have acted as powerful tools for social protest and revolutionary social and political change.

For example, people today need to know how to be resilient even in the most dire of tragic circumstances [7]. Alongside personal, organisational, and national resilience, we need, as a counter-movement, to start a new phase for ICT that is used for peace, harmony and collaboration. The passive acceptance of inappropriate and ill-considered – some might even say, "evil" – use of ICT has to be prevented. If and when secure and sustainable, ICT may actually help to reduce risks.

ICT can and should be used to narrow the gap between subcultures, and to bridge the differences between different religious systems. It could, instead, show their similarities, emphasise the synergies among the various cultural and faith-based blocks, and bring us all into a thrilling, fruitful dialogue with each other. We need quite a different approach which would be based on the achievement of a future "unity and diversity" in the world [5].

This would be a much more cross-disciplinary approach based on broader theoretical perspectives than in times past. It should, first, be feasible to be put into practice and, second, help *all* people to work on preventive action strategies.

5 Constructive Considerations (for a Positive Turnaround?)

People in general, together with academics, need to start a new movement for ICT that is used for peace, harmony and collaboration. The latest forms of ICT can be used for constructive interaction, dialogue and the enrichment of human feelings and thinking. Here, therefore, are some initial thoughts on "tools" that can be used, in particular, to prevent and fight cyber warfare.

A mutual brainstorming, another of the outcomes of the IADIS July 2011 conference [5], highlighted the formulation of an initial set of possible positive positions and tools. These tools relate principally to four domains. They are awareness-building;

education and development; software and games; and seeing the issues from an international perspective. These four sets of proposals are laid out here: there is no particular prioritisation to the issues. All are important, and would benefit from further investigation and, moreover, action.

In terms of *awareness-building*, it is important not just to increase the consciousness of the threats of cyber warfare, but also to:

- Create an understanding of how contemporary society is built and its underpinning, invisible infrastructures (for example, based on the economy, electricity, transportation and water). From this understanding, build an awareness of the vulnerability of society.
- Create the potential for positive, new uses of ICT. The 2011 International Association for the Development of the Information Society (IADIS) ICT, Society and Human Beings conference [5], for example, dealt with many examples of ICT use that can help to make people aware of what could be done to combat global warming; what can be done ecologically and environmentally in a positive way; helping people at the bottom of the pyramid; enhancing the lives of the very young and especially the very elderly; and using ICT in health, welfare and well-being.
- Work together to create space and time for constructive discussion and debate in forums and *agora*, as much physically and in real-time as in cyberspace and on the Internet.
- Use cyberspace for dialogue and for the search for the common essence of all faiths, religions and philosophical and spiritual endeavours.
- Hold dialogues about common value systems. Again, for example, the 2011 IADIS ICT, Society and Human Beings conference held inspirational panels on human rights and on "unity and diversity" [5].

In terms of *education and development*, employ ICT directly and indirectly to:

- Examine the experience of early childhood in relation to ICT and its influence on childhood and adult development.[5]
- Explore strategies to encourage human and humane roles instead of further strengthening traditional "male" and "female" roles. Emancipation is needed for men and women, boys and girls. Until now, emancipation has focused largely on what it means for women.
- Emphasise an assessment of ICT's influence on boys and men because it is so much more often the male gender that wages war. While all of us are the victims of warfare, war often particularly affects women and children.
- Consider education more and more in the context of global learning.

[5] In this respect, the pedagogical work of Maria Montessori, and schools which follow in the tradition of her thinking, is of especial importance. The celebrated Italian physician and educator devoted her life to developing a learning philosophy for children that has become widespread internationally. Debate about the approach became a hot issue before, during and after World War II. Indeed, she was nominated several times for the Nobel Peace Prize. One of her books dealt with education and peace.

- Ensure that global and international trade shifts instead towards a "Global and International Educational System".
- Explore the potential for "commoning" (sharing) in the ICT society.

In terms of *software and electronic games*, to:

- Begin to use multimedia products in a positive peace-oriented way.
- Focus on developing "peace games" across cultures and religions.
- Develop a role and purpose for anti-war games.
- Stop developing games based on extreme violence.

From an *international perspective*, to:

- Explore the power of good examples.[6]
- Explore what kinds of wise, preventative actions formal international bodies, could take, and compare these with disarmament campaigns.
- Re-think the basis of formal international bodies based on the character of today's and tomorrow's threats.
- Explore the collaboration potential between formal bodies and the informal organisations, bodies and networks. Examine how the work and relationships between the non-governmental organisations, bodies and informal networks operating in the field of peace-building could be co-ordinated and strengthened.
- Stop the "robotisation" of international, economic transactions that involve an increase in the risk of conflict development.
- Explore specifically what an organisation like the International Federation for Information Processing could begin to do about these challenges.

6 Emerging Conclusions

In the authors' opinion, there are some phenomenal tools available to help build a Good Information and Communication Society. That society starts within ourselves and with ourselves, and in the networks of which we are members. It also relates to civil society as a whole, and the formal organisations that function in society.

We all have a responsibility in our roles as researchers, policy-makers, citizens and human beings to consider how we can leave after us a society where human rights and peace form its essential elements. Stakeholders, along with ICT experts, can help society to start to answer a vast number of important questions pertaining to the potential turnaround of contemporary society.

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[6] In 2011, the Nobel Peace Prize was given to three African woman, Ellen Johnson Sirleaf, Leynah Gbowee, and Tanakkol Karman who have applied innovative strategies to strive for democracy and to reach peace. Over the more than one hundred years that the prize has been awarded, there have been fewer than ten women who have received it. Many more have been nominated. http://www.nobelprize.org/nobel_prizes/peace/articles/heroines/html. Accessed 28 March, 2012.

A set of fundamental points, and a number of possible actions are immediately evident:

- Never before in history has there been such a great opportunity for peace. Let us build on that opportunity.
- Rethinking is required to deal with today's global problems, and transparent, rapid action too is needed.
- Visionary strategic tools are needed to help transform dictatorships into democracies, to overcome not only present conflicts but also future risks.

ICT should help people to appreciate diversity. To capture an old saying of Gunilla Bradley's: when we design, work with and use these technologies the focus should be on "ICT for deepening human and societal qualities" [3], [4].

A major re-thinking is needed to deal with today's problems. Transparent, rapid action is needed. Let us act on it!

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