

“The Unthinkable”

Open letter to “IEEE Spectrum” magazine, in relation to a series of publications regarding USA policies against contemporary threats.

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Dear Sirs,

In the March 2003 issue of the IEEE Spectrum Magazine, the article “Not so unthinkable”, presented by James E. Gover and Paul G. Huray, raises some serious questions about the intention and relevance of its subject in relation to the general area of interest of both the magazine core, as well as the majority of its subscribers. In this article, Gover and Huray discuss the feasibility of using nuclear weapons of limited scale, in cases where conventional ammunition seems to be ineffective [01]. The specific article is only the conclusion of a series of publications of similar content, clearly political in nature and totally outside the scope and technical nature of the specific magazine.

Besides the propagandistic nature of this article, regarding the intentions and the expediency of its presence in a purely technical magazine with readers all

around the world, it deserves a short comment on some core issues presented by its writers. A few more similar articles, also hosted by IEEE publications, should be mentioned as well. Like the aforementioned article, they too indicate that these publications have, more than once, become an area of promoting some rather extreme and farfetched objective opinions to its readers, who usually show little to no interest in reading or commenting them in the scope of the specific, technical in nature, magazine.

Some historical facts

It is a fact that, according to political and military analysts, the formerly known as the "Cold War Dogma", regarding the core idea of assured mutual destruction, is now considered obsolete and not applicable in the modern world of regimes that harbour fanaticism and terrorism.

The Cuban Missile Crisis in 1962 was, perhaps, the last solid manifestation of the successful appliance of this dogma, although none of the two main engaging forces, the USA and (former) USSR, did not apply it consciously, as this would prevent the whole crisis escalation in the first place. It is well known that, during the initial phase, (former) USSR's initiative to establish a forwarded ballistic missile base on the mainland of Cuba, as well as USA's intelligence services' failure to detect its intentions and the very presence of the base early on, inevitably resulted to the rapid escalation of the crisis within a few days time. USA initially failed to keep (former) USSR's forces away from Cuba's mainland, while on the contrary (former) USSR succeeded in surprising USA's strategic command, in relation to its intentions, as well as the establishment of the missile installations for a relatively long period of time. A theoretic approach in analyzing the emerged strategic situation reveals that, although none of the engaging forces succeeded in its initial goals, the symmetry of their strategies led unavoidably to a new equilibrium [02]. The firm resolution of the two sides during the first few days of the crisis was finally overthrown when, intentionally or not, USA proclaimed its non-negotiable decision to assert this specific move as a "casus belli" (act/reason of war). The (former) USSR's officials, utterly convinced that this was the final position by the USA, chose rationally and gradually disengaged from the situation, winning in some degree on the military ground, but losing naturally in the political scene with regard to their international relations to other countries.

In contrast to the Cold War era, the modern geopolitical status is characterized by many small regimes, considered hostile towards the one superpower that USA represents today. The strategy of modern conditions is characterized as asymmetric, as most of these regimes base their core power and domestic domination in the promotion of fanaticism, religious or not. This fanaticism inevitably results in the emergence of holy martyrs and national heroes who place their own personal survival in lower priority than the destruction or even damage of their enemy. Furthermore, the geopolitical and military situation itself, in contrast to the direct confrontation of two superpowers during the Cold War, leads to the birth of many small cores that conduct guerilla warfare, in the form of terrorist organizations. The strategic situation is now considered asymmetric, in relation to the power of the engaging forces, as well as the priorities and values of each side. A fanatic, willing to die for his values and the intimidation of the enemy, is equally dangerous with another superpower that, on the contrary, shares the same basic logic and priorities. A fanatic may not be able to inflict significant damage on the military level; but he can become a serious one for the superpower's social and political infrastructure.

Naturally, this situation is by far very different to the Cold War era. However, these new geopolitical conditions do not justify the characterization of every opposing, unstable or fanatic regime as a probable hostile to the USA. The intention of USA to move towards a preemptive aggressive action against similar regimes, especially involving the use of weapons of mass destruction, constitutes a direct tactic of "counter-terrorism" in order to return back to a symmetrical strategic situation, rather than a deterrence method [33]. Both international laws and, moreover, human rights agreements demand that everyone should respect the integrity, self-determination and self-command of every nation, even if this means accepting the risk of a possible aggressive attitude in the future. Furthermore, the obligations and responsibilities of all countries, in relation to the development and use of weapons of mass destruction, especially nuclear, is fully stated and governed by a frame of international treaties, including NPT (Non-Proliferation Treaty – 1970), CTBT (Comprehensive Test Ban Treaty – 1996) and ABM (Anti-Ballistic Missile Treaty – 1970).

In the case of the USA, the political intention to gradually back away from these international treaties, which up until now ensured in some degree the limitation of developing and using weapons of mass destruction, became clear after

the end of the Cold War and during the next 5-10 years that followed it. The failure of the SDI project (Strategic Defense Initiative – 1985) of the Regan presidency was followed by the emergence of similar plans, smaller in scale and scope, like the ABL (Airborne Ballistic Laser) and ATL (Airborne Tactical Laser) projects. Finally, NMD (National Missile Defense – 1995) was concluded as the most ambitious and realizable project yet, although its results are now equally fuzzy and questionable by many experts [22-28]. Nonetheless, during the last two decades, all USA governments consistently pursue similar ambitions, directly undermining the ABM, NPT and CTBT international treaties. Their reasoning is based on the assertion that, after the collapse of the (former) USSR, all similar treaties are really targeted exclusively to the USA, but mostly and more recently in the (unfortunately proven) assertion that USA may become a target of an unprovoked attack by terrorist organizations that are hosted by hostile regimes like North Korea and Iraq [03-05]. The pure logic of the limited use of weapons that are internationally banned for many decades seems to be a coherent intention by the USA, amongst other countries. This new global trend has been proven by various findings and research conducted by the “Sunshine Project”, an international organization that is actively involved in tracking the development and use of chemical and biological weapons. The organization has found undisputed evidence that USA and many other countries are involved in the development of a new radical generation of less-than-lethal chemical agents, like the ones deployed by Russian special forces during the siege and neutralization of Chechen terrorists in Moscow, Russia (2002).

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No one suggests that a fanatic regime, that actively and consciously harbors terrorism, is willing to respect the aforementioned treaties, as well as other similar international treaties concerning the use of chemical and biological weapons. However, the development or even the possession of chemical, biological or nuclear weapons by a country is not in any way sufficient cause to render it guiltier or more dangerous than any other country that already has similar weapons. Furthermore, this cannot be the basis to characterize them as “lethal threat” to the international community, resulting in their tagging as probable targets in any future move towards preemptive aggressive action against them with the excuse of their disarmament. Anyways, these international treaties do not hold the support of many of the countries that composed them in the first place. For example, China

and USA, amongst others, have not yet validated the CTBT treaty, regarding the banning of nuclear tests, while other countries, including India, Pakistan and N. Korea, have not even signed it yet [04]. In an effort to cut down the cost and the international disavowal about their resumed nuclear tests, have recently developed sophisticated computer systems that allow them to conduct accurate tests in a virtual environment [06,29-31].

The writers of the particular article suggest that the mere development of weapons of mass destruction by "unstable" regimes is an excuse serious enough to justify immediate military actions against them. Furthermore, they suggest that any possible use of nuclear weapons against them will not conclude to the further escalation of the crisis, as the rest of the hostile regimes will receive this particular action as deterrent example for their own geopolitical strategy, while the rest of the nuclear powers ("P5") will probably support such actions.

These evaluations are evidently wrong, especially concerning the consequences of the use of nuclear weapons of any scale. International laws, as well as the public opinion worldwide (including USA), conclusively condemn any such initiative on introducing nuclear weapons in the real battlefield, in the past, the present or the future. Furthermore, the assumption that the use of such weapons against any hostile regime will function as a deterrent measure for all the other similar regimes is, to the very least misleading [04]. There are numerous examples to the exact opposite worldwide, in regions that are infested with savage conflicts between opposing armed parties, including Palestine, Kashmir, Central Africa and North-East Asia. Extreme actions, even if they are intended as deterrent measures, only lead to greater fanaticism. The most probable scenario, after the use of nuclear weapons against a regime, even if it is most repressive or fanatic, will be the gathering of more sympathy and even actively supporting forces around it, as well as the manifestation of even more violent and fanatic actions worldwide, rather than the opposite. Anyways, as previously stated, the deterrent value of any firm stasis is true only when all the opposing parties share a similar set of rules and values in terms of politics and strategy, rather than blind fanaticism. The introduction of tactical nuclear weapons in the international market of arms and military technology, sooner than later, consists the most dreadful danger worldwide, regarding the possibility of illegal trafficking of similar weapons into "unstable" regimes and fanatic organizations [09,10].

Besides the social-political dimension of the use of nuclear weapons, there are also some facts worth noted in relation to their military effectiveness.

The military value of tactical nuclear weapons

The end of the Cold War and the assured mutual destruction dogma signaled the end of the strategic value of nuclear weapons as well. The destruction of whole cities or entire countries was of no strategic value anymore, since there was simply no threat serious enough or great enough to justify the realization of similar military plans. On the contrary, the selective use of nuclear weapons in a more limited scale may be of some military value on the tactical level, in cases where the power of conventional weapons is considered insufficient [07,08]. For this reason, the unilateral departure of the USA from the ABM treaty, from the first leaks and statements from government sources (1996: statement by former USA Secretary of Defense W. Perry) until the formal validation on June 13th 2002, eventually led to the 2003's confirmation of the associated defense budget by the USA Congress, regarding the development of new tactical nuclear weapons, the so-called "bunker-busters", for the destruction of reinforced underground bunkers and other hard targets [11,12].

The article refers to the operational effectiveness of the B-52 heavy bomber airplane and compares its payload, conventional and nuclear, as a manifestation of the crucial gain in tactical military power. It should be noted that the parallelism of the deployment of tactical nuclear weapons of the "bunker-buster" type by the specific type of bomber is totally clumsy, as the B-52s are not suited for extremely precise bombing needed in this kind of attacks. Furthermore, as proven by the failure to completely eliminate all the groups of Al-Qaeda and to capture Osama Bin Laden himself, the mere use of (conventional) weapons of immense power for the destruction and incendiary of underground tunnels during the bombings of the highlands of Afghanistan was not adequate. The failure to complete these specific missions, which were the main goals of the whole expedition in the first place, according to many military analysts, was the result of the reluctance by the USA and UK command to establish strong military power on the ground, and not any insufficiency of power from the aerial bombings.

The first prototypes of similar weapons, already on their final stages of testing by the USAF ("B61-11"), can incorporate nuclear warheads up to 5 KT, they

can easily penetrate 20 feet of hard soil and utterly disintegrate underground installations in a range of 1,5 miles. Special versions of these weapons (RNEP – Robust Nuclear Earth Penetrator) can pierce through 300 feet of solid granite. The intelligence services and the USA military command asserted that there was approximately 10-12 super-hardened underground shelters of Saddam Hussein scattered in Iraq, able to withstand direct hits by 2 KT bombs of conventional warheads and (under circumstances) survive a nuclear attack. Two Yugoslavian engineers disclosed relevant information to the news media, reporting that they had taken part of the original designs and their construction after 1976. These studies were presented a short time before the emergent new crisis in Iraq, further supporting the case that these weapons may be the only “logical” choice for the destruction of these installations. The intention to use them in Iraq was already evident after relevant statements by the USA president George W. Bush, as well as members of the Congress like Warner and Allard back from 2001, with equally strong support by other government organizations like CDI (26-Apr-2002). The same intention was evident by the UK government as well, through the statements of the British Secretary of Defense in the parliamentary defense committee (20-Mar-2002).

The assertion that the use of tactical nuclear weapons of small scale, often called as «mini-nukes», does not necessarily conclude to tremendous casualties of civilians, is totally inaccurate. The most characteristic manifestation of the results produced by the use of a nuclear weapon in the recent history, the 15 KT nuclear warhead that exploded 17.000 ft above the city of Hiroshima on 1945, resulted to the immediate annihilation of 100.000 civilians and as many deaths from the intermediate effects of radiation and skin burns. The deployment of mini-nukes with 5 KT warheads, detonated underground, may seem much more “gentle”, as the direct impact on the civilians is calculated approximately between 3.000-50.000 casualties. If, however, the goal is to utterly destroy 12 or so hardened bunkers like the ones that were alleged on the ground of Iraq, the summed warhead power needed to accomplish that comes up to (at least) 300 KT, concluding to a total of around 3.000.000 deaths and essentially the disintegration of 400 of square miles of urban areas [32]. Fortunately, this scenario did not come into reality during the recent crisis in Iraq, but these calculations are a characteristic example of the possible direct results comprised when using such weapons in the modern battlefield.

Finally, the presentation of similar weapons as the ideal means of destroying biological and chemical weapons is very misleading. The success of such operations greatly depends on many prerequisites. Although during the final stages of development most weapons of mass destruction are placed inside hardened underground facilities, technical and safety constraints demand that the main production facilities are placed on the surface. This means that any possible use of tactical nuclear weapons targeted at them will have to be above-ground instead of underground, something that will clearly result in devastating consequences in terms of radiological contamination utterly cancel their "limited" range of destruction. The American Scientific Confederation has raised questions even to the alleged "local" attributes of the detonation of the nuclear warhead itself. Reports conclude that even a warhead of 1% of power of the 15 KT one used in Hiroshima, considering the structural insufficiency of withholding the nuclear blast underground and deep enough, will simply create an enormous crater of radioactive dust that will fall down on the ground of the greater area in the form of intense and lethal rain [32]. In this case, the tactical nuclear weapons of limited scale become strategic nuclear weapons of small power, their use of which is accompanied with the greatest level of destruction, deaths and consequences, both political and social, for all the engaging parties.

The writers of the specific article state that the modern USA trend towards the deregulation of the use of nuclear weapons in tactical level is supported by many government organizations and other think-tanks, like the National Security Council and RAND Corporation. Regarding RAND Corporation, some important issues should be noted. Although the corporation was originally founded by the government as a research foundation, supporting the requirements of strategic planning of DARPA during the Cold War era, today functions as a private corporation of advanced logistic research with a broad range of applications, whose most valuable customer remains the DARPA [13]. This essentially means that it has no legal right to participate or propose opinions in the strategic politics of USA in issues like using nuclear weapons on the real battlefield. The thorough development of strategic plans and solutions by the company, this or any other with similar activities, naturally includes every resource and asset of the available arsenal and the tactical options. However, the mere decision and realization of any theoretic plan constitutes an exclusive right and duty of the rightful political and military command, not only of the USA, but also of every country of the world. As to the various other organizations that actively support the trend, it should be noted that

the application of “utter” solutions was always the virtue and characteristic of every military force who does not operate on its ancestral land. It is extremely unlikely that those same organizations would recommend the same course of action, to bomb hostile installations with nuclear weapons, if those installations were placed on the grounds of the same country which they have sworn to defend.

The consequences

Worth noted for is the fact that, in the rather extensive article by James E. Gover and Paul G. Huray, there is not one mention to the consequences of the use of nuclear weapons to the environment. Evidently for them, the use of tactical nuclear weapons in the battlefield is the next natural step in modern warfare, after the employment of depleted uranium (DU) in armor-piercing conventional ammunitions. Numerous research projects, some conducted by the Pentagon itself, all support the evidences of highly ionized, radioactive clouds of DU, projected up to thousands of feet into the atmosphere over the target area, during the impact of armor-piercing projectiles from A-10 attack aircrafts. These DU dust clouds have been proven as a tremendous health hazard for any civilians or military personnel operation in the area, both from inhalation and radioactivity, as the results of the first Gulf War in Iraq has shown (“Gulf War syndrome”) [33].

According to studies conducted by the Pentagon, as well as other research organizations in Europe and elsewhere, the results of a nuclear detonation have become a commonly known and well-established fact, irrespective of whether the explosion is aerial, surface or underground. Especially for underground detonations, even though the initial disperse of radioactive material into the atmosphere is much more limited in relation to a surface or aerial one, however the extremely long half-life period of these materials, sooner or later, constitutes their evident propagation to other areas a sure fact. The soil of the ground that receives the blast of one single 5 KT nuclear warhead becomes barren and agriculturally dead in a range of 1,5 miles for over 230.000 years, while the residuals of the enriched uranium used in the nuclear warhead continues to radiate for over 4,5 billion years, that is equal to the current estimation of Earth’s age [32]. There is a clear danger of radiological contamination of the underground water reservoirs of the greater area, evidently resulting to the contamination of all the native population within a relatively short period of time, while at the same time the disperse of residuals and contaminated soil to other areas through rivers and the

sea constitutes a possible threat to the complete ecosystem of the neighboring countries. Fortunately, these hazardous results of these weapons on areas with soil and underground properties similar to the ground of Iraq, with all the extensive underground and surface water networks present, has not been realized yet in the recent conflict.

Furthermore, it is not yet clear how the transportation and maintenance of these "mobile" nuclear weapons affects the health of the military units involved in their handling and protection, as well as the civilian population of the neighboring areas, keeping in mind that it is not a case of weapon systems stored in underground silos in remote locations, like the ones used during the Cold War era for ballistic nuclear missile bases.

The imminent danger from the gradual unblocking of using nuclear weapons and weapons of mass destruction in general, is not related just to the local theater of the battlefield. As these weapons gradually become more "gentle" in essence regarding the public reactions and their deployment is presumably not necessarily accompanied with the same social and political consequences as during the Cold War era, the mere role of military command centers is literally upgraded against the political centers, as the responsibility and tactical initiative is transferred to them. At the same time, the egocentric views regarding "good" and "evil" regimes is substantially advanced, as each regime perceives its own weapons of mass destruction as a deterrent measure against similar threats or against the aggressiveness, or mere suspicion, of other possible hostiles. Only now, in contrast to the Cold War era, the limited power and destruction scale of these weapons constitutes them tremendously more dangerous and aggressive, in relation to the possibility of the actual use in a real battlefield, instead of just a deterrent measure in political and strategic-military level.

Of course, no one seems to seriously care about the ethical dimension of this issue. The one single mention to international disavowal in the whole article, regarding the consequences of using these weapons, is viewed under the scope of an "obstacle" for the strategic value of them, rather than a justified reaction against their use under any scale circumstances or justification. Maybe it is not clear to everyone that the social will and ethics of any nation is vastly more important than the intentions and the strategic options of the authority, military or not, that protects it.

Other publications

Besides the aforementioned article by James E. Gover and Paul G. Huray, there are some more examples of similar publications in the columns "Speakout", "News Analysis" and "Opinion" of the magazine.

In the article entitled "Are We Safe Yet?" by Richard L. Garwin of the January 2003 issue [14], a series of personal opinions are presented under the scope of possible scenarios of terrorist attacks against nuclear power installations inside the USA ground, as well as the possibility of a nuclear attack as a whole. The writer exploits the space of the magazine columns to propagate personal views regarding the security inside USA ("...politically attractive formation of the U.S. Department of Homeland Security..."), the continuous threat of an unprovoked attack against USA by Russia ("...Russia takes into account not U.S. intentions but U.S. capabilities..."), as well as the immense growth of defense budgets for new weapons and counter-measures against terrorism ("...we need to spend tens of billions of dollars, now..."). Furthermore, he does not hesitate to call upon the great need to discover new determined scientists like J. R. Oppenheimer and L. C. Groves of the Manhattan project, as to develop similar plans for the near future. Everyone understands that these views, when published in a technical magazine of worldwide audience and read by numerous readers of non-USA origin, at the very least create a great deal of suspicion and distrust, moreover against people who from time to time have dragged USA into military expeditions based on their "expert" opinions, rather than the, otherwise peaceful by nature, American people.

Besides the fact that the opinions presented by the writer can be safely characterized as extreme and beyond any relation to the modern reality [15], it is obvious that they have absolutely no connection to the basic scope and area of interest of the specific magazine. Furthermore, it is certain that they express the views of only a few American analysts and experts on nuclear reactor security. In any case, all the major mishaps in nuclear reactor installations are linked to accidents related to human error, rather than attacks by terrorist organizations. Unfortunately, similar opinions seem to gain ground in the USA under the recent war in Iraq, as the Congress, all according to the hopes of the writer, has recently approved a new immense defense budget of several billions of dollars.

Similar articles, totally irrelevant with the technical scope of the magazine, can be designated in the issues of the last few months. In the issue of December 2002, two articles entitled "How close is Iraq to getting the Bomb?" [16] and "North

Korea's nuclear revelation puts spotlight on China" [17], a superficial and amateurish analysis, regarding the nuclear possibilities of countries hostile towards USA, are only two examples. It is evident that the writers of these articles have no care in contributing anything to the scientific community by presenting new ideas or research trends and results, when the majority of their audiences have no interest in reading them or commenting on them, at least under the frame and scope of the specific magazine.

On the contrary, there has to be some mention to articles, also presented in the columns of the magazine, also dealing with issues of political or social in essence, but much more strict and technical in nature. For example, the special tribute on the attack on the World Trade Center entitled "9/11: One year later" on the September 2002 issue [18], investigates many technical aspects of the disaster that have changed engineering planning, including mobile communication devices, efficient coordination of emergency units on site, replacing and distributing radio broadcasting antennas in terms of redundancy, new portable scanning devices for biological and chemical agents, as well as the major issue of security against privacy. In a similar article in the August 2002 issue [19], entitled "Getting the message", the current technical abilities of the National Security Agency (NSA) of the USA is investigated, in relation to new technologies available as hardware or software, the importance of signals intelligence operations (SIGINT), and also the intention of the current USA government to raise the related budgets accordingly. Even if someone does not concur to some of these prospects, nevertheless the article by itself remains inside the firm constraints of such a magazine, in terms of validity and completeness regarding the technical aspects. Finally, the same integrity and completeness and be seen in the cover articles of the September 2002 issue of "IEEE – The Institute", entitled "After 9/11, IEEE members plan for the unimaginable" [20] and "U.S. Government may give private sector engineers opportunities to fight terrorism" [21].

Instead of an epilogue

During the time that the aforementioned articles, like the one written by James E. Gover and Paul G. Huray [01] or the interview of Richard L. Garwin [14], the new war on Iraq was just a probable possibility. Today, this scenario has already come to realization in the worst and most accurate way. It is evident that opinions and views of such matter and attribute can eventually affect not only the current generations, but also many more that will follow. It is therefore crucial that they are investigated very carefully and cautiously, especially within the context and time of their presentation. Equally important for the magazine's editorial staff is the necessity to decide, whether the stand that they will adopt from now on will remain firmly on technical and engineering scope, or whether the magazine will become a place to express various political and social views by all (I hope) parties. I, personally, should not have any objection if letters like the current one would be published in parallel to articles like the ones examined above. Unfortunately, as a reader and subscriber of this magazine I would rather prefer not to deal with this kind of content if it deviates greatly from the magazine's initial core scope.

With regards,

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