

# War and peace

The past 100 years changed the nature of war. With conflict worldwide showing no sign of abating, historian Eric Hobsbawm assesses the prospects for stability in the new century

**Eric Hobsbawm**

Saturday 23 February  
2002 01.40 GMT

The 20th century was the most murderous in recorded history. The total number of deaths caused by or associated with its wars has been estimated at 187m, the equivalent of more than 10% of the world's population in 1913. Taken as having begun in 1914, it was a century of almost unbroken war, with few and brief periods without organised armed conflict somewhere. It was dominated by world wars: that is to say, by wars between territorial states or alliances of states.

The period from 1914 to 1945 can be regarded as a single "30 years' war" interrupted only by a pause in the 1920s - between the final withdrawal of the Japanese from the Soviet Far East in 1922 and the attack on Manchuria in 1931. This was followed, almost immediately, by some 40 years of cold war, which conformed to Hobbes's definition of war as consisting "not in battle only or the act of fighting, but in a tract of time wherein the will to contend by battle is sufficiently known". It is a matter for debate how far the actions in which US armed forces have been involved since the end of the cold war in various parts of the globe constitute a continuation of the era of world war. There can be no doubt, however, that the 1990s were filled with formal and informal military conflict in Europe, Africa and western and central Asia. The world as a whole has not been at peace since 1914, and is not at peace now.

Nevertheless, the century cannot be treated as a single block, either chronologically or geographically. Chronologically, it falls into three periods: the era of world war centred on Germany (1914 to 1945), the era of confrontation between the two superpowers (1945 to 1989), and the era since the end of the classic international power system. I shall call these periods I, II and III. Geographically, the impact of military operations has been highly unequal. With one exception (the Chaco war of 1932-35), there were no significant inter-state wars (as distinct from civil wars) in the western hemisphere (the Americas) in the 20th century. Enemy military operations have barely touched these territories: hence the shock of the bombing of the World Trade Centre and the Pentagon on September 11.

Since 1945 inter-state wars have also disappeared from Europe, which had until then been the main battlefield region. Although in period III, war returned to south-east Europe, it seems very unlikely to recur in the rest of the continent. On the other hand, during period II inter-state wars, not necessarily unconnected with the global confrontation, remained endemic in the Middle East and south Asia, and major wars directly springing from the global

confrontation took place in east and south-east Asia (Korea, Indochina). At the same time, areas such as sub-Saharan Africa, which had been comparatively unaffected by war in period I (apart from Ethiopia, belatedly subject to colonial conquest by Italy in 1935-36), came to be theatres of armed conflict during period II, and witnessed major scenes of carnage and suffering in period III.

Two other characteristics of war in the 20th century stand out, the first less obviously than the second. At the start of the 21st century we find ourselves in a world where armed operations are no longer essentially in the hands of governments or their authorised agents, and where the contending parties have no common characteristics, status or objectives, except the willingness to use violence.

Inter-state wars dominated the image of war so much in periods I and II that civil wars or other armed conflicts within the territories of existing states or empires were somewhat obscured. Even the civil wars in the territories of the Russian empire after the October revolution, and those which took place after the collapse of the Chinese empire, could be fitted into the framework of international conflicts, insofar as they were inseparable from them. On the other hand, Latin America may not have seen armies crossing state frontiers in the 20th century, but it has been the scene of major civil conflicts: in Mexico after 1911, for instance, in Colombia since 1948, and in various central American countries during period II. It is not generally recognised that the number of international wars has declined fairly continuously since the mid-1960s, when internal conflicts became more common than those fought between states. The number of conflicts within state frontiers continued to rise steeply until it levelled off in the 1990s.

More familiar is the erosion of the distinction between combatants and non-combatants. The two world wars of the first half of the century involved the entire populations of belligerent countries; both combatants and non-combatants suffered. In the course of the century, however, the burden of war shifted increasingly from armed forces to civilians, who were not only its victims, but increasingly the object of military or military-political operations. The contrast between the first world war and the second is dramatic: only 5% of those who died in the first were civilians; in the second, the figure increased to 66%. It is generally supposed that 80 to 90% of those affected by war today are civilians. The proportion has increased since the end of the cold war because most military operations since then have been conducted not by conscript armies, but by small bodies of regular or irregular troops, in many cases operating high-technology weapons and protected against the risk of incurring casualties. There is no reason to doubt that the main victims of war will continue to be civilians.

It would be easier to write about war and peace in the 20th century if the difference between the two remained as clear-cut as it was supposed to be at the beginning of the century, in the days when the Hague conventions of 1899 and 1907 codified the rules of war. Conflicts were supposed to take place primarily between sovereign states or, if they occurred within the territory of one particular state, between parties sufficiently organised to be accorded belligerent status by other sovereign states. War was supposed to be sharply distinguished from peace, by a declaration of war at one end and a treaty of peace at the other. Military operations were supposed to distinguish clearly between combatants - marked as such by the

# go figure!

Devastation caused by war and disease extends into all sectors of society. As a country uses more of its resources for wartime activities, leaders often give less money and political attention to the social systems which care for the most vulnerable in the population. Consistent data revealing the short and long term effects of the combination of disease and war are unavailable. But, a composite of statistics and information can be used to create a more complete picture.

## 20th century

- Between 40,000 and 45,000 Rwandan refugees may have died from cholera or dysentery (80-90 percent of all deaths) during the first month after their arrival in Zaire's Goma region in mid-July 1994 (Goma Epidemiology Group, quoted by Michael J. Toole, in Levy, p 204).
- In the Angolan civil war, the total number of deaths in 1993 was approximately 20,000. When estimating all war-related deaths in Angola, including victims of war-induced starvation and disease, the UN suggests 450,000-500,000 deaths between October 1992-December 1993 (SIPRI, quoted by Carter Center).
- Nearly 500,000 children may have died since the beginning of the Persian Gulf War, largely due to a resurgence of diarrheal and vaccine preventable diseases and malnutrition (Eric Hoskins, in Levy, p 254).

**43,920,000 military deaths**

**62,194,000 civilian war-related deaths**

- In Somalia, nearly all children in rural areas were said to suffer from malnutrition by the time Western governments began to send relief in mid-1992. By December 1992, an estimated 400,000 deaths from starvation were recorded for that year (IISS, p 184).
- In 1965, there were only 150 doctors to treat over 15 million people in South Vietnam (excluding military doctors and those who would treat only paying patients). During the war, tuberculosis, intestinal parasites, leprosy, and malaria became major causes of morbidity. Incidence of cholera, plague, and human rabies increased. In the South Vietnamese budget for 1973, 53 percent went to national defense, and less than one percent went to public health. Of US aid to South Vietnam that year, 76 percent went to the military and 0.5 percent to public health (Myron Allukian and Paul Atwood, in Levy, pp 219-220).
- The risk of spread of sexually transmitted disease increases in war. Estimates of the number of women raped in Bosnia run from 10,000 to 60,000. This includes the systematic rape of girls as a strategy of war (Mary-Wynne Ashford and Yolanda Huet-Vaughn, in Levy, pp 188-189).

**109,745,500 people have died**

**Sources:** Figures for 20th century war and war-related deaths down center of page are from *World Military and Social Expenditures 1996*, Ruth Leger Sivard. Washington, DC: World Priorities, 1996. These numbers do not add up because a breakdown of civilian and military deaths is not available in all cases. Other sources: *War and Public Health*, Barry Levy and Victor Sidel (ed). New York: Oxford University Press, 1997. *Strategic Survey 1992-1993*, London: International Institute for Strategic Studies and Brassey's, 1993. *In Her Life Time: Female Morbidity and Mortality in Sub-Saharan Africa*, Christopher Howson, et. al. (eds). Washington, DC: National Academy Press, 1996. *1994-1995 State of the World Conflict Report*, Carter Center Web Site, [http://www.emory.edu/Carter\\_Center](http://www.emory.edu/Carter_Center).

# Wars and Casualties of the 20th and 21st Centuries

(slowly extending it back to the 19th century as i find data)

by [Piero Scaruffi](#)

**160 million people died in wars during the 20th century**

(See also [Modern Genocides](#))

TM, ®, Copyright © 2009 [Piero Scaruffi](#) All rights reserved.

---

**1860-65: USA civil war (628,000)**

**1886-1908: Belgium-Congo Free State (8 million)**

**1898: USA-Spain & Philippines (220,000)**

**1899-02: British-Boer war (100,000)**

**1899-03: Colombian civil war (120,000)**

**1899-02: Philippines vs USA (20,000)**

**1900-01: Boxer rebels against Russia, Britain, France, Japan, USA against rebels (35,000)**

**1901-32: Saudis vs Arabian kingdoms (?)**

**1903: Ottomans vs Macedonian rebels (20,000)**

**1904: Germany vs Namibia (65,000)**

**1904-05: Japan vs Russia (150,000)**

**1910-20: Mexican revolution (250,000)**

**1911: Chinese Revolution (2.4 million)**

**1911-12: Italian-Ottoman war (20,000)**

**1912-13: Balkan wars (150,000)**

**1915-23: Ottoman genocides (1.2 million Armenians, 500,000 Assyrians, 350,000 Greek Pontians and 480,000 Anatolian Greeks)**

**1914-18: World War I (20 million)**

**1916: Kyrgyz revolt against Russia (120,000)**

**1917-21: Soviet revolution (5 million)**

**1917-19: Greece vs Turkey (45,000)**

**1918-20: Russian civil war (1 million)**

**1919-21: Poland vs Soviet Union (27,000)**

**1928-37: Chinese civil war (2 million)**

**1931: Japanese Manchurian War (1.1 million)**

**1932-33: Soviet Union vs Ukraine (10 million)**

**1932: "La Matanza" in El Salvador (30,000)**

**1932-35: "Guerra del Chaco" between Bolivia and Paraguay (117.500)**

**1934: Mao's Long March (170,000)**

**1936: Italy's invasion of Ethiopia (200,000)**

**1936-37: Stalin's purges (13 million)**

**1936-39: Spanish civil war (600,000)**

**1937-45: Japanese invasion of China (500,000)**

**1939-45: [World War II](#) (55 million) including holocaust and Chinese revolution**

**1946-49: Chinese civil war (1.2 million)**

**1946-49: Greek civil war (50,000)**

**1946-54: France-Vietnam war (600,000)**  
**1947: Partition of India and Pakistan (1 million)**  
**1947: Taiwan's uprising against the Kuomintang (30,000)**  
**1948-1958: Colombian civil war (250,000)**  
**1948-1973: Arab-Israeli wars (70,000)**  
**1949-: Indian Muslims vs Hindus (20,000)**  
**1949-50: Mainland China vs Tibet (1,200,000)**  
**1950-53: Korean war (3 million)**  
**1952-59: Kenya's Mau Mau insurrection (20,000)**  
**1954-62: French-Algerian war (368,000)**  
**1958-61: Mao's "Great Leap Forward" (38 million)**  
**1960-90: South Africa vs Africa National Congress (?)**  
**1960-96: Guatemala's civil war (200,000)**  
**1961-98: Indonesia vs West Papua/Irian (100,000)**  
**1961-2003: Kurds vs Iraq (180,000)**  
**1962-75: Mozambique Frelimo vs Portugal (10,000)**  
**1962-75: Angolan FNLA & MPLA vs Portugal (50,000)**  
**1964-73: USA-Vietnam war (3 million)**  
**1965: second India-Pakistan war over Kashmir**  
**1965-66: Indonesian civil war (250,000)**  
**1966-69: Mao's "Cultural Revolution" (11 million)**  
**1966-: Colombia's civil war (31,000)**  
**1967-70: Nigeria-Biafra civil war (800,000)**  
**1968-80: Rhodesia's civil war (?)**  
**1969-: Philippines vs the communist Bagong Hukbong Bayan/ New People's Army (40,000)**  
**1969-79: Idi Amin, Uganda (300,000)**  
**1969-02: IRA - Norther Ireland's civil war (3,000)**  
**1969-79: Francisco Macias Nguema, Equatorial Guinea (50,000)**  
**1971: Pakistan-Bangladesh civil war (500,000)**  
**1972-2014: Philippines vs Muslim separatists (Moro Islamic Liberation Front, etc) (150,000)**  
**1972: Burundi's civil war (300,000)**  
**1972-79: Rhodesia/Zimbabwe's civil war (30,000)**  
**1974-91: Ethiopian civil war (1,000,000)**  
**1975-78: Menghitsu, Ethiopia (1.5 million)**  
**1975-79: Khmer Rouge, Cambodia (1.7 million)**  
**1975-89: Boat people, Vietnam (250,000)**  
**1975-87: civil war in Lebanon (130,000)**  
**1975-87: Laos' civil war (184,000)**  
**1975-2002: Angolan civil war (500,000)**  
**1976-83: Argentina's military regime (20,000)**  
**1976-93: Mozambique's civil war (900,000)**  
**1976-98: Indonesia-East Timor civil war (600,000)**  
**1976-2005: Indonesia-Aceh (GAM) civil war (12,000)**  
**1977-92: El Salvador's civil war (75,000)**  
**1979: Vietnam-China war (30,000)**  
**1979-88: the Soviet Union invades Afghanistan (1.3 million)**  
**1980-88: Iraq-Iran war (435,000)**  
**1980-92: Sendero Luminoso - Peru's civil war (69,000)**  
**1984-: Kurds vs Turkey (35,000)**  
**1981-90: Nicaragua vs Contras (60,000)**

**1982-90: Hissene Habre, Chad (40,000)**  
**1983-: Sri Lanka's civil war (70,000)**  
**1983-2002: Sudanese civil war (2 million)**  
**1986-: Indian Kashmir's civil war (60,000)**  
**1987-: Palestinian Intifada (4,500)**  
**1988-2001: Afghanistan civil war (400,000)**  
**1988-2004: Somalia's civil war (550,000)**  
**1989-: Liberian civil war (220,000)**  
**1989-: Uganda vs Lord's Resistance Army (30,000)**  
**1991: Gulf War - large coalition against Iraq to liberate Kuwait (85,000)**  
**1991-97: Congo's civil war (800,000)**  
**1991-2000: Sierra Leone's civil war (200,000)**  
**1991-2009: Russia-Chechnya civil war (200,000)**  
**1991-94: Armenia-Azerbaijan war (35,000)**  
**1992-96: Tajikistan's civil war war (50,000)**  
**1992-96: Yugoslavian wars (260,000)**  
**1992-99: Algerian civil war (150,000)**  
**1993-97: Congo Brazzaville's civil war (100,000)**  
**1993-2005: Burundi's civil war (200,000)**  
**1994: Rwanda's civil war (900,000)**  
**1995-: Pakistani Sunnis vs Shiites (1,300)**  
**1995-: Maoist rebellion in Nepal (12,000)**  
**1998-: Congo/Zaire's war - Rwanda and Uganda vs Zimbabwe, Angola and Namibia (3.8 million)**  
**1998-2000: Ethiopia-Eritrea war (75,000)**  
**1999: Kosovo's liberation war - NATO vs Serbia (2,000)**  
**2001-: Afghanistan's liberation war - USA & UK vs Taliban (40,000)**  
**2001-: Nigeria vs Boko Haram (20,000)**  
**2002-: Cote d'Ivoire's civil war (1,000)**  
**2003-11: Second Iraq-USA war - USA, UK and Australia vs Saddam Hussein's regime and Shiite squads and Sunni extremists (160,000)**  
**2003-09: Sudan vs JEM/Darfur (300,000)**  
**2004-: Sudan vs SPLM & Eritrea (?)**  
**2004-: Yemen vs Houthis (?)**  
**2004-: Thailand vs Muslim separatists (3,700)**  
**2007-: Pakistan vs Pakistani Taliban (38,000)**  
**2011-: Iraq's civil war after the withdrawal of the USA (150,000)**  
**2012-: Syria's civil war (320,000)**  
**2013-: ISIS in Syria, Iraq, Libya (?)**  
**2013-15: South Sudan vs rebels (10,000)**  
**2014-16: Ukraine's civil war (9,500)**

---

## **Arab-Israeli wars**

- I (1947-49): 6,373 Israeli and 15,000 Arabs die
- II (1956): 231 Israeli and 3,000 Egyptians die
- III (1967): 776 Israeli and 20,000 Arabs die
- IV (1973): 2,688 Israeli and 18,000 Arabs die
- Intifada I (1987-92): 170 Israelis and 1,000 Palestinians
- Intifada II (2000-03): 700 Israelis and 2,000 Palestinians
- Israel-Hamas war (2008): 1,300 Palestinians

# War and Disease: War Epidemics in the Nineteenth and Twentieth Centuries

AVM Bruce Short AM RFD FRACP (rtd)



Air Vice Marshal Bruce Short, a retired physician, sometime Surgeon General ADF and editorial consultant to ADF Health, is currently undertaking studies for a Master of Arts (History).

In the fifth century BC, with allied land and sea forces, the two Greek city-states, Athens and Spartan, engaged in a 27 year, three-phased continuous war from 431 BC to 404 BC, the Great Peloponnesian War. The world's first contemporaneous historian, Thucydides (ca 460 BC – ca 400 BC), wrote a lucid but incomplete account of that conflict ending his narrative in 411 BC. The soldier-historian Xenophon in his memoirs, the *Hellenica*, completed the history to 404 BC. During the same century, a Chinese soldier and military adviser, Sun Tzu, in ca 473 BC, wrote a handbook of thirteen chapters translated as *The Art of War*. This highly regarded pamphlet-guide of the stratagems of ancient warfare, yet still pertinent to modern times, Sun Tsu proposed another idea on war:

*'all warfare is based on deception'. (2).*

*Two motives lead men to War: instinctive hostility and hostile intent.*

*The political objective is the original motive of War.*

*Vom Kriege,*  
Carl Marie von Clausewitz, 1832

The root of the English word, 'war', is the Old High German word, werra, meaning 'to confound', curiously resonating the dictum of Sun Tzu. Epidemic is the conjunction of the Greek *epi*, 'upon', 'near' and *demos*, 'people', and signifies a disease concurrently affecting a large number of people. Heraclides of Tarentum (Taranto in Southern Italy) ca 70 BC, wrote a book entitled *The Soldier*, although a recipe collection of plants and drugs, it was the first treatise devoted to modern military medicine.

Kohn itemised some 2,000 wars, revolutions, rebellions and pacifications during the last four thousand years in his *Dictionary of Wars* (3) and in the six decades since World War II (1939-45), there have been no less than 350 wars, revolutions and coup d'etat throughout the world (4). Mankind's urge and willingness to wage war may be a species specific characteristic of *homo sapiens*. The extent and severity of bad outcomes upon the combatant and non-combatant cohorts, so-called 'collateral damage', within the warfare of modernity were realised late in the historiography of war. The devastatingly brutal day-long battle around the village of Solferino, Northern Italy, in 1859, between France and Austria, provoked widespread controversy throughout Europe. Five years later the foundation of the Red Cross and the establishment of codified laws of modern war occurred in Geneva. Ultimately four principles were approved as the so-called Geneva Conventions in 1949, and with the

## Introduction

War begets disease, particularly epidemic disease, and these two ancient human disasters remain immutably linked even as the twenty-first century unfolds. This paper will explore the disease and warfare dyad, describe the underlying mechanisms linking the two, provide narratives of significant nineteenth and twentieth century war epidemics, and discuss some bioterrorism-linked diseases.

The Prussian soldier, writer and philosopher, Carl Marie von Clausewitz (1780 – 1831) published a *magnum opus* entitled *Vom Kriege*, On War. In this posthumous 1832 publication, the first modern treatise on the philosophy and science of warfare, Clausewitz defined war simply as:

*'an act of violence intended to compel our opponent to fulfil our will'.(1)*

addition of two Geneva Protocols later in 1977, provided the extant legal framework for the humanitarian operation of war.

## Nineteenth and Twentieth Century War Epidemics

A seminal manuscript, entitled *Epidemics Resulting from Wars*, appeared during World War I in 1916 authored by German physician and statistician, Friedrich Prinzing (5). Prinzing coined a special term, 'war pestilences', which he reserved for: 'those infectious diseases which in the course of centuries have usually followed at the heels of belligerent armies'. He ascribed six pestilences: cholera, dysentery, plague, smallpox, typhoid fever and (louse-borne) typhus. He later added scurvy as a seventh 'war pestilence'. He further acknowledged, 'as playing an important role in many wars, malaria, influenza, measles, louse-borne relapsing fever and yellow fever'.

Combatants during twentieth century armed conflicts benefited from improvements to military health care delivery such as antibiotic drug therapy, immunisation schedules, anti-malarial drugs and vector control programs, military medicine and nursing, emergency resuscitation and trauma surgical techniques and many more. Prior to the twentieth century, deaths from diseases regularly exceeded other war-caused mortality. During the Napoleonic Wars the British Army suffered seven disease-related deaths for every one combat-related death. Infectious diseases have been the commonest cause of non-combatant morbidity and mortality whilst dermatoses and dental infections together cause the majority of non-combatant morbidity particularly in contemporary military deployments to tropical and warm climate areas. There is, however, one extraordinary exception: during the 1870-71 Franco-Prussian War. As a result of highly effective sanitary reforms within the army, Prussian forces suffered a greater loss of life from combat than due to infectious disease (6).

During the four month-old Spanish-American War (1898) typhoid fever accounted for 87 per cent of the total deaths from disease occurring in the assembly camps. With an overall mortality of 7.7 per cent, typhoid was the major killer of American soldiers during that conflict (7). During the Great War (1914-18), as a consequence to the development of more lethal weaponry and improvements in military medical hygiene, technologies and resources, the trend was reversed whereby the number of deaths from hostilities exceeded those from disease.

Civilian deaths in war include the effects of mass population migration and refugee movements, besieged incarcerations, concentration camp internments, war-related nutritional deprivation and famine, destruction of health infrastructure as well as the dislocation of disease-control programmes. Communicable diseases brought to the civil populace by war fugitives, prisoners of war and demobilised soldiery add to civilian death rates, whilst the disruption of wild-life habitats allows the spread of zoonotic diseases to civilians (8). From the Carnegie Endowment for International Peace, John Bates Clark, signalled during World War I that: 'the most serious human cost of war has been not losses in the field nor even the losses from disease in the armies, but the losses from epidemics disseminated among civil populations' (9).

The greatest war-related epidemic in history, impacting multinational citizenry globally, was the influenza A H1N1 virus infection responsible for a three-waved pandemic from March 1918. Including the approximations for Indian cases, the so-called 'Spanish Flu' is estimated to have been responsible for the deaths of between 40 to 50 million people, principally in previous healthy young persons (10). The term influenza (or the *grippe*) is derived from Italian medical writings of the 16th century which attributed the disease to the 'occult influence of heaven'. J S Oxford *et al* recently hypothesised that the pandemic commenced in the large British base camp at Etaples in Northern France during the winter of 1917 by linking overcrowding in the many large camp hospitals with, the putative sources of the virus, the camp piggeries and live geese, duck and chicken markets in nearby townships (11, 12).

The Crimean War (1853-6) was the first major war for which there are official summary data on cause-specific losses during the entire period of hostilities and for which statistical analysis can be attempted. The British Army at the Crimean peninsula were subjected to major outbreaks of several diseases, principally cholera, which incidentally also caused the death, in June 1855, of the British Commander-in-Chief, Field Marshal Lord Raglan (1788 – 1855) (13).

Within military populations over the centuries it is possible to identify several recurring aetiological mechanisms to conjunct war with infectious diseases. In the American Civil War (1861-5), multi-centred military mobilization at the commencement of hostilities and surge recruitment programs during protracted campaigns, were commonly complicated by the out-break of so-called 'eruptive fevers'. These primarily were measles, as well as smallpox, scarlet fever and erysipelas. These epidemics were the consequences of non-immune young recruits from rural areas contacting disease carriers from more urbanised areas. In particular, black troops sustained three times a higher death rate than white recruits when infected by 'camp' measles (14). Camp epidemics regularly attended the habitation of large temporary and makeshift cantonments. Historically sexually transmitted diseases have plagued both the garrisoned and active-duty armies and navies of all nations. The incidence of venereal disease, for example, in the British Army during the mid-1800s was variously reported at a steady thirty-five per cent. This high attack rate so impaired force efficiencies that specific legislations, the Contagious Diseases Act regulating prostitution, were enacted in 1864, 1866 and 1869, leading later to protracted public controversy.

## Infectious Disease and Contemporary Warfare

The effect of war in promoting the emergence of new disease and the re-emerging of established diseases is well exemplified in modern times with the development of chloroquine-resistant falciparum malaria and insecticide-resistant fleas, the plague vector, during the Vietnam War (1964-73). The Korean Police Action (1950-3) witnessed the emergence of Japanese encephalitis virus and Hantavirus infections both due to the contact of at-risk soldiery and the ecological changes wrought by warfare. Hantavirus diseases also dramatically reappeared during the Bosnian Civil War (1992-5) via the same mechanism. Another example of the human invasions of an ecological jungle niche occurred in World War II with

the widespread outbreak of scrub typhus during the prolonged Burma campaign.

Likely infectious diseases associated with bioterrorism has moved ahead of the American 1942 report by Rosebury and Kabat which listed thirty-three candidate pathogens for analysis as effective biological warfare agents. That report ranked *Bacillus anthracis* in its dormant spore as overall the most important agent (15). The Centres for Disease Control and Prevention (CDC), the United States federal monitoring organisation based in Atlanta, Georgia, functions as the epidemiological eye of the American Public Health system. It has ranked biological agents into three classes based on the dangers they pose. In 2005, the following diseases were classified by the CDC as Class A (easily disseminated and/or highly infectious associated with high mortality rates): anthrax, smallpox, Ebola virus, *Francisella tularensis*, *Yersinia pestis* and *Clostridium botulinum*. However, genetic engineered pathogenic micro-organisms for malevolent purposes are now an entirely practical development. Synthesised in Bio-safety Level 4 laboratories, scientists have developed a recombinant chimera of the Ebola and smallpox genomes. This *ebolapox* hybrid would result in severe haemorrhagic pustulation leading to body-wide surface blackness, 'blackpox', combined with the violent haemorrhaging characteristic of the Ebola virus. The severe haemorrhaging combined with the contagiousness of the smallpox virus can result in near-one hundred per cent fatality rates (16).

The nexus of war and epidemics, the so-called 'war-and-epidemics couplet', may not, in the view of Roger Cooter (17), have a certain straight forward relationship. He argues that most epidemics are not rooted in war suggesting, for example, that polio, tuberculosis, whooping cough, scarlet fever and diphtheria correlate poorly with war. Exceptionally, wars have occurred without epidemics. Cooter quotes Creighton's 1891 article *A History of Epidemics in Great Britain*, that during the Napoleonic Wars, typhus and other contagious disease became singularly absent from England (18). Further, although smallpox is often linked with war, it has not always been spread by it. An 1882 article by W Guy records that it is in the years of peace that the highest average death-rate by smallpox occurs (19).

Over the last few decades wars have continued to increase in number and increasingly have occurred within poor states. In the past decade poor nations, such as Afghanistan, Bougainville, the Caucasus, Cambodia, the Congo, Rwanda, Somalia, Sierra Leone, Solomon Islands, Sri Lanka and Timor Leste, to mention some, have suffered war. The authors of *War Epidemics* outline three new themes that characterise modern conflicts. The increasing involvement of non-state organisations, with guerrillas, terrorists and rebels ranking as the principal combatants. With non-state participants there has been an associated rise in so-called 'low-intensity conflicts' such as counter-insurgencies (El Salvador) and pro-insurgencies (Angola, Nicaragua). Finally, civilians are intermingling with combatants and civilians are now viewed as legitimate targets (the Rwandan genocide) (20).

Interspersed with the epidemic adverse health outcomes from the recent major wars in Afghanistan, Iraq and Kosovo are

the attendant health fall-outs associated with the continued threat of the use of biological agents and weaponry, world energy shortages and world climate change. War between John Keegan's 'have-nots' against the 'haves', and vice versa, and increasingly by the poor alone, (21) will underpin and continue to drive the world's apparent infatuation with military conflict.

## References

1. von Clausewitz, C M, *On War*, Penguin Press, London, 1968, p. 101
2. Sun Tzu, *The Art of War*, Barnes and Noble Classics, New York, 2003, p. 9
3. Kohn G C, *Dictionary of Wars*, Checkmark, New York, 1999, pp. 557-594
4. Smallman-Raynor M R and Cliff A D, *Impact of Infectious Diseases on War*, *Infectious Diseases Clinic of North America*, W B Saunders and Co, June 2004, 18: 2, p. 20
5. Smallman-Raynor M R and Cliff A D, *War Epidemics: An Historical Geography of Infectious Diseases in Military Conflicts and Civil Strife 1850 – 2000*, Oxford University Press, Oxford, 2004, p. 35
6. Short, B H, *Bioterrorism: The Menace of Microbiological Science*, *United Service, Journal of the Royal United Services Institute of NSW*, 2008, 59: 3, p. 12.
7. Cirillo V J, *Fever and Reform: The Typhoid Epidemic in the Spanish-American War*, *J History of Medicine*, 2000, 55, p 363.
8. Smallman-Raynor M R and Cliff AD, *War Epidemics*, *op cit.*, p. 40
9. Smallman-Raynor M R and Cliff A D, *Impact of Infectious Diseases on War*, *op cit.*, p. 7
10. Bartlett J and Hayden F, *Influenza A (H5N1): Will it be the next Pandemic Influenza?* *Annals of Internal Medicine*, 2005, 143: 6, pp. 460-1
11. Oxford J S, Lambkin R, Sefton A et al, *A Hypothesis: the conjunction of soldiers, gas, pigs, ducks, geese and horses in Northern France during the Great War provided the conditions for the emergence of the 'Spanish' Influenza Pandemic of 1918-1919*, *Vaccine*, 2005, 23. p. 940
12. Oxford J S, Lambkin R, Sefton A et al, *World War I may have allowed the emergence of 'Spanish Influenza'*, *The Lancet, Infectious Diseases*, 2002, 2, p 111-14
13. Hibbert C, *The Destruction of Lord Raglan: A Tragedy of the Crimean War, 1854-5*, Penguin, London, 1963, pp. 338-9
14. Smallman-Raynor M R Cliff A D, *Impact of Infectious Diseases on War*, *op cit.*, pp. 8-9
15. Short B H, *Bioterrorism: The Menace of Microbiological Science*, *op cit.*, p. 14
16. Zubay G et al, *Agents of Bioterrorism: Pathogens and their Weaponisation*, Columbia University Press, New York, 2005, pp. 73-6
17. Cooter R, *Of War and Epidemics: Unnatural Couplings, Problematic Conceptions*, *J Society for the Social History of Medicine*, 2003, 16: 2, pp. 285-6
18. Creighton C, *A History of Epidemics in Great Britain*, (1891) London, reprinted 1965, vol II, pp. 163-7
19. Guy W, *The Small Pox Epidemic as Affected by the States of War and Peace*, *J of Statistical Society*, 1882, 45, 576-87, p. 584
20. Smallman-Raynor M R and Cliff A D, *War Epidemics*, *op cit.*, pp. 691-3
21. Keegan J, *A History of Warfare*, Pimlico, London, 1994, p. 57

