
**UNIVERSITY COLLEGE LONDON
SCIENCE, WARFARE AND PEACE
COURSE OUTLINE**

HPSC 3002 Autumn Term 2008	Course Convenors: Dr Jon Agar Dr Brian Balmer
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About this course

This course investigates the relationship between science, technology and war, primarily using intellectual tools from history, philosophy and sociology of science. The course explores military science and technologies in their social, political and historical context, and focuses mainly on the twentieth century. The course is organised around a number of 'big questions' about science, warfare and peace:

- Is science peaceful or aggressive?
- Do new technologies change the way wars are fought?
- What are the sources of new military technology?
- Is war good for science?
- Are scientists responsible for the weapons they research?
- Who counts the dead?
- How can scientists contribute to peace movements?
- Can weapons of mass destruction be uninvented?
- How is military science and technology changing?
- Are humans naturally warlike?

As well as thinking about how science, technology and warfare have shaped each other, we will also consider the changing role of the scientist in relation to the state. The course will also consider broader themes such as arms control, ethics, popular culture and the body in relation to war.

By the end of this course you should:

- Be able to apply critical thinking to understanding issues around science, technology, war and peace.
- Possess an understanding of the duties and responsibilities of scientists involved in military research
- Have developed detailed knowledge of the history and governance of modern military technologies.

About the Department

You are advised to familiarise yourself with the departmental *Student Handbook* and consult them on all procedural matters. The notes are available on the departmental web-site at <http://www.ucl.ac.uk/sts/>

Lectures

Lectures will take place on Tuesdays 2-4pm (first hour in Roberts 110, second hour in Foster Court 220 until reading week and Foster Court Biology Seminar Room after reading week)

Reading:

The notes that you take in lectures will *not* be detailed enough to understand a topic or to write an essay on that topic. It is therefore essential that you make use of the reading lists. **In essays you are expected read widely and to use (and make reference to) material in addition to that labelled essential reading.** You may use material that is not on the reading list but use all readings *critically* - you don't necessarily have to agree with everything you read.

Where to find the reading material

No one text covers this course. Most of the required and optional reading material is kept in the DMS Watson science library. Unless otherwise marked, assume journal articles are available online through the library Electronic Journals link. Material in the teaching collection is marked [TC *nnnn*] in this outline and is usually available on-line through the library or in a few cases you will need to get the material from the issue desk. All of the seminar readings, unless otherwise noted, can be accessed electronically through the library.

There is also useful material kept in **Senate House Library** which you can use with a UCL Identity Card.

You are also encouraged to use the **Wellcome Library**. The Service is a reference library with a large collection of science policy material - including some material on chemical and biological warfare.

You are also encouraged to use the internet for research. However make sure you reference the full web address, the site title and date visited. Be critical of what you read. Be very careful of purely descriptive sites, such as Wikipedia – we are looking for *analysis* and *argument* in your essays not just re-hashing basic information. **Also note that plagiarism, particularly involving internet sources, will be treated as a severe exam irregularity.**

Attendance

There will be either two lectures or one lecture and seminar each week. Attendance at **both** is a course requirement. Anyone who misses more than four lectures **or** seminars will be asked to provide an explanation via their tutor. Anyone who fails to provide an adequate documented explanation may be declared INCOMPLETE for the course.

Assessment

This term's course will be assessed on the basis of one *essay* of 3,000-3,500 words worth 50%, and a written *exam* worth 50%. An abstract for the essay is due by reading week (see end of this syllabus for guidance).

If you are not used to writing essays then you should also read chapter 5 of A. Northedge's *The Good Study Guide*.

The due dates for the assignment are:

Essay Abstract	31st October 2008	
Essay	15th December 2008	

Work should be handed in via the Turn-it-in system, as well as a hard copy to either Dr Balmer's or Dr Agar's pigeonhole; **no hard copy essay will be accepted unless accompanied by a completed Course Work Submission Sheet** (available from the departmental office). Do not e-mail coursework direct to us without prior permission.

Late essays will be penalized: up to one week late, five points will be deducted; up to two weeks late, eleven points will be deducted; ***after two weeks essays will not be marked.***

Completion of the course requires that coursework assignments be submitted. Any student who has not completed all coursework assignments (abstract and essay) may be refused permission to sit the exam paper.

Schedule of Lectures

Week	Question	Lecturer
1	Is science peaceful or aggressive?	BB/JA
2	Do new technologies change the way wars are fought?	JA
3	What are the sources of new military technology?	BB
4	Is war good for science?	JA/BB
5	Are scientists responsible for the weapons they research?	BB
6	READING WEEK	
7	Who counts the dead?	JA
8	How can scientists contribute to peace movements?	JA
9	Can weapons of mass destruction be uninvented?	BB
10	How is military science and technology changing?	JA/BB
11	Are humans naturally warlike?	BB

General Background Reading

These are readings that you would not necessarily expect to learn for the essay and exam, but may be worth reading quickly as they contain useful background material - particularly if you feel there is a gap in your knowledge.

John Lewis Gaddis, *The Cold War*, London: Penguin, 2007

A.W. Purdue, *The Second World War*, Basingstoke: Palgrave, 1999

Gerard de Groot, *The Bomb: A History of Hell on Earth*, London: Pimlico, 2005.

Jeanne Guillemin, *Biological Weapons: From State-Sponsored Programs to Contemporary Bioterrorism*, New York: Columbia University Press, 2005.

Kim Coleman, *A History of Chemical Warfare*, Basingstoke: Palgrave Macmillan, 2005

Michael Walzer, *Just and Unjust Wars: A Moral Argument with Historical Illustrations*, New York: Basic Books, revised 2006

Jonathan Glover, *Humanity: a Moral History of the Twentieth Century*, London: Jonathan Cape, 1999

Week 1 30th September 2008

Is Science Peaceful or Aggressive?

Introduction to course (BB).

Lecture (JA) will review some of the broad ways science has been seen to be a peaceful, aggressive or neutral activity, including themes such as: the scientific method is destructive; science as masculine is aggressive; science is neutral; science is international and therefore peaceful; science is a disinterested inquiry into nature; science is a force for good; military science is a perversion of science

Seminar Reading:

None

Essential Examinable Reading

Alex Roland, 'Science, technology, and war', in Mary Jo Nye (ed.), *The Cambridge History of Science. Volume 5: The Modern Physical and Mathematical Sciences*, Cambridge: Cambridge University Press, 2003, pp.561-578.

Very useful, if compressed, summary of relationships between science, technology and war

Everett Mendelsohn, 'Science, scientists and the military' in John Krige and Dominique Pestre (eds.), *Science in the Twentieth Century*, Amsterdam: Harwood, 1997

Another overview.

David Edgerton, 'Science and War', in Olby et al (eds.), *The Companion to the History of Modern Science*, London, Routledge, 1990, pp.935 – 945.

Some useful insights on relationships between science and war.

Additional Reading for Essays

Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution*, San Francisco: Harper & Row, 1980

For the argument that the version of the scientific method successful in the scientific revolution was masculine and destructive

Do New Technologies Change the Way Wars Are Fought?

Lecture (JA) will review the main lines of argument concerning the relationships between technologies and warfare. Examples will include the stirrup, firearms, machine gun, aircraft and the atomic bomb. Some themes addressed include mass killing, impersonalisation, bureaucratization, and “decisive weapons”.

Seminar Reading:

Keith Grint and Steve Woolgar, ‘What’s Social About Being Shot?’, in Grint and Woolgar, *The Machine at Work: Technology, Work and Organisation*, 1997 also in Teaching Collection SCIENCE 6264.

Essential Examinable Reading

Martin van Creveld, ‘The rise and fall of military technology’, *Science in Context* (1994) 7, pp.327-351.

Argues that low-tech, “low-intensity” warfare is returning to prominence

David Edgerton, ‘Significance’, ‘War’, and ‘Killing’ in *The Shock of the Old: Technology and Global History since 1900*, London: Profile Books, 2006.

Sceptical look at innovation

Additional Reading for Essays

Lynn White, *Medieval Technology and Social Change*, London: Oxford University Press, 1976.

For the stirrup case.

Zygmunt Bauman, ‘Chapter 4: the Uniqueness and Normality of the Holocaust’, in *Modernity and the Holocaust*, Cambridge: Polity Press, 1989.

Makes the challenging argument that the holocaust arose not from aberrations in German culture and society, but from normal and pervasive features of modern society, especially bureaucracy and scientific-technical rationality (If you’re brave, dip into chapter 7 for a theoretical development of this argument.)

Henry T. Nash, ‘The Bureaucratization of Homicide,’ in E. P. Thompson ed., *Protest and Survive*, Harmondsworth, Penguin: 1980, pp.62-74. TC 6262

An insider’s account of the worldview of the nuclear strategy bureaucrat. Fits well with Bauman’s analysis.

Anthony Giddens, "Capitalist Development and the Industrialization of War," in Giddens, *The Nation State and Violence*, Cambridge: Polity Press, 1985. TC 6207.

Sociological analysis of nature of modern warfare and its relationship to the development of capitalism and the state.

Elaine Scarry, *The Body in Pain: the Making and Unmaking of the World*, Oxford: Oxford University Press, 1985.

See chapter two for a discussion of the war images are sanitized.

John Ellis, *The Social History of the Machine Gun*, London: Pimlico, 1993

The machine gun exemplifies the industrialisation and depersonalisation of warfare.

Daniel Pick, *War Machine: The Rationalisation of Slaughter in the Modern Age*, New Haven: Yale University Press, 1993

On metaphors of war as a machine, and the lineage of mass produced killing to industrialized warfare.

Michael Adas, 'The Great War and the assault on scientific and technological measures of human worth', in *Machines as the Measure of Men: Science, Technology and Ideologies of Western Domination*, Ithaca: Cornell University Press, 1989, pp.345-401

First World War as cultural shock.

William H. McNeill, 'Chapter Nine: World Wars of the Twentieth Century', in *The Pursuit of Power: Technology, Armed force, and Society since A.D.1000*, Oxford: Blackwell, 1983, pp.307-345.

Tehnology just one of the factors behind the severity and nature of 20th century warfare.

What are the Sources of New Military Technology?

Lecture (BB): Where does new military technology come from? What role does science play in the invention of new military technologies? What does it mean to claim that a technology is 'socially shaped'?

Seminar Reading:

Weber, Rachel (1997) "Manufacturing Gender in Commercial and Military Cockpit Design," *Science, Technology and Human Values* 23: 235-53.

Essential Examinable Reading

Donald MacKenzie and Judy Wajcman, (eds.) *The Social Shaping of Technology* (2nd Edition). 'Military Technology. Introduction', 1999, pp.343-350.

If you have not taken the first year course: Introduction to Science Policy Studies, you should also read the introductory essay in the book (pp.3-27).

Additional Reading for Essays

B. Buzan and E. Herring, *The Arms Dynamic In World Politics*, Rienner, 1998
Chapters 2, 5-7.

Not specifically about social shaping, but general and accessible introduction to theories of the arms race.

Brian Rappert, Brian Balmer and J. Stone, 'Science, Technology and the Military: Priorities, Preoccupations and Possibilities', in E. Hackett et al (Eds), *The New Handbook of Science and Technology Studies*, Cambridge Mass: MIT Press, 2007.

Specific Case Studies Discussed in the Lecture:

Janet Abbate, 'Cold war and white heat: the origins and meanings of packet switching' in MacKenzie and Wajcman (eds.) *The Social Shaping of Technology* (2nd Edition), 1999, Chapter 25

On the origins of the Internet.

M. Armacost, 'The Thor-Jupiter Controversy' in MacKenzie and Wajcman (eds.), *The Social Shaping of Technology* (2nd Edition), 1999 Chapter 28.

Paul Forman, 'Behind Quantum Electronics: National security as basis for physical research in the United States, 1940-1960', *Historical Studies in the Physical and Biological Sciences* (1987) 18(1) pp.149-229

This seems like a huge article, most of it is footnotes though – skim it through to get the general message.

Harry Collins and Trevor Pinch, 'A clean kill?: the role of Patriot in the Gulf War', in *The Golem at Large: What you should know about technology*, Cambridge University Press, 1998

Week 4 21st October 2008

Is War Good for Science?

Lecture (JA/BB): Wars can pour resources into science, but is war 'good' for science? What are the many ways 'good' can be interpreted in this case? We will look at questions such as: how significant is military funding for science?, is military science different from civil science?, does secrecy impede science?, in what ways is human experimentation different in military or civilian settings?

Seminar Reading:

Peter Galison, 'Removing Knowledge', *Critical Inquiry* (2004) 31(1), pp.229-43

Essential Examinable Reading

David K van Keuren, 'Cold War science in black and white', *Social Studies of Science* 31(2), April 2001, pp207-252

Shows how science in the cold war was the result of negotiation between scientists and military patrons, and reflected both sets of interests

Additional Reading for Essays

Introduction to Peter Galison and Bruce Hevly (eds.), *Big Science: the Growth of Large-scale Research*, Stanford: Stanford University Press, 1992.

Also browse the articles

James H. Capshew and Karen A. Rader, 'Big Science: Price to the Present' in A. Thackray (ed.), *Science after '40*, *Osiris* (1992) 7, pp.3-25.

Also see other articles in this special issue, eg Roger L. Geiger, 'Science, universities and national defense, 1945-70'.)

Lawrence Badash, 'From security blanket to security risk: scientists in the decade after Hiroshima', *History and Technology* (2003) 19(3), pp.241-256.

Traces the increasing paranoia of the Cold War national security culture and how scientists were increasingly constrained by security regulation. Interesting parallels to today's climate of 'homeland security'.

Brian Balmer, 'How Does an Accident Become an Experiment? Secret Science and the Exposure of the Public to Biological Warfare Agents', *Science as Culture* (2004) 13(2), pp.197-228.

Discussion of secrecy and how it affects the conduct of open air experiments

Tal Bolton, "'Never Volunteer for Anything': The Concept of the 'Volunteer' in Human Experimentation During the Cold War", *University of Sussex Journal of Contemporary History* (2005) 9, available at http://www.sussex.ac.uk/history/documents/9_bolton_never_volunteer_for_anything.pdf

Susan Lindee, 'The Repatriation of Atomic Bomb Victim Body Parts to Japan: Natural Objects and Diplomacy,' *Osiris* (1999) 13, pp.376-409.

Argues that the material body parts from bomb victims, and the way they are (mis)treated, are a way of 'instantiating' (i.e. making concrete) abstract ideas such as victory in war).

Jonathan D. Moreno, *Undue Risk: Secret State Experiments on Humans*, London: Routledge, 2001. (All useful, but esp Chapters 3, 5, 6, 7)

Week 5 28th October 2008

Are Scientists Responsible for the Weapons they Research?

Lecture (BB). This lecture will explore two senses of this moral question. What are the responsibilities of scientists doing research on weapons? Secondly, are scientists responsible for how those weapons are used? The lecture will explore how scientists have dealt with these issues during the 20th Century.

Seminar Reading:

Steven Shapin, 'Don't let that crybaby in here again', *London Review of Books*, 7 September 2000, online at: <http://www.lrb.co.uk/v22/n17/shap01.html>

Daniel Charles, 'Chapter 9: "The greatest period of his life"', in *Between Genius and Genocide: the Tragedy of Fritz Haber, Father of Chemical Warfare*, London: Jonathan Cape, 2005

Essential Examinable Reading

Charles Thorpe, *Oppenheimer: The Tragic Intellect*, Chicago: University of Chicago Press, 2007, chapters 6 and 7.

Analyses physicist J. Robert Oppenheimer's views on the moral responsibility of the scientist, his initial opposition to the development of the hydrogen bomb, and the political backlash he faced during the McCarthy era.

Additional Reading/Watching for Essays

John Rubin Productions (2007), 'The Living Weapon' – Emmy-winning documentary on the history of biological warfare:

<http://www.pbs.org/wgbh/amex/weapon/program/index.html>

Kai Bird and Martin J. Sherwin, *American Prometheus: the Triumph and Tragedy of J. Robert Oppenheimer*, London: Atlantic, 2005.

Big biography. Check out Chapter 24: "I feel I have blood on my hands"

Brian Balmer, 'Killing "Without the Distressing Preliminaries": Scientists' Defence of the British Biological Warfare Programme', *Minerva* (2002) 40, pp57-75

Hugh Gusterson, *Nuclear Rites: A Weapons Laboratory at the End of the Cold War* Berkeley: University of California Press, 1998 (See Chapter 3).

Anthropological investigation of nuclear weapons laboratories.

Silvan S. Schweber, *In the Shadow of the Bomb: Oppenheimer, Bethe and the Moral Responsibility of the Scientist*, Princeton University Press, 2000.

This book is reviewed in the Shapin reading

R.R. Colwell and R. Zilinskas, 'Bioethics and the Prevention of Biological Warfare', in Zilinskas (ed.) *Biological Warfare: Modern Offense and Defense*, Rienner, 2000.

M. Somerville and R. Atlas, 'Ethics: A Weapon to Counter Bioterrorism', *Science* (2005) 307: 1881-1882

Looks at responsibilities of civilian rather than defence scientists.

B. Paskins, 'The Responsibilities of Defence Scientists', in Freedman, L (ed.) *War* Oxford: Oxford University Press, 1994

Jonathan Glover, *Humanity: a Moral History of the Twentieth Century* (London: Jonathan Cape, 1999), esp. chapters 10-13. In SSEES.

Week 6

READING WEEK

Week 7 11th November 2008

Who Counts the Dead?

Lecture (JA) on counting in wartime, including: the way rationality can backfire (case study: Operation Igloo White), the politics of counting civilian versus military casualties; we will also see excerpts from the Erroll Morris documentary *Fog of War* about arch-bureaucrat Robert McNamara.

Seminar Reading:

Paul Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America*, Cambridge MA: MIT Press, pp.3-15.

On Igloo White, and thoughts on 'containment'.

Essential Examinable Reading

Erroll Morris (Director), *Fog of War*, 2004. In the Main Library DVD collection.

John Stone, 'Technology and the problem of civilian casualties in war', in Brian Rappert (ed.), *Technology and Security: Governing Threats in the New Millennium*, Basingstoke: Palgrave Macmillan, 2007, pp.133-151

Carol Cohn, 'Sex and death in the rational world of defense intellectuals', *Signs* (1987) 124, pp.687-718

An excellent discussion of the way that language shapes how nuclear weapons are dealt with

Additional Reading for Essays

Lynn Eden, *Whole World on Fire: Organizations, Knowledge and Nuclear Weapons Destruction*, Ithaca: Cornell University Press, 2006.

Looks at how different organisational factors resulted in very different assessments by groups of defence planners of the damage that would be caused by a nuclear attack.

Malcolm Dando, *A New Form of Warfare: the Rise of Non-lethal Weapons*, London: Brassey's, 1996.

Looks at whether non-lethal weapons are so innocent when it comes to counting the dead.

How Can Scientists Contribute to Peace Movements?

Lecture (JA): during the Cold War both peace movements and strategic think-tanks presented themselves as rational responses to nuclear warfare. We look at the contrast, taking RAND as a case study of the latter and the anti-nuclear movements as examples of the former.

For the seminar we will be joined by Sandy Butcher (Pugwash UK)

Seminar Reading:

Browse the following websites. Take notes on the activities, past and present of the Pugwash movement. What are the advantages and disadvantages of Pugwash's approach to peacemaking? On the basis of your notes, compose three questions you would like answered about Pugwash.

<http://www.pugwash.org/>
<http://www.pugwash.org/uk/>

Essential Examinable Reading

David Hounshell, 'The Cold War, Rand and the generation of knowledge, 1946-1962', *Historical Studies in the Physical and Biological Sciences* (1997) 27, pp.237-267

Additional Reading for Essays

Henry T. Nash, "The Bureaucratization of Homicide," in E. P. Thompson ed., *Protest and Survive* (Harmondsworth, Penguin: 1980), 62-74. [TC 6262] (An insider's account of the worldview of the nuclear strategy bureaucrat.

Lawrence S. Wittner, "Gender Roles and Nuclear Disarmament Activism, 1954-1965," *Gender and History* 12 (1) (April 2000), 197-222. Available via Athens.

Richard Taylor, *Against the Bomb: the British Peace Movement, 1958-1965*, Oxford: Clarendon Press, 1988.

Ian Welsh, *Mobilising Modernity: the Nuclear Moment*, London: Routledge, 2000.

For anti-nuclear movements in the UK.

Lawrence S. Wittner, *The Struggle Against the Bomb, Vol. 2. Resisting the Bomb* Stanford: Stanford University Press, 1997, pp.41-60.

Caitriona McLeish and Daniel Feakes, 'Biosecurity and stakeholders: the rise of networks and non-state actors', *Science and Public Policy* 35(1) (2008), pp. 5-12

Brian Martin, 'Social defence strategy: the role of technology', *Journal of Peace Research* 36(5) (1999), pp.535-552.

Finney, J (2007), 'Dual Use: Can we learn from the physicists' experience? A personal view', in Rappert, B and McLeish, C (eds) *A Web of Prevention: Biological Weapons and the Governance of Research* (London: Earthscan)

Week 9 25th November 2008

Can Weapons of Mass Destruction be Un-invented?

Lecture (BB): what factors guide the proliferation of weapons of mass destruction (atomic, biological and chemical weapons)? How can we prevent the spread and use of weapons of mass destruction? What role do international treaties play?

Seminar Reading:

Donald MacKenzie and Graham Spinardi, 'Tacit knowledge, weapons design, and the uninvention of nuclear weapons' *American Journal of Sociology* 101(1) (1995), pp.44-99.

Essential Examinable Reading

I. Kenyon, 'Chemical Weapons in the Twentieth Century: their Use and their Control', *The CBW Conventions Bulletin* No.48 (June 2000) pp.1-15. Available at <http://www.fas.harvard.edu/~hsp/bulletin/>

Jeanne Guillemin, *Biological Weapons: From State-Sponsored Programs to Contemporary Bioterrorism*, New York ; Chichester: Columbia University Press, 2005 (Chapters 1, 8 and 9)

Additional Reading for Essays

Roland Dannreuther, *International Security: The Contemporary Agenda* (Chapter 9, 'Proliferation of WMD') Cambridge: Polity Press, 2007

C. McCleish, 'Science and Censorship in an Age of Bioweapons Threat', *Science as Culture* (2006) 15(3), pp.215-36.

Examines the way in which threat is 'framed' in terms of dual-use.

K. Vogel, 'Bioweapons Proliferation: Where Science Studies and Public Policy Collide', *Social Studies of Science* (2006) 36(5), pp.659-690

Discusses former USSR bioweapons and what sort of knowledge might be needed to make and dismantle a weapons programme.

Jez Littlewood, 'Managing biological disarmament: the UK experience' *Science and Public Policy* 35(1) (2008), pp.13-20.

Julian Perry Robinson, 'Chemical-weapons proliferation in the Middle East', in Efraim Karsh, Martin S Navias and Philip Sabin (editors), *Non-Conventional-Weapons Proliferation in the Middle East*, Oxford: Clarendon Press, 1993, pp 69-98.

On the military and political circumstances under which CW weapons might be employed) [TC 2359]

N. Tannenwald, 'The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use', *International Organisation* (1999) 43(3), pp.433-468.

O. Bosch, 'Dark Period Ending', *The World Today*, May 2003, pp. 12-13

On being a weapons inspector in Iraq

Week 10 2nd December 2008

How is Military Science and Technology Changing?

Lecture (JA and BB) will examine trends in science, technology and warfare in the twenty-first century. Examples may include cyber warfare, nuclear proliferation, asymmetric warfare, bioterrorism, and others.

Seminar Reading:

Scan recent newspapers and journals and bring along to class three articles relating to the changing character of twenty-first century warfare.

Essential Examinable Reading

Stephen Graham (2005), 'Switching cities off', *City* 9(2): 169-84

About attacking infrastructure as a theme of modern warfare.

Additional Reading for Essays

Susan L. Carruthers, 'New media, new war', *International Affairs* 77 (July 2001), pp. 673-681.

This is an essay review of three books that identify changing trends in 21st century war

Kenneth R. Timmerman, *The Death Lobby: How the West Armed Iraq*, Boston: Houghton Mifflin, 1991

Where did Saddam acquire the products and know-how necessary to build his war machine?

Richard P. Hallion, *Storm over Iraq: Air Power and the Gulf War*, Washington : Smithsonian Institution Press, 1992

Rather gung-ho analysis of new technologies in the First Gulf War.

Special Issue of *History and Technology* (2003) 19(1)

Historians of technology reflect on 9/11.

M. Cooper, 'Pre-empting Emergence: The Biological Turn in the War on Terror'. *Theory Culture and Society* (2006) 23(4), pp.113-135.

Explores the convergence of the public health and military agendas, under the rubric of 'biosecurity', that has occurred since 9/11

<http://www.guardian.co.uk/technology/2007/sep/05/hacking.internet>

A useful place to start for thoughts and examples of cyber-warfare.

B. Durodie, 'Facing the Possibility of Bioterrorism', *Current Opinion in Biotechnology* (2004) 15: 264-268

Good, provocative and short assessment of the threat from bioterrorism

James der Derian, *Virtuous War: Mapping the Military-Industrial-Media-Entertainment Network*, Boulder, CO: Westview, 2001

Engaging academic travelogue through the world of military simulation

Sharon Ghamari-Tabrizi, 'Simulating the Unthinkable: Gaming Future War in the 1950s and 1960s' *Social Studies of Science* (2000) 30(2), pp.163-223.

A long article, but the main message is about how 'real' a simulation needs to be in order to simulate reality, especially a reality that no one has ever experienced such as nuclear war.

Andrew Mack, 'Why Big Nations Lose Small Wars: The Politics of Asymmetric Conflict', *World Politics* (1975) 27(2), pp.175-200.

An article about why big nations lose small wars.

Week 11 9th December 2008

Are Humans Naturally Warlike?

Lecture (JA) will look at arguments from diverse disciplines, including anthropology, ethology and war studies, concerning the questions, are humans naturally violent? and are humans naturally warlike?

Seminar Reading:

Konrad Lorenz, 'Chapter 13: Ecce Homo!', in *On Aggression*, 1963

Essential Examinable Reading

John Keegan, 'Chapter 2: Stone', in *A History of Warfare*, London: Hutchinson, 1993.

Additional Reading for Essays

Anna Simons, 'War: Back to the Future', *Annual Review of Anthropology* (1999) 28, pp.73-108.

Review of anthropological literature on warfare, with many further references, including to supposed chimp wars

Nico Tinbergen, 'On War and Peace in Animals and Man', *Science* (June 28, 1968) 160, pp.1411-1418.

More ethology.

Lawrence Freedman (ed.), *War*, Oxford: Oxford University Press, 1994

See: Section B: The Causes of War esp. pp65-89.

Steven Rose (2003), *Lifelines: Life beyond the Gene* (Oxford: OUP)

See 'aggression' in the index

D. Paul Crook, *Darwinism, War, and History: the Debate over the Biology of War from the 'Origin of Species' to the First World War*, Cambridge: Cambridge University Press, 1994.

Daniel Pick, 'Chapter 8: Biology of War', and 'Chapter 15: Why War?', in *War Machine: The Rationalisation of Slaughter in the Modern Age*, New Haven: Yale University Press, 1993, pp.211-270

Margaret Mead, 'Chapter 2: A co-operative society', and 'Conclusion', in *Sex and Temperament in Three Primitive Societies*, 1935

Harry Turney-High, *Primitive Warfare*, Columbia: University of South Carolina Press, 1949.

Richard Tucker and Edmund Russell (eds.), *Natural Enemy, Natural Ally: Toward an Environmental History of War*, Oregon State University Press, 2004

ESSAY TOPICS FOR SCIENCE, WARFARE & PEACE

Part 1. Abstract

An abstract/overview of your essay is due by **Friday 31st October 2008**.

You will need to choose one of the questions posed by us as titles to each weeks lectures, which does not need to be one we have yet covered in the lectures.

You will need to have done some *preliminary* reading – the seminar reading and the essential examinable reading.

The weekly topic questions are very broad. To answer the question well in the form of an essay you will have to choose AND JUSTIFY a specific approach to answering the broad question. For example for topic one “Is science peaceful or aggressive?”, you might decide that the best illustration of the peaceful nature of science is its inherent internationalism, rather than, say, its destructive methodology, and so on. Your essay will then be a justification of this angle, and plenty of discussion of examples of this angle, based on your reading.

You should write a **250 word abstract/overview** of the topic you intend to cover. This is your justification and a sketch of possible examples.

This part of the assignment does not carry a mark but:

- (a) you will be given recognition when we mark the assignment for thinking of an interesting question
- (b) you will receive feedback on the abstract so that you know you are heading in the right direction for your essay (and for your question)

Part 2. Essay

Essays should be 3,000-3,500 words long, *with references cited in the main text and a list of references at the end*. Do not cite material in the end references that you have not used in the main text. Essay font should be no smaller than 12 point type, essays should have page numbers, be double-spaced and include a word count at the end.

Please read the guidelines on how to write an essay. If you are not used to writing essays then you should also read chapter 5 of A. Northedge’s *The Good Study Guide*.