The Impending Nuclear Wars[1]

by Angelo Baracca[2]

The US is performing an alarming escalation towards a nuclear war.
It is completely renovating its strategic nuclear arsenal, actively preparing to launch a "preventive attack", and developing biological and chemical waepons, while the anti-missile shield will complete an impressive offensive system.
A "Fourth Generation" of low-yeld, highly penetrating nuclear warheads have probably been developed and already used:
they erase the distinction between "nuclear" and "conventional" weapons and make a nuclear war feasible without formally violating the existing treaties

THE XXIth CENTURY (US, NUCLEAR) WARS

The hope of eliminating nuclear and mass destruction weapons from the surface of the earth seems actually more far than ever: On the contrary, the danger of their effective use is presently more concrete than during all the decades of the Cold War. The US, in the framework of an unprecedented arms race, in spite of a consistent numerical reduction of its redundant strategic stockpile, *is performing the biggest effort of every time to renovate it with completely new nuclear warheads*, while is concretely preparing to launch a "preventive attack". Moreover, with the deployment of the antimissile shield it is building a tremendous offensive system. Washington is also *developing chemical and biological weapons, while is boycotting verifications and inspections that would implement the Conventions for the prohibition of these arms*.

As a matter of fact, the use of nuclear warheads is becoming increasingly convenient in the wars Washington is planning and will fight in the future. In fact, the war operations of the last decade have shown that the cost-effect ratio of conventional explosives delivered by precision-guided munitions resulted exceedingly high (some targets require the expenditure of several delivery systems): this pushed the search for new more effective nuclear weapons that could be politically accepted for their low yield and residual radioactivity. In this context has to be interpreted Bush's decision of March 2002 of developing new low-yield, deeply penetrating nuclear warheads. Along these lines, a front-line investigation performed in the big nuclear arms laboratories is trying to develop *a new generation of "micro-nukes"*, that will erase the distinction between nuclear and conventional arms, legitimating the use of nuclear weapons in conventional conflicts, or lowering the threshold for a nuclear conflict, without formally violating the existing treaties.

It must be stressed that, since research and development in these fields are strictly classified, only speculations are possible, connecting and interweaving official information or evidence with clues, lacking links, disquieting open questions. It is highly probable that the big Laboratories of military research in the US (probably in the UK, France, Russia, or

---

[1] Prof. Gordon Poole, of the University "Federico II" of Napoli, kindly translated into English a previous, abridged version of this paper. The present is in fact an updated and extended version (up to December, 2002) of a research started some years ago [see: *Giano*, n. 33, May-August 1999, p. 33; *Guerre e Pace*, n. 93, October 2002; *Il Manifesto Rivista*, November 2002]. I must say that at every revision the situation appears much worse and more worrying!

[2] Department of Physics, University of Florence, Italy; e-mail: baracca@fi.infn.it

the former Soviet Union) have already designed or built new weapons, probably based on new or unknown principles or processes, that are being tested in the wars fought during the last decade. From this point of view, *the alarming but reliable hypothesis may be advanced that the US have already built a "Fourth Generation" of "micro-nukes" and that they have been already tested and probably extensively used in the wars of the last decade*. I have no information that some scientist has raised the question of how a "mini-nuke" could circumvent the problem of the critical mass for a sustaining fission reaction[3]: this authorizes to suppose that some new mechanism or process is being experimented, if not already set up and applied. I will come back on this point.

It is sure in general that new methods of "*mass and indiscriminate destruction warfare*" are being developed, improved and used in what is considered "conventional" warfare, to weaken the enemy's structures, infrastructures, population and moral, saving lives of one's own soldiers; and testing moreover the eventual international reactions to such methods. For instance, the extensive bombardments of chemical plants in Panchevo and Novy Sad during the Balkans war as a matter of fact produced on the civil populations effects very similar to those of a true chemical warfare[4]. In the case of depleted uranium[5] (DU) munitions, it seems worrying that, although they were developed long time ago, they were not extensively used until the collapse of the Soviet Union, starting with the 1991 Gulf War. As a matter of fact, their use did not meet a sufficiently strong international and internal opposition, in spite of the almost 80,000 US and thousands of Canadian and British veterans stroke by the "Gulf Syndrome", not to speak of the European soldiers in the Balkans and of the populations in Iraq, the Balkans and Afghanistan. In the usual appreciation, DU munitions are *radiological bombs, "weapons of indiscriminate effect"* in terms of the 1st Protocol additional to the Geneva Conventions[6]. However such an

---

[3] I must thank my colleague Emilio Del Giudice, of the INFN of Milan, for this remark and for discussion of related aspects.

Let me briefly recall some basic notions. In *Fission* a heavy nucleus (uranium-235, plutonium-239) absorbs a neutron, and breaks into two lighter nuclei, emitting energy plus 2 to 3 neutrons: the latter may break more nuclei, triggering a *chain reaction*, if they do not escape from the fissile material. The *critical mass* is just the minimum mass of fissile material for which the chain reaction may sustain. Its value depends from many factors - for instance, the trigger configuration and mechanism (classified) - but cannot be reduced at will.

In *Fusion* two light nuclei join together, emitting energy: this process may take place only if the two nuclei approach at extremely short distance, exceeding the barrier of the electric repulsion. This occurs at temperatures of the order of a million degrees: This situation is common inside the stars, but is generated by a fission explosion in a *thermonuclear weapon*, which is therefore a fission-fusion bomb.

[4] Recent data on Pancevo are highly preoccupying, see e.g.: "Long term environmental and health effects", <www.enn.com/news/wire-stories/2002/11/11052002/ap_48881.asp>.

On the other hand, cluster bombs caused numerous victims even after the bombing was over (as we will see, they are being adapted to biological weapons). It has been argued that the chemical products used in Latin America to destroy the coca crops are really a sort of chemical weapons.

[5] The *fissile* isotope of uranium (U-235, containing 235 protons+neutrons) is only the 0,7 % in natural uranium. For military use uranium must be highly enriched, leaving a component which is "*depleted*" of U-235, and is composed almost exclusively by U-238, an isotope which is radioactive and decays emitting an alpha particle (a nucleus of Helium). It seems certain, however, that in weapons also uranium from exhausted fuel is used: however cleaned in the retreatment process, this may be dirt, containing residues of fission products and plutonium.

[6] *Weapons of mass destruction* cause sudden death or destruction in target areas, some with long term or widespread effects. *Weapons of indiscriminate effect* cause widespread or long lasting contamination liable to cause injury, chronic illness, slow death or severe birth defects. Both are outlawed in the 1st Protocol of the Geneva Conventions.

It is worth recalling here the study of Rosalie Bertell on the overall effects of radioactivity on the world population, concluding that "Up to 1.300 million people have been killed, maimed or diseased by nuclear power since its inception"; she analizes and criticizes moreover the reasons why the official criteria deeply undervalue these numbers: Rosalie Bertell, " Victims of the nuclear age", *The Ecologist*, November 1999, pp. 408-411 (<www.ratical.org/radiation/NAvictims.html>).

interpretation may be questioned from more than one point of view. It seems difficult (at least for me) to understand and believe how a low radioactive substance could produce such generalized and extended health effects, although spread in the environment and the alimentary chain by the “pyrophoric” explosion of DU. Moreover, some eye-witnesses report that the tanks struck by a DU shell appear to be deeply distorted or destroyed, besides being highly radioactive[7]: such effects seem difficult to explain on the basis of this “pyrophoric” effect, and may be suspected to involve a much stronger kind of explosive phenomenon. On the other hand, how could the US Administration authorize the realization of the new penetrating “mini-nukes” if the principle and mechanism of their operation were not already set up? The most natural speculation - however fantasious it may seem - could be that DU munitions have already set up, and used, some kind of new nuclear explosive process, highly classified and still unknown to the scientific community. We will come back on this point in more detail.

FIGHT WITHOUT QUARTER FOR RESOURCES AND WORLD RULE

In fact, the dangers of a nuclear conflict, and use of weapons of mass destruction derive primarily from the US, rather than from the countries pointed out as the “axis of evil”: a war to Iraq would consist, paradoxically, in “preventing” *unconfirmed* weapons of mass destruction through the *effective use* of weapons of indiscriminate or mass destruction! It should be explained *why*. As a matter of fact, the new-century US’ strategy adopts war as the mean to solve (or provoke) international conflicts, and to impose its own

---

Reports identify 21 weapon systems suspected of using Uranium warheads ranging from Bunker Busters and Cruise Missiles to Cluster bombs; there are also reports of the use of 2 ton GBU-28 Bunker Buster guided bombs, suspected of carrying 1000-1500 kg of Uranium per warhead.

A new concern has been raised about a new breed of uranium weapons using standard, non-depleted uranium (i.e., having the same isotopic mix as natural uranium) in the warhead components: if used in large, explosive "hard target" warheads (up to 1500 kg) it will create levels of radioactive contamination 100 times higher and more widespread than the DU anti-tank "penetrators" used in the Gulf War.

Use of DU munitions in Iraq and the Balkans is certain, and its consequences are denounced, although covered by silence by the media.

In what concerns Afghanistan, although it is not proven, new reports highlight growing concerns that the US bombardments may have used over 1000 tons of Uranium warheads with potentially disastrous consequences for Afghan civilians and posing serious health risks to troops and expatriates who were exposed to the bombardments or contaminated areas (see the Reuter's Health website at <http://www.reutershealth.com/en/index.html> and search "Afghanistan"). Current data of biological samples from Kandahar, Kabul, and Jalalabad obtained by state of the art mass spectrometry analysis confirm over 100 times higher concentration of uranium isotopes in the biological specimens as compared with the control group. Very high levels of maternal mortality in Afghanistan have been reported in two recent studies: the first one from the American Medical Association (September, 2002), at http://jama.ama-assn.org/issues/v288n10/ffull/jlf20033.html; and the latest from the CDC / UNICEF study for the Afghan Ministry of Health, at <http://www.nlm.nih.gov/medlineplus/news/fullstory_10239.html> (November 6, 2002: the researchers who did these studies were unaware of suspected Uranium hazards and did not report on the health of the infants who died unborn, or survived maternal mortality; post-mortem examinations were not reported). There have also been several lethal epidemics of "mystery illnesses" this year in Afghanistan. For background on the weapons systems used in Afghanistan suspected of containing Uranium warheads and potential health hazards for civilians and troops see: “Depleted Uranium weapons 2001-2002: Mystery Metal Nightmare in Afghanistan”, 31 January 2002, at <http://www.eoslifework.co.uk/du2012.htm> (+ PDF copy of full report); and “Hazards of Uranium Weapons in Afghanistan and Iraq”, 23 October 2002, at: <http://www.eoslifework.co.uk/u232.htm> (plus linked files). For the latest assessment (November 13, 2002) by Prof. Marc Herold see <http://www.cursor.org/stories/uranium.htm> (this contains some errors about details of the weapons and asserts that Uranium weapons have been used).

About the next war to Iraq, there are estimates that over 1500 tons of Uranium dust could be added to the Iraq environment, 5 times more than acknowledged in the Gulf War in 1991: this would threaten a major increase in the existing epidemic of cancers and birth defects that has developed into a humanitarian disaster in Iraq and multiple health problems for Gulf War veterans.

[7] See Jean-Marie Benjamin, *1999 - Iraq, l’Apocalypse*, Editions Favre SA, Lausanne, Swizerland.

interests (denying the fundamental principles of International Law, as they were stated and embodied in the UN Chart and in the most advanced constitutions of many countries): US interests come before any general interest, democratic principle, social justice, and even "human rights", whose violation is denounced by the US only when they perceive their direct convenience, while Washington openly defend or impose dictatorships and cause humanitarian catastrophes[8].

The origins of this worldwide strategy are to be viewed in the imperial vocation of the country and the lack of a comparable counterpower, but also in the powerful interests of its military industrial complex (whose influence in imposing, for instance, the antimissile shield is out of doubt) and in the choice of war as the mean to overcome the increasing difficulties of its economy and to impose restrictive internal laws, instrumentally denouncing the dangers of an international "terrorism" which is largely a product of the same American politics, and is adopted instead by the US itself and by its strict allies and protégés, like Israel. But a basic motivation for such a strategy is becoming the fight for direct control of the sources of natural resources and of strategic areas and corridors, and in particular of the deposits of natural fossil fuels. In fact, in contrast with all arguments during past decades on the large consistency of these supplies, it is actually accepted that - in spite of the residual consistence of oil pits - the extraction rate of oil and natural gas will reach an absolute peak in the next few years, and will begin to lower well before mid century[9]: in such a perspective, the fight for direct military control of these resources is becoming a vital need.

It is likely that, after Iraq, the next target will be Iran: direct control of Iraq and Iran would in fact give the US control of an enormous, crucial strategic area extending from the whole Mediterranean Sea till China's border, including military penetration into Caucasian and Central Asiatic countries.

One should wonder, instead, of the total submission of so many countries, in the first place the European ones, to Washington's strategy, in the fallacious illusion that the powerful ally will guarantee also their interests.

NEW NUCLEAR WEAPONS AND PREVENTIVE ATTACK

What is the present consistency of the strategic nuclear stockpiles?

Actually there has been a consistent reduction in the number of Russian and US strategic nuclear warheads: their actual number is around 5,000 on each side, while full accomplishment of the START-2 treaty would have led to 3,000 - 3,500 warheads on each side by the year 2007. The problem is that this treaty has been refused by Russia, after Washington's unilateral withdrawal from the ABM (*Anti Ballistic Missile*) treaty! But it is true that the strategic arsenals of the two main nuclear powers, built up under the strategy of dissuasion and assured mutual destruction, were really redundant and overestimated.

The media celebrated last June's agreement between Bush, Jr. and Putin to cut down the stockpiles for these warheads to 1,700 - 2,200 on each side. In reality, though, it was nothing but a big bluff (suffice to recall that the warheads removed will not be destroyed, so that a total of 4,600 US warheads, deployed or removed, will remain at the end: without

---

[8] In its increasing "terrorist" paranoia, the Pentagon is also developing the largest expansion of covert action by the armed forces around the world since the Vietnam era, see William M. Arkin, "The secret war", *Los Angeles Times*, October 27, 2002: "The Defense Department is building up an elite secret army with resources stretching across the full spectrum of covert capabilities. New organizations are being created. The missions of existing units are being revised. Spy planes and ships are being assigned new missions in anti-terror and monitoring the "axis of evil"".

[9] See for instance several Internet sites, like: <www.petroconsultants.com/iwatch/index.html>; <www.dieoff.com>; <www.iea.org/g8/world/oilsup.htm>. It is worth noticing that the decline of the extraction rate of fossil fuels is not due to exhaustion of the pits: well before the exhaustion of a pit, the energy required for oil extraction overcomes the energy content of oil itself.

taking into account an undefined number of tactical warheads, on which we will return later on). While during recent years many inside the Administration had proposed that warheads be cut back to no more than 1,500 per side, Moscow knows well that over the upcoming years it will be able to keep barely more than one thousand warheads in efficiency[10].

But the real, basic problem is that Washington is completely renovating its strategic arsenal with more efficient and specialized new generations of warheads.

Moreover, in January of 2002 the *Nuclear Posture Review* and the *Defense Planning Guidance* recognized the possibility of a "preventive attack"[11], naturally against countries belonging to the "axis of evil," accused of holding weapons of mass destruction, even if they are often "made in USA"[12]. It was not ruled out that such an attack could be launched against Iraq. In December, 2002, it was confirmed the United States's willingness to retaliate with nuclear weapons for chemical or biological attacks on U.S. soil or against American troops overseas[13].

There are evident preparations afoot, such as the announced unification of the Space

---

[10] An uncertainty and a delicate aspect in the computation of the consistency of the stockpiles is given by the *tactical warheads*, that were removed from deployment (but not dismanteled) at the end of the decade of the eighties by the INF (*Intermediate Nuclear Forces*) treaty, but are not covered by the START (*Strategic Arms Reduction Treaties*). The exact number of Russian tactical warheads is not known, but is estimated on the order of thousands. Given the difficulty of getting funding for new warheads, the proposal was made to keep them operative as a component of the nuclear deterrent (the Russian army has carried out drills simulating the use of tactical warheads). On this the US position is not clear, since (besides having too tactical nuclear warheads) it maintains gravity bombs in Europe that are still one of the mainstays of its Atlantic bonds. Declassified documents have revealed that in past decades the USA introduced nuclear weapons without informing the host countries (among these Japan, whose constitution explicitly forbids such weapons on Japanese soil).

[11] *Los Angeles Times*, July 13 and 14, 2002; *Global Security Newswire*, July 15, 2002; *US News*, July 15, 2002. Also NATO, that was always dominated by the US, seems to be adopting a similar strategy: Adam Tanner, "NATO says could launch pre-emptive strikes", *Swiss radio International*, November 2, 2002.

[12] A shocking essay of Dominique Lorentz, *Affaires Nucleaires*, Paris, Les Arénes, 2001, documents the proliferation policy leaded by the White House all along the post-war mid century, either directly or, more often (in order to circumvent the prohibitions by federal laws, or parliamentary control), through intermediaries, mainly France, Israel, Germany, or Argentina, India, Pakistan, and so on. "Civil" nuclear programs have been the common way to introduce military programs, since in most cases they included enrichment and/or retreatment plants: in fact, many of the concerned countries were far from suffering any energy shortcut!

France and Germany were involved in Iraq's nuclear program: Israel sabotaged the "Osirak" reactor while it still was in France, and later bombarded the Tamouz site, in which it was being built up. During the bloody and forgotten Iraq-Iran war in the eighties - instrumentally encouraged and supported by the US against the Ayatollah's regime, that they had imposed in order to dismiss the Shah (history repeats!) - Washington supplemented Baghdad with both chemical and biological warfare know-how (and obviously knew and approved their use against both Iran and Curds).

Washington's international affairs have often turned against themselves, as in the cases of Saddam Hussein, or of the Taliban regime in Afghanistan.

The Iranian nuclear program was supported directly by the US under the Shah regime, and later by France and Germany. Teheran has a 10 % participation in the "Eurodif" European uranium enrichment program: the true beginning of the bloody Islamic Jihad's terrorism was during the eighties, when Paris (and Washington) tried to cut this participation, till when it was officially confirmed in 1991. It seems that some of the 1998 Pakistan's nuclear tests really tested Iranian warheads (the same done for Israel in the parallel Indian tests). Moscow is actually involved in the Iranian nuclear programs, for the completion of the Busher's plant (in which also Germany was previously involved).

The *New York Times* (November 25, 2002) has denounced Pakistan's support of North Korea's nuclear program, after the support given by North Korean to the Pakistan's missile program: in spite of the strong denial by part of President Musharraf, it's highly believable that all the history is true, and is the cue of the past maneuvers guided by the US.

[13] Mike Allen and Barton Gellman, "Preemptive Strikes Part Of Strategy, Officials Say", *Washington Post*, December 11, 2002 Pg. 1.

Command (*SpaceCom*), responsible for military operations in space and the informatics web, and the Strategic Command (*StratCom*), responsible for nuclear forces[14]. The possibility of recourse to nuclear attack is linked to the deployment of the anti-missile shield, the effect of which will be, as we will analyze in more detail, to encourage a nuclear arms race and a turn to terrorist attacks, against which the shield is absolutely useless; to this could be added the future orbiting space platforms equipped with high technology weapons and capable of striking any enemy country in a matter of minutes (compared with almost 30 minutes for an intercontinental ballistic missile, ICBM). In fact, in June of 2002 Washington refused a proposal made form Russia and China at the Conference for Disarmament in Geneva for a new treatise for the prohibition of arms based in space[15].

On its part, Moscow has abandoned its traditional doctrine of *no first use*; the New Military Doctrine adopted a couple of years ago explicitly allows for the possibility of a nuclear response even to an attack with conventional weapons "in situations seen as critical for national security". Peking is strengthening its nuclear and missile arsenal (already some years ago China declared it was capable of building a neutron bomb). Not to mention India and Pakistan, constantly on the verge of a conflict that could go nuclear; and Israel, ready for a nuclear response to any attack from Iraq[16]. According to official UN documents and the CTBT (*Comprehensive Test Ban Treaty*), over forty countries have nuclear capacity[17].

We are sitting on a nuclear powder keg, and it looks like we are destined to think back longingly to the "balance of terror." Let us revise the various projects for building new nuclear warheads.

SUPER COMPUTERS AND SIMULATION OF NUCLEAR TESTS

The USA has launched the most massive arms race in its history. One is awed not only by the mind-boggling figures of the military budget but also by how it as soared, from 250 billion dollars in 1999 to the present more than 400 in the fiscal year 2003 [18] (over 40% of the military spending of the whole planet, more than that of the next fourteen military powers put together; slightly less than the gross national product of India, almost half that

---

[14] Reuters, June 25, 2002; Manlio Dinucci, *il manifesto*, June 17, 2002.

[15] *Associated Press*, June 27, 2002.

[16] Recently Israel has equipped with cruise missiles with nuclear warheads three conventional submarines bought from Germany.

[17] See for instance the cited Dominique Lorentz's essay. These countries are: Algeria, Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Congo, Egypt, Finland, France, Germany, Holland, Hungary, India, Indonesia, Iran, Israel, Italy, Japan, Mexico, North Korea, Norway, Pakistan, Peru, Poland, Rumania, Russia, Slovak, South Africa, South Korea, Spain, Sweden. Switzerland, Turkey, Ukraine, United Kingdom, United States, Vietnam.

There are countries, like Germany and Japan, that do not hold nuclear warheads, but possess the know-how and capacity to build them, since they have done it for and in other countries.

[18] Moreover, the enormous cost of a war to Iraq is not included in this budget, but will be covered as emergency expenses. The former director of the Office for Administration and Budget, Lawrence Lindsey, was strongly criticized and subsequently expelled from the administration for having foreseen a war expense between 100 and 200 billion dollars. His successor, Mitchell Daniels, has lowered this forecast to 60 to 90 billion dollars. However, such a sum does not include neither the expenses for a long military occupation nor those for reconstruction. The costs of the 1991 Gulf War were around 80 billion dollars, but did not comprise a military occupation, and were largely assumed by Saudi Arabia, Kuwait and Japan.

Seumour Melman, professor emeritus of the Columbia University, is denouncing since many years the massive military overspending in the federal budget and its effect of de-industrializing the country, costing millions of jobs and starving the investment in public work. In a recent memorandum, called "The Pentagon connection", he recounts the massive redundancy and costliness of various weapon systems, such as the next wave of fighter planes, missiles, submarines and aircraft carriers. The American Society of Civil Engineers estimates that one and a third trillion dollars are required for the repair of twelve categories of public works. See Ralph Nader, "The Pentagon connection", January 17, 2003, <http://commondreams.org/>.

of Brazil, almost a third of that of Italy; the military budget of the whole European Union is around 150 billion dollars, although there are strong pressures to rise it[19]). This unleashes an increase in military spending in all countries.

In this sky-high budget, expenditures for new weaponry are increasing. In particular, Washington is making an unprecedented effort to realize a new generation of nuclear warheads. The latest, contested nuclear tests by Chirac in 1995 were carried out on behalf of the United States, with which Paris had stipulated a confidential agreement for data exchange, in order to experiment with a charge of variable strength[20].

A mega-project to carry out virtual nuclear tests, using the fastest super computers[21], calls for an expenditure of sixty-seven billion dollars in fifteen years (almost three times the cost of the Manhattan Project or the Apollo Project). The yearly expense of 4.5 billion dollars only for this project is more than the 3.7 billion dollar yearly average during the cold war.

A government laboratory has revealed the details of the most powerful super computer in the world, the "Asci White"[22] (*Advanced Strategic Computation Initiative*), developed by IBM, 1,000 times more powerful than its predecessor, "Deep Blue", that won the chess world champion Gary Kasparov: it is composed by 8192 microprocessors, weights as 17 big elephants, its cooling system absorbs an energy equivalent to that of 765 houses, and it carries out 12.3 trillion operations in one second. The simulation of a nuclear explosion, planned for 2005, requires one hundred trillion operations per second.

A second project calls for a *National Ignition Facility* (NIF) to be realized in 2003, in which 192 lasers are supposed to simulate the heat generated by a thermonuclear explosion; the project risks being subject to delay and almost certainly will cost more than the initially planned 1.2 billion dollars. As we will see, this will be a multipurpose facility, devoted to radically innovative nuclear projects.

Miniaturized, low-yield and highly penetrating nuclear warheads are among the main aims of these researches. The proposal Bush made in March of 2002 to develop a new generation of low-yield nuclear warheads, capable of penetrating deeply into the earth (three hundred meters of granite) before exploding, had begun to circulate officially a couple of years ago[23]; and already three years ago a proposal was making the rounds in Russia to build a new generation of mini-nukes (0.4 kilotons) for battlefield use.

It is worth noticing that the US is not alone in developing such projects. Recently it was revealed that Great Britain too is planning a 2 billion £ (3 billion $) project at Aldermaston to build super-computers and develop low-yield nuclear warheads[24]: it would be strange if this project were not correlated with that of the US. On its part, France is building a combined system of a super-computer to modelize nuclear explosions plus a giant radiographic apparatus, named *Airix* (operative since September of 2000), to study the behavior of materials exposed to an explosion, and the biggest laser in the world, named *Mégajoule*, to reproduce the physical conditions of thermonuclear fusion: compared with the NIF, the latter will deliver an energy of 2 million joules using the convergence of 240 laser beams on a target, and some thirty measuring devices[25].

---

[19] Chirac has increased in 6 % the French military budget, and has proposed that military expenses do not be comprised in the Pact of Stability of the European Union.

[20] Dominique Lorentz, cit., pp. 567-8.

[21] Christopher E. Paine, *Scientific American*, September 1999; John Barry, *Newsweek*, August 20, 2001.

[22] *Reuters*, August 16, 2001.

[23] *Fas Public Interest Report*, January/February 2001, Vol. 54, no. 1. Ben MacIntire, *The Times*, April 16, 2001; Julian Borger, *The Guardian*, April 18, 2001.

[24] *The Guardian*, June 18, 2002.

[25] A detailed description is given by Luc Allemand, "Mégajoule: le plus gros laser du monde", *La Recherche*, No. 360, January 2003, pp. 60-67. It seems interesting to notice that the *Comissariat à l'Énergie Atomique* is developing an operation of "seduction" towards the civil physicists announcing that the facility will be devoted

Everything is being prepared to develop, test and use new nuclear weapons under controlled conditions!

NANOTECHNOLOGY, THE NEW FRONTIER IN NUCLEAR WEAPONS

Radically innovative perspectives in nuclear weapons are open by the new frontier field of nanotechnology - i.e., the science of designing microscopic structures in which the materials and their relations are machined and controlled atom-by-atom (over distances of 10^{-9} m, compared to 10^{-6} m in microelectronics, that is of the order of 1,000 atoms) - and that in fact was born a few decades ago just in nuclear weapons laboratories. An important article by André Gsponer[26] denounces the active development of these techniques (obviuosly classified) in the military laboratories, with a very large field of applications both in conventional weapons (such as new high-performance sensors, transducers, actuators, and electronic components) and in nuclear weapons. Following Gsponer's arguments, a first field of application of nanotechnology to nuclear weapons is to improve the existing types of warheads. Extremely rugged and safe arming and triggering mechanisms are necessary for nuclear weapons such as atomic artillery shells, in which the nuclear explosive and its trigger undergo extreme acceleration, and the crucial components must be made as small as possible. Also the design of warheads which would detonate after penetrating the ground by more than tens meters requires some kind of active penetration mechanism and implies that the nuclear package and all components have to survive extreme conditions of stress until the warhead is detonated. The drive towards miniaturization of nuclear weapons and very-low yield explosives (between a few kilograms and a few tons of high-explosive equivalent) has become the main advanced weapons research activity in nuclear weapons laboratories, using gigantic tools such as the above mentioned NIF and France's Laser Mégajoule; it was recognized that it is easier to design a micro-fusion than a micro-fission explosive (which has the further advantage of producing much less radioactive fallout than a micro-fission device of the same yield).

But the most alarrning perspectives are the applications of nanotechnology to the development of new types of nuclear explosives, i.e. a fourth-generation of nuclear weapons[27], that can be developed in full compliance with the Comprehensive Test Ban Treaty (CTBT) using inertial confinement fusion (ICF) facilities such as the NIF or *Mégajoule*, and other advanced technologies which are under active development in all the major nuclear-weapon states and in major industrial powers such as Germany and Japan. It is interesting to follow Gsponer's arguments: "in a nutshell, the defining technical characteristic of fourth-generation nuclear weapons is the triggering - by some advanced technology such as a superlaser[28], magnetic compression, antimatter, etc. - of a relatively small thermonuclear explosion in which a deuterium-tritium mixture is burnt in a device whose weight and size are not much larger than a few kilograms and liters. Since the yield of these warheads could go from a fraction of a ton to many tens of tons of high-explosive

---

in part to civil researches.

[26] André Gsponer, "From the Lab to the Battlefield? Nanotechnology and Fourth-Generation Nuclear Weapons", *Disarmament Diplomacy*, No. 67, October-November 2002; see: <www.acronym.org.uk/dd/dd67/67op1.htm>.

[27] First- and second-generation nuclear weapons are atomic and hydrogen bombs developed during the 1940s and 1950s, while third-generation weapons comprise a number of concepts developed between the 1960s and 1980s, e.g. the neutron bomb, which never found a permanent place in the military arsenals.

[28] The 'superlaser' provides a factor of one million increase in the instantaneous power of tabletop lasers, and is possibly the most significant recent advance in military technology; photons can be concentrated in unlimited numbers so that a very localized and brief light pulse can contain huge amounts of energy - so large that a table-top superlaser can initiate nuclear reactions such as fission or fusion. This increase in power is of the same magnitude as the factor of one million difference in energy density between chemical and nuclear energy.

equivalent[29], their delivery by precision-guided munitions or other means will dramatically increase the fire-power of those who possess them - without crossing the threshold of using kiloton-to-megaton nuclear weapons, and therefore without breaking the taboo against the first-use of weapons of mass destruction. Moreover, since these new weapons will use no (or very little) fissionable materials, they will produce virtually no radioactive fallout. Their proponents will define them as "clean" nuclear weapons - and possibly draw a parallel between their battlefield use and the consequences of the expenditure of DU ammunition"[30].

It is just this consideration, if true, that poses problems with reference to the known nuclear fission and fusion processes: in fact, since the first one needs a critical mass of the order of kilograms, and the second one the production of a temperature of a million degrees, as can be actually generated by a fission explosion, it follows that a nuclear warhead must have a minimum yield, of the order of kilotons, that is much higher than that reported for the new "mini-nukes". It seems highly believable, therefore, that some new process or mechanism has been discovered and applied in order to conceive, or realize such "micro-nukes": if President Bush Jr. has authorized their development, it is highly probable that they have been tested, or already developed. Gsponer refers to the possible use of a superlaser to trigger a small fusion process: however we have already discussed the enormous complexity and dimensions of such facilities, like the NIF or *Mégajoule*, conceived to reproduce the conditions of a thermonuclear explosion. Moreover, even if the superlaser existed, how could it fit into a miniaturized warhead? Which moreover should resist extreme accelerations and stress conditions!

It seems more plausible that some new kind of nuclear process has been discovered and developed in condensed matter, igniting spontaneously the fissile or fusion "explosive". Which kind of process is difficult to say, since these investigations are absolutely top secret. It could have nothing to do with DU; or instead it could just be some previously unknown process inside it. Probably it is only fantasy, but it could explain much better the effects of the DU munitions: in such a case, their "mechanism" en explosion would be quite different than is actually supposed.

If confirmed, these hypotheses would imply that the wars fought in the last decade already were true nuclear wars, as would be also the next war to Iraq. As a matter of fact, the White House has confirmed in December of 2002 to explicitly foresee the use of nuclear weapons when and were it considers it convenient, without excluding the war to Iraq: what would be the advantage of using in such a battlefield, in a country that should be militarily occupied, nuclear warheads as powerful as some thousand tons of equivalent explosive?

RESUMPTION OF NUCLEAR TESTS?

But the alarming perspectives related with nuclear weapons do not stop here. In the US in fact, above all under the new Bush administration, the opinion is gaining strength to never ratify the CTBT, which forbids underground nuclear testing (those in the atmosphere were prevented since 1963), and indeed to leave the door open for their resumption.

For years underground, sub-critical nuclear tests with plutonium have been carried out in Nevada, at Los Alamos, and at the Livermore Laboratory (the 18th of such tests was performed in October 2002), while the secret Appaloosa program calls for natural-scale simulations of nuclear explosions on the surface using plutonium 242 as a surrogate for

[29] Compared with usual warheads powers expressed in kilotons or megatons, respectively one thousand and one million tons of high-explosive equivalent.

[30] André Gsponer, cit. See a study on the radiological aspects of fourth-generation nuclear weapons in : http://arxiv.org/abs/physics/0210071

military plutonium[31].

However, there is increasing pressure for real nuclear tests to be resumed, especially to develop the new, low-yield warheads. The Assistant Secretary of Defense, Wolfowitz, has spoken of circumstances in which nuclear tests "should be contemplated"[32]. The Bush administration has asked nuclear warhead scholars to examine the possibility of quickly resuming underground nuclear explosions in the Nevada desert, if the government should decide to put an end to the eleven-year-old moratorium on testing[33], and has reduced financing for non proliferation programs, including aid to Russia.

In Russia many scientists are frustrated by the ban on nuclear testing, which they respect while Washington rejects the CTBT and updates its arsenal. Moscow too carries out sub-critical nuclear tests in Novaya Zemlya[34] and the CIA has made it known that it is unable to monitor possible Russian low-intensity tests with sufficient precision to guarantee respect of the CTBT[35], thus giving the opponents of ratification a further argument.

China, meanwhile, carries out sub-critical nuclear tests (a few years ago it bought containment devices from Russia to mask the seismic effects of a nuclear explosion). Behind the collision of the American spy-plane Ep-3e with a Chinese interceptor (April 2001) there was the intention of checking whether Peking was preparing for a nuclear test in the Lop Nur proving grounds[36]. Some years ago China acquired from Russia the containment apparatus devised to mask the seismic effects of a nuclear explosion.

France too is carrying out sub-critical nuclear tests. So that the nuclear testing activity is already proliferating all around the world.

THE RISK OF "ERRORS" (OR MISUSE?) MOUNTS

A further factor of tension and danger is that Washington continues to maintain over 2,000 strategic warheads on constant alert, on "launch by warning", and aimed at "enemy" targets[37], almost five hundred in the Moscow area alone. This increases the risk of a launching by mistake (in 1995 Moscow mistook an experimental rocket launched by Norway for a strategic ballistic missile; the reprisal was stopped at the last moment, when Eltsin's "briefcase" was already being opened).

The most serious problem is that not only the strategic arsenal but also the Russian alarm system is decrepit and "blind" for part of the day: several warning satellites are already extinguished, but the majority of them are at the end of their operative life. Paradoxically, the danger in Russia comes more from her weakness than her strength.

Last but not least, one more alarming proposal is emerging: that of loading the interceptor missiles of the antimissile shield with a nuclear warhead, in order to be sure of destroying all the incoming weapons, without the need of distinguishing them from decoys[38]. A similar proposal had been discarded in the seventies, in a system known as *Safeguard*, since a nuclear explosion to destroy incoming Soviet ICBM could blind US sensors and warning satellites, so increasing the possibility that a second wave of missiles

---

[31] <http://www.lasg.org/appaloos/appaloos.htm>
[32] Richard Butler, *New York Times*, July 13, 2001.
[33] Knight Ridder, *Tribune News Service*, June 28, 2001.
[34] *Washington Times*, September 15, 1999; albeit the minister for Atomic Energy denied it (*Itar Tass*, September 16, 1999).
[35] *Washington Post*, October 3, 1999, p. A01.
[36] Bill Gertz, *Washington Times*, April 9¸2001. That the sub-critical test was carried out would seem to have later been confirmed: Bill Gertz and Rowan Scarborough, *Washington Times*, June 6, 2001.
[37] Walter Pincus, *Washington Post*, June 20, 2001, p. 8. Maintaining this state of alert costs the Pentagon some twenty billion dollars a year. In recent years the number of strategic targets in Russia has actually increased.
[38] Daniel G. Dupont, "Nuclear reactions", *Scientific American*, September 2002.

hit their targets. Today, however, Washington is concentrated on the threat of a very limited number of missiles launched by a "rogue state" or terrorists: since the missile defenses would not be ready until 2005, the nuclear alternative could gain ground. Detractors of this proposal argue that if the intercepting nuclear charge is too small, some chemical or biological warheads could spread their content: on the contrary, a most powerful explosion would damage the military and commercial satellites all around the earth.

ANTI-MISSILE SHIELD AND PROLIFERATION

The deployment of the anti-missile shield will have serious destabilizing consequences. The *National Missile Defense* (NMD) project is the best known, but the Bush Administration is working for the fulfillment of a *layered defense*, consisting in many complementary types of anti-missile defenses, in order to attack an incoming missile in many ways: this system takes on again many aspects of Reagan's 1983 "Star Wars" project.

It is worth recalling that the flight of a ballistic missile is composed of three different phases: the boost phase, the phase of inertial flight outside the dense layers of the atmosphere, and the phase of reentry in the atmosphere. During the boost phase it would be easier to intercept the missile, since it moves slower and the engines are burning: but time is very short, and an intercepting system very near the attacking country would be needed. The problem of missile defense is extremely complex and difficult. The possible attacks are not limited to intercontinental ballistic missiles, but include the warheads for the battlefield, cruise missiles, besides possible missile attacks offshore. There are many efficient and economic countermeasures, such as decoys or false warheads (this is one of the main problems encountered in the tests of the NMD). Last but not least, the shield is ineffective against terrorist attacks performed with different means.

The NMD is only one of the eight main programs being experimented (out of no less than twenty), with costs (probably underestimated) that will run over 115 billion dollars[39]. The vital eye of the system are the *System-Low-the-missile-warning* and the infrared rays satellites to follow the trajectory. The Navy has two projects: the *Navy Area Theater Ballistic Missile Defense*, and the *Navy Theater Wide*. Also the Army has two projects: the THAAD (*Theater High Altitude Area Defense*: a land based system that should protect the troops deployed oversee by theater missiles) and the system *Patriot* PAC-3. There are then two projects of the Air Force: the *Airborne Laser* (transported by a Boeing 747-400, should destroy the missiles during the ascent, at a distance of no more than 400 km) and the *Space Based Laser* (based instead in space). The overall costs (probably underestimated, in particular for the expenses during the life cycle of the systems, estimated around 20 years) overcome the mind-boggling sum of 115 billion dollars[40], see the Table.

Table (data 2001)

Program	**Acquisition (billion $)**	**Life cycle (billion $)**
NMD	24,4	43,2
System-Low-the missile	8,2	10,6
Navy Area	7,3	?
Navy Theater Wide	5,5	?
THAAD	16,8	23
Patriot-3	10,1	?
Space Based Laser	3	?

[39] John M. Donnely, *Defence Week*, April 2, 2001
[40] John M. Donnely, cit.

The *Ballistic Missile Defense Organization* (BMDO) foresee simultaneous research in the various areas. The Administration pushes to accelerate the projects, so that some may become operative at the end of Bush' mandate (2004), asking the Congress additional founds. The state of the projects is in continuous evolution and the situation is fluid. Some of the news that circulated in the last year are the following. The Navy's program of tactical defense *Navy Area* encountered technical difficulties and its deployment is foreseen with a 20 months delay with respect to the forecast date of December 2003. The THAAD is foreseen for 2007, but could be anticipated of one or two years[41]. The *Airborne Laser* is foreseen for 2008, but its deployment could be anticipated (though some news report that it must be redesigned, since it results too heavy). Some sea based systems could be deployed by 2005. Test of the *Space Based Laser* is foreseen by 2012 and should cost $ 4 billion.

In the fiscal 2003 defense appropriations bill, President Bush scored a major victory on NMD, getting $7.4 billion and making it all but certain that a group of interceptor rockets soon will be deployed in Alaska[42]: on December 2002, in fact, Bush decided to anticipate the deployment of the first intercepting missiles to 2004[43] (10 ground-based interceptor missiles at Fort Greeley, and an additional 10 interceptors by 2005 or 2006: preparatory construction at Fort Greeley began in June of 2002, and other elements of the missile-defense test site will be built beginning in 2003). "Bush´s success came without much of the ideological turmoil that has accompanied past missile defense decisions: these days, the bigger fights are over which programs should win a piece of the generous missile defense pie. (...) By refusing to commit itself to a specific missile defense "architecture", the administration appears to be keeping its options open to see which approaches are most promising. (...) One casualty of this approach is the effort to develop orbiting satellites armed with lasers that could take out a missile in its "boost-phase""[44].

---

[41] M. Selinger, *Aerospace Daily*, 14.06.2001.

[42] Pat Towell, "Bush's missile defense victory signifies changing times", *Congressional Quarterly Weekly*, October 26, 2002.

[43] Bill Gertz, "U.S. To Deploy Anti-Missile System By '04", *Washington Times*, 17 December 2002, Pg. 1
It must be added that the CIA estimates that Iran, Iraq, Libya and Syria could also emerge as long-range missile threats and that the initial West Coast system will be unable to knock out missiles from those countries: administration officials have been reported as declaring that Pentagon is planning a second missile defence system, based at an interceptor site in Maine, oriented towards missile threats from Europe and the Middle East, that could be built in the 2010-2015 time frame (*The Hindustan Times*, December 20, 2002).

[44] Pat Towell, cit: the following are the main programs funded under the fiscal 2003 defense appropriations law, and are aimed at developing weapons that could intercept a missile in the first few minutes after its launch.

Boost Phase: *Air-Borne Laser* - Boeing, Lockheed Martin and TRW are teamed in a $10.7 billion project to field seven 747 cargo jets equipped with huge lasers that could destroy missiles at a range of a several hundred miles; the defense appropriations law provides the $598 million requested for fiscal 2003.

Space-Based Laser - Although some conservatives have touted satellites armed with anti-missile lasers for years, Congress slashed the $170 million fiscal 2002 funding request of because the first test of the weapon was not slated until 2013. The team of contractors working on the project - TRW, Lockheed Martin, Boeing - dissolved at the end of September. The 2003 defense appropriations law slashes the administration´s request for $35 million for the project to $25 million.

Kinetic-Energy Weapons - The administration requested two new programs to develop guided missiles that could be launched from ships ($90 million) and from satellites ($54 million) to ram an attacking missile shortly after its launch, destroying it by the force of impact. The fiscal 2003 appropriations law slices $50 million from the total of $144 million, leaving it to Pentagon managers to allocate the reduced funding.

Mid-Course: There are two major programs intended to ram an interceptor into a long-range missile as

But the projects don't end here. In fact there are more of the Army, the *Tactical High Energy Laser*, the mobile protection for troops *Medium Extended Air Defense*; then two programs developed on behalf of Israel, the Theater defense *Arrow* program (tested in the joint military maneuvers Us, Israel, Turkey in June 21, 2001), and the anti-rocket laser. Moreover there are the system of warning satellites *SBIRS-High* (8.2 billion dollars are foresee only for research and development, more 2.4 billion dollars of support), the Navy's network of management of the field *Cooperative Engagement Capability*, and several more collateral projects. The US Missile defence plans also call for deploying three warships equipped with the Aegis battle management system and SM-3 interceptor missiles, to deal with short-range and medium-range missiles.

These projects, moreover, are against ballistic missiles, but the militaries denounce the lack of defenses against *cruise* missiles (that are said will incorporate *stealth* capacities in the future): however, systems are being tested with this task[45].

The project of missile defense has several serious consequences, that are already becoming manifest. It is already unleashing further arms races. In fact, any anti-missile system has a limited effectiveness[46] and can be effectively contrasted by a series of countermeasures. One of them is to saturate it, increasing the number of missiles or/and warheads in a nuclear attack.

The new Russian ballistic missile Topol-M (SS-27) seems to have a maneuverability in the phase of reentry into the atmosphere which would allow it to get around the anti-missile defense[47]. With Washington's abandonment of the ABM treaty, Moscow declared that it no longer recognized the START treaties: so Moscow's most effective choice might be to mount multiple warheads (MIRV), banned by the treaty, on the new missiles. Without counting that so far no defenses against the Cruise missiles being perfected by Moscow are available, although they are under experimentation. Last year Russia conducted a test on a new, high-speed, intercontinental cruising missile (SS-25) in three stages plus a post-boost vehicle containing the warhead, which consists in a high-speed cruising missile that flies in the atmosphere to get above anti-missile defenses[48]. In the meantime, Moscow plans to extend the operational range of the old, intercontinental missiles SS-19, which can be armed with six nuclear warheads.

---

it arches through space:

Ground-Based - Boeing leads a large team of companies developing ground-launched interceptors, which President Bill Clinton first considered deploying in Alaska. The fiscal 2003 appropriations law funds the $2.6 billion request for the missiles and test sites.

Sea-based - The law trims $10 million from the $427 million requested to develop a similar system launched from the Navy's Aegis cruisers.

Terminal phase: *Patriot PAC-3* - The fiscal 2003 appropriations law adds $30 million to the $151 million requested to fund additional testing for this Lockheed Martin system. The law also adds $20 million to the $472 million requested to continue production.

THAAD - The law provides $912 million of the $932 million requested to continue developing this Lockheed Martin system, designed to intercept missiles that fly farther and faster than the PAC-3.

Sea-Based Terminal - After a Raytheon-led effort to develop a short-range ship-launched interceptor was scrapped in 2001, the administration requested $90 million to start over. But the appropriations law cut $60 million and shifted the remaining $30 million to the Sea-Based mid-course system, which uses some of the same components.

In order to follow how the various missile defense programs are developing, the Center for Defense Information, USA, has created charts detailing the successes and failures of every integrated light test held by the Missile Defense Agency (MDA): <http://www.cdi.org/missile-defense/systems.cfm>

[45] Jeff Bennett, "Inside Missile Defense", 18.04.2001, p. 1; "Washington Times", 07.06.2001, p. 6.

[46] See for instance: V. F. Polcaro, in *Contro le Nuove Guerre* (M. Zucchetti, ed.), Odradek, Rome 2000, p. 213.

[47] *Russia Weekly*, Center for Defense Information, Washington, no. 65, September 10, 1999.

[48] Bill Gertz, *Washington Times*, July 30, 2001: <http://washingtontimes.com/national/20010730-13752166.htm>

The MIT scientist Ted Postol criticizes the anti-missile shield in sharp opposition to the administration: he has denounced, among other things, the danger that warheads struck during the boost phase might fall in Europe, Canada, or Central America. It has also been denounced the risk that the interception of a nuclear warhead by a laser could be no less disastrous than the explosion of the warhead, with the difference that the victims would be different from those foreseen if the missile should strike its target[49].

CHEMICAL WEAPONS

But the nuclear risk today extends to all the weapons of mass destruction.

The *Convention on chemical weapons* was signed in 1997 and ratified by 120 countries, but the USA is in violation for not having passed legislation to apply it or regulations for inspection of its chemical industries. Consequently, also Germany and Japan are hindering verification. Last April, the Bush administration rudely demanded the sacking of the Brazilian diplomat Bustani as General Director of the Organization for the Prohibition of Chemical Weapons on account of his initiatives, not coordinated with Washington, among them the attempt to persuade Iraq to join the organization: on July 26 the Argentine diplomat Pfirter, evidently more lined up, was appointed in his place.

There is little chance the expiration date of 2012 established for the elimination of chemical weapons will be honored. The USA has destroyed one fourth (7,000 tons) of its arsenal, while Russia would need five billion dollars to destroy its forty thousand tons[50].

It seems likely that at the very least the US used aggressive hallucinogens in the 1991 Gulf War[51]. Washington is moreover supporting the position of licit use of incapacitant chemical arms: “The US support the position that their use to control war prisoners and civil disorders does not constitute a war method and therefore does not fall under the Convention”[52]. It is highly probable that such a position extends to “terrorists”, since the Taliban prisoners in Guantanamo are not considered by them as war prisoners.

BIOLOGICAL WEAPONS

Still more serious is the situation regarding the *Convention on Biological Weapons* of 1972. Bacteriological weapons constitute in fact the most alarming case, since techniques that have become standard (functional to the interests of food multinationals seeking to monopolize the world market with genetically modified organisms) allow even a terrorist group with a relatively modest laboratory to modify the genetic code of a micro-organism normally living in the human body or agricultural plants, in such a way that it will produce lethal toxins (the USA has repeatedly attacked Cuba with aggressive chemicals, damaging agriculture and animal farming).

---

[49] Geoffrey Forden, *Bulletin of the Atomic Scientist*, September 2002.

[50] *Christian Science Monitor*, April 6, 2001; Sergei Ishchenko, *Trud*, Russia, June 21, 2001 (*CDI Russia Weekly*, no. 159, June 22, 2001). Russia could suspend its participation in an international convention banning chemical weapons if Moscow's request to extend the deadline for destroying its chemical arsenals is rejected by the convention's signatories, the Interfax-Military News Agency reported (*Moscow Times*, October 8, 2002 Pg. 4).

[51] Maintained by Wouter Basson, the *eminence grise* behind the chemical war plans of the government of apartheid South Africa, in testimony before the High Court of Pretoria on the destruction of this arsenal. He declared that films of the surrender of Iraqi troops clearly showed the effects of these aggressive substances in the faces of the soldiers (*India Times*, July 28, 2001: <http://timesofindia.indiatimes.com/articleshow.asp?art_id=67147283>). After the war further evidence of the use of aggressive chemicals was brought forth.

[52] *Joint Publication 3-06/Doctrine for Joint Urban Operations* (September 16, 2002). It may be recalled that in the occasion of Genoa’s G8 in July of 2001 the Italian police used against the crowd 6,200 tear bombs equipped with a chemical substance named CS, which is really a chemical aggressive; see e. g. Edoardo Magnone and Ezio Mangini, *La Sindrome di Genova. Lacrimogeni e Repressione Chmica*, Fratelli Frilli Editori, Genova, September of 2002

Although the 1972 Convention has been ratified by 143 states (including all the main military powers), it contains no mechanism for verification. Last year Washington, with its usual arrogance, scuppered the agreement forged at great effort in Geneva for an inspection protocol, since "it would set at risk national security and confidential information," i.e., the affairs of the biotechnological industries[53]. Recently the existence of a laboratory has been revealed in the Nevada desert where, in violation of the 1972 Convention, lethal biological agents are produced using genetic engineering, under the pretext of carrying out simulations to reduce the threat. Actually it is a secret research program on biological weapons[54]: in any case, the bare production of biological weapons violates the Convention. Indeed, the case of the anthrax letters has to due with a trail within the US …

Even worse, the US and UK have been reported[55] of being developing a new generation of biological weapons that, as for the new generation of nuclear warheads, would undermine and possibly violate international treaties on biological and chemical warfare: the Pentagon, with the help of the British military, is working on "non-lethal" weapons similar to the narcotic gas used by Russian forces to end the siege of terrorists in Moscow. The US is encouraging a breakdown in arms control by its research into biological cluster bombs, anthrax and non-lethal weapons for use against hostile crowds, and by the secrecy under which these programs are being conducted. The US argue that the research work is being done for defensive purposes, but its legality under the Biological Weapons Convention is highly questionable. Furthermore, signatories of the Convention agreed to make annual declarations about their biodefence programs, but the US never mentioned any of those programs in its reports. According with a recent analysis[56], British and US research on hallucinogenic weapons encouraged Iraq to look into similar agents, and showed it the way. The programs referred to above are:

1. CIA effort to copy a Soviet cluster bomb designed to disperse biological weapons;
2. a project by the Pentagon to build a bio-weapon from commercially available materials to prove that terrorists could do the same thing;
3. research by the Defense Intelligence Agency into the possibility of genetically engineering a new strain of antibiotic-resistant anthrax;
4. a program to produce dried and weaponized anthrax spores.

It could be recalled that recently the US accused Cuba (against which they have delivered biological attacks) of being developing chemical and biological weapons. In order to justify the development of new weapons, new enemies and threats must continuously be found; or … invented.

In the meantime, the paranoia for a bacteriological attack is widespreading, alimented by the administration: at the end of 2002 a massive vaccination campaign against smallpox for security reasons was announced[57], starting with military personnel, health care and emergency workers, and offering then immunization to the public on a voluntary basis starting in 2004. Government officials have estimated that about 500,000 military personnel and 500,000 civilians would be covered by the plan's initial phases; eventually

---

[53] E.g., v Richard Beeston, *The Times*, July 23, 2001.

[54] *New York Times*, September 4, 2001 (<www.nytimes.com/2001/09/04/international/04GERM.htm?ex=10>); *New York Times*, September 4, 2001 (<www.nytimes.com/2001/09/04/international/04BIOW.htm?pagewa>); Manlio Dinucci, *il manifesto*, September 6, 2001.

[55] <www.guardian.co.uk/usa/story/0,12271,821306,00.html>

[56] Malcom Dando and Mark Wheelis, *Bulletin of the Atomic Scientists*, December of 2002.

[57] David Brown, "In Vaccination Plan, A World of Unknowns", *Washington Post*, December 14, 2002; Page A01 (<http://www.washingtonpost.com/ac2/wp-dyn/A52661-2002Dec13?language=printer>); Richard W. Stevenson and Lawrence K. Altman, "Smallpox Shots Will Start Soon Under Bush Plan", <http://www.nytimes.com/2002/12/12/politics/12VACC.html>.

as many as 10 million people involved in law enforcement, health care and emergency response could be offered the vaccine. Opposition to wide use of smallpox vaccine however bubbles up from three wellsprings, psychological, medical and sociological[58].

MODIFYING THE WEATHER: METEOROLOGICAL AND ECOLOGICAL WARFARE

But the spasmodic search for new warfare methods seems endless! Actually, both the Americans and the Russians have developed capabilities to manipulate weather conditions for war purposes[59]: Kyoto Protocol indeed!

In the US, the new technology is being perfected under the *High-frequency Active Aural Research Program* (HAARP) as part of the *Strategic Defense Initiative* (SDI, "Star Wars")[60]: it is a system of powerful antennas based in Gokona, Alaska, jointly managed by the US Air Force and the US Navy. Recent scientific evidence suggests that the HAARP is fully operational and has the ability of potentially triggering floods, droughts, hurricanes and earthquakes, through the diversion of vapor flows in the earth's atmosphere or triggering of atmospheric disturbances by using extremely low frequency electromagnetic waves. From a military standpoint, HAARP is a weapon of mass destruction, as is capable of selectively destabilizing agricultural and ecological systems of entire regions.

HIGH-TECHNOLOGY CONVENTIONAL WEAPONS BASED IN SPACE

To further complicate this scenario, there is the growing role and ever more destabilizing effect of high-technology, high-precision conventional weapons that are being frenetically developed by the US. Although these weapons are not strictly arms of mass destruction, they are assuming increasingly subtle, powerful and devastating effects, and are increasingly interlacing with the dangers of mass destruction warfare, and superposing with some of the effects and purposes of nuclear weapons. It must be stressed that wars are occasions to test new wapons. In this exasperated evolution a crucial role is played by the powerful industrial military complex of the US.

One of the latest novelties in this field should be a new weapon that Washington is anxious to experiment in the assault on Iraq: a high-power microwave weapon that is supposed to knock out the electronic components and informatics systems[61], to be used together with a massive employment of unmanned aircraft, tested successfully in the war in Yugoslavia. Another case are futuristic laser weapons under development by the U.S. military, that are making the transition from fodder for science fiction to reality and could soon be ready to play a major role in protecting troops on the battlefields of the 21st century: successful test firings have become routine for the Zeus, which zaps unexploded

---

[58] The medical reason for opposing widespread vaccination is the relative riskiness of the vaccine and the difficulty of minimizing that risk. At least one quarter of the potential pool of recipients - and possibly a lot more - will need to be screened out: this includes anyone who is infected with the AIDS virus, is pregnant, is on immunosuppressive drugs or has any of the skin diseases known collectively as eczema. Because the vaccine is a live virus that can be transmitted to others, anyone in close contact with a person in those categories must also be excluded: that will be an even harder task, and one more vulnerable to mistakes. Even if everything goes perfectly, there will be thousands of people with hot, swollen, sore arms. More likely, there will be complications and a few deaths.

What has public health officials most worried are the sociological consequences of a vaccination campaign that is badly handled, or even just unlucky. In recent years, both autism and the symptoms known as "Gulf War syndrome" have been blamed on vaccines, although there is little or no scientific evidence to support the contention. Skepticism about vaccines is fueled by the fact that occasionally one does cause harm, as in the case of the rotavirus vaccine against a common intestinal illness. The vaccine was abandoned after it was found to have triggered an intestinal defect in some people.

[59] <http://www.au.af.mil/au/2025/volume3/chap15/v3c15-1.htm>.

[60] See: Michel Chossudovsky, "Washington's new order: weapons have the ability to trigger climate change", <www.emperors-clothes.com/articles/chuss/haarp.htm>;
and Rosalie Bertell, <www.globalpolicy.org/socecon/environment/weapons/htm>

[61] David A. Fulghum, *Aviation Week and Space Technology*, August 6, 2002.

mines and bombs, and the Mobil Tactical High-Energy Laser, MTHEL, a joint American-Israeli weapon designed to swat down small short-range rockets and even artillery shells in mid-air[62]. Actually the new BLU-118/B should be mentioned, an "bunker buster" weapon that can plow deep into the ground before detonating[63]: already given a test run this year in an attack on a suspected Qaeda cave in Afghanistan, the bunker buster may become one of the key weapons in an attack on Saddam Hussein's regime.

Other countries feel they are cut out of the competition in this field and see the unchallenged supremacy of the USA rising terribly[64].

These concerns are greatly intensified by another aspect of US paranoia: the US thinks that its supremacy in space is on the decline and that this puts its security at risk. The strategic proposals for the future (*Joint Vision 2010*, *SpaceCom 2020*) fondly aim at re-conquering hegemony in space with a "full range dominion" based on a digital system made up of spy satellites, alarms, and command/control missile defenses, and space-based weapons, so as to be able to strike any point on the planet in a few minutes (as against the twenty to thirty minutes required by ballistic missiles). Washington is studying a "space bomber," i.e., a "sub-orbital vehicle" launched from an airplane at a speed fifteen times greater than that of present bombers, capable, from an altitude of sixty miles, of destroying targets on the other side of the planet in just thirty minutes' time[65]. This would amount to a new escalation, a new kind of stratospheric war.

This paranoia fuels an uncontrollable spiral. The new conventional weapons compromise any chance of strategic stability. The only choice left to other countries is to seek to rebalance the situation by relying on technologically less sophisticated weapons of mass destruction, strengthening the nuclear deterrent, taking into account the possible recourse to any military means, from chemical and biological weapons to ecological war, guerrilla warfare, and terrorism (being then harshly denounced by Washington for that).

"CYBER-WAR", THE NEW FRONTIER

But the spine-chilling scenarios of technological war go still farther. During the war in the Balkans "the United States, with maximum secrecy, activated a super-weapon that catapulted the country into a new military era that could change forever the methods of war. Secretly, the American forces launched a *"cyber-combat*" offensive[66], scrambling the command/control network of the Yugoslav army, knocking out the integrated air-defense computers, inserting deceptive messages, perhaps even disturbing the telephone network, to induce the Yugoslav commands to communicate by cellular phone, the transmissions of which can easily be intercepted.

According to the experts, false data can be implanted in enemy computers, memory banks can be wiped out, viruses inserted, and even the weapons systems of the enemy can be modified (e.g., reprogramming an enemy Cruise missile so that it will reverse its course and return to the ship or plane that launched it), or else the voice of a president or commander can be faked, having him issue suicidal orders to the troops. News was spread of a British invention that could use existing mobile phone antennas to locate stealth planes, invisible to radar[67]. The line between military and non military objectives becomes fuzzier and fuzzier; the legal and ethical limits are subtle, also on account of the

---

[62] Hil Anderson, "Combat lasers becoming a reality", < http://www.upi.com/view.cfm?StoryID=20021210-090342-6771r>.

[63] Ivar Ekman, "Bunker Buster", *The New York Times*, December 15, 2002.

[64] In this connection, there is another significant objection timidly raised by Germany, regarding the protections (black-boxes*)* imposed by the US on the weapons they sell, to prevent buyers from accessing the secret technologies. Naturally the US rejected it (*Defense News*, November 22, 1999, pp. 3-28).

[65] Ed Vulliamy, *New York Sunday*, July 29, 2001.

[66] *Washington Times*, October 25, 1999.

[67] Robert Uhlig, *London Daily Telegraph*, June 11, 2001.

clear threats against the civil population.

It is thought that at present twenty-three countries possess capacities in this field (among them India, Siria, and Iran). In January 1999 identification was made of an attack by the Indonesian government against the provider of an Irish internet provider, which hosted a site demanding independence for East Timor. Between January and March Russian hackers broke into the Pentagon's informatics network, apparently looking for naval codes and missile guidance data. Then there was an attack by China on a network of Washington web sites, which were put out of service three times. Of course it is very hard to distinguish isolated hackers from those acting on behalf of enemy countries. During 2000 some 413 intruders broke into military networks.

The Pentagon – which calls this sector "Information Warfare" (IW) – has set up a new military center in the base area of Peterson, in Colorado Springs, under the above-mentioned Air Force Space Command, to manage the forces of cyberwarfare, a space Battalion, a Mobile Technology Team, and a Space Defense Laboratory, with the task of coordinating both the defense of the military informatics network from outside threats and offensive actions. In fact "computer weapons" offensives are also being studied[68].

[68] Andrea Stone, *USA Today*, June 19, 2001, p. 1.