

The revolution of electromagnetic pulse weapons

by Lyndon H. LaRouche, Jr.

The following speech, titled "Electromagnetic pulse weapons based on nonlinear effects: a technological revolution in the order of battle," was delivered to a conference in Paris on Nov. 26, 1987.

Do not assume that it is impractical to think of early development of the kinds of weapons-systems we are discussing here today. Remember, that it was in the darkest hour of a France plunged into bankruptcy by Jacobin rule, that the great Lazare Carnot unleashed a many-faceted revolution in warfare. Too often, nothing less than the most profound crisis discredits obsolete ruling ideas, hopefully to such effect that bold leaders like Carnot are able to bring sweeping, beneficial changes onto the stage of living history.

Often, apparent economic prosperity creates the most stubborn obstacles to change. In what men think to be prosperous times, they have been too often more disposed to resist important changes than to allow them. It is in those moments of despair that awesome crisis brings nations to their knees, and discredits prior policies almost entirely, that complacent authorities of preceding years fall upon their knees, begging to God or to anyone else who will hear: "Save us!" It is when crisis prompts society to lose confidence in stubborn old habits, that the most sweeping, overdue changes in policies are likely to be welcomed, and implemented successfully.

Therefore, the presently deepening international financial collapse should be seen as creating precisely those special circumstances under which the most profound advances in applied military science may be more likely to occur, than at any time during the preceding past forty years.

The strategic setting

Before turning to the core of my subject today, it is important that I dispel a certain distracting thought which might tend to prevent some from concentrating their attentions freely upon the material I have to present. Since President Reagan's March 23, 1983 announcement of the U.S. Strategic Defense Initiative, the Soviet



Bulgarian TIR trucks in West Germany: These trucks are famous for conducting spetsnaz commandos across Europe, for espionage, sabotage, and terror missions. Radio frequency weapons currently under development could be fitted aboard such trucks, for wartime use against the West.

government, which blamed me for that new policy, has expended astonishing amounts of its newsprint to portray me as the sort of super-war monger whose name terrifies the admirers of Genghis Khan.

It is not only relevant to the discussion of weapons technology, but perhaps indispensable politically, that I interpolate the following general strategic observations as prelude to the discussion of the new weapons technology itself.

The world is gripped by a threat of warfare greater than that which ensued from the Western powers' appeasement of Hitler in 1938. Under its new ruling dynasty, the Bolshevik oligarchy, that ancient foe of Western European civilization, Muscovy, has achieved the greatest power in its history, greater by far than during the dark decades following the 1815 Treaty of Vienna.

Today, Moscow is much more powerful than in its 1815-49 role as the "policeman of Europe"; today, it views Western civilization as entering what Mr. Gorbachov's "confessor," Bolshevik Grand Inquisitor Yegor Ligachov hopes is indeed the "final collapse" of that hated Western culture Moscow calls "Roman." It hopes soon to rearrange the political map of this planet, to create a global empire modeled upon that of Diocletian's heirs and upon the Achaemenid empire before it. It intends to employ the acquisition of an absolute strategic superiority to accomplish the rapid rearrangement of the world's political map into a system of colonies, satrapies, and client states of Holy Moscow.

This lust for global rule is no mere over-ambition of a nation-state. The root of this lust is a deep and ancient cultural conflict between East and West, a hatred of Western Euro-

pean culture which has gripped Moscow since the twelfth century, a hatred which became Moscow's foreign policy during the fifteenth and sixteenth centuries, a hatred represented in its most concentrated form among those old Rurikid aristocratic and raskolnik families who constitute the ruling Moscow oligarchy, the Bolshevik *nomenklatura*, today.

Although many among Moscow's Slavic and other subject populations today are instinctively our friends, only credible force of deterrence could prevent the Soviet empire from subjugating us as they have enslaved the Poles and so many others, at the earliest opportunity. Those in the West who dream sentimental dreams of détente are those whom V.I. Lenin named "useful fools."

For such reasons, the East-West strategic conflict must not be compared to the sometimes monstrously bloody conflicts among the nations of Western civilization in the past. We may agree with the peaceniks on one thing; we should hope, at last, that the day of wars among the nations of Western civilization has finally come to its end. The East-West conflict is of a different nature than the past wars among Western nations. It is a strategic conflict between two uncompromisable differences in culture, two opposing conceptions of the most fundamental notions respecting God, the individual human personality, and society. There is no way in which cultures so different, and so hostilely so, can live peacefully under a single body of law or treaty agreements.

Yet, no sane men and women in the West desire a new general war. The clearest thinking to this effect comes from the ranks of leading military professionals and their collaborators, from the ranks of men and women who understand

better than anyone else what war today would mean. The problem is, that although we seek avoidance of war, the Soviet leaders desire no peace but that which hangs silently over the mass graves of Polish patriots at Katyn. Moscow seeks no peace but that of our submission to the rule of the KGB death-squads weeding out suspected anti-Soviet elements among us, exterminating those priests and others among us whom Moscow views as bearing the seeds of St. Augustine's design of Western Judeo-Christian civilization.

In consequence, we are left with no acceptable alternative but the hope of a somewhat prolonged condition of neither peace nor war. The ugliest prerequisite of war-avoidance is that we have always sufficient military strength and manifest political will, that the Soviet oligarchy would not dare to unleash those adventures which would spark general war. We must contain the Soviet menace so, and will be obliged to do so for probably two generations or so yet to come.

The outstanding failure of Western military doctrine during the recent forty-five years, is the assumption that the generations following World War II must live under a new kind of rule, a Manichean's utopia, which some today call a "bipolar world." In this bipolar world, the new agreements reached through constant "crisis-management" negotiations between Moscow and New York are intended to become the interwoven complex of open and secret agreements to which the other nations of the world submit.

Classical scholars will recognize this dogma of "crisis-management in a bipolar world," as akin to the abortive secret agreement which Philip of Macedon negotiated with the Magi controllers of the Persian Empire, the proposed division of the world between a Western and Eastern Persian empire, divided geographically by the Halys and Euphrates rivers.

Under this Manichean arrangement, the adherents to the agreements of Teheran, Yalta, Potsdam, and the 1972 *détente* agreements, outlawed the notion of victory from the strategic vocabulary of the West, but not the East. We have returned so to something worse than the cabinet-warfare diplomacy of the eighteenth century, or that under Metternich's Holy Alliance.

Curiously, we of the West have inherently vastly greater strategic potential than does Moscow. The OECD nations alone have twice the population of the Muscovite empire, and the per capita productive potential of the OECD's labor-force is twice that of the Muscovites'. In addition, in Africa, in non-communist Asia, and Ibero-America, there are vast populations. Combined, we and our friends of Africa, Asia, and the Americas are the overwhelming power in the world, in population, in productive potential, in natural resources, in land-area and in maritime chokepoints. Why, therefore, need we fear Moscow, had we not done so much to destroy our civilization from within?

Look at this potential, and its strategic significance through my eyes, the eyes of a physical economist in the tradition of such as Leonardo da Vinci, Jean-Baptiste Colbert, Gottfried

Leibniz, U.S. Treasury Secretary Alexander Hamilton, Lazare Carnot and his friends of the 1794-1814 Ecole Polytechnique, or Friedrich List, and many other so-called "mercantilists" before me.

Physical power of society is measured in terms of the rate of increase of the potential population-density of nations. The quantity measured is the number of persons who can be sustained, with a rising standard of economic, social, and political life, per square kilometer of land-area. This gain is derived from increase of the effective amount of energy available per person and per unit of land-area. It is derived from increases in the effective density of energy applied to the target-area of production. Yet, all of these and related constraints depend upon advances in the generation and assimilation of technology. In other words, all depends upon fostering, employing, and defending the potential creative-mental powers of the individual personality.

This is a source of strategic economic power; it is a source from which mobility, firepower, and depth of tactical defense and offense are derived.

In this respect, among others, Western civilization is vastly superior in potential to Muscovite culture. The Soviet *raskolnik* disguised as Bolshevik is a representative of a culture which is inferior to our own in every way. He is a racist, who believes in "blood and soil," as Hitler's Nazism copied this Dostoevskian racism from Eastern sources. He was a collectivist centuries before Karl Marx took up radicalism at Bonn and Berlin universities. In him there is nothing of that which distinguishes Western culture: the commandment to love God and to love thy neighbor as thyself. In him, there is no *agapē*.

This *agapē* is a term added to Greek by the Christian Apostles, a term which signifies the emotion of love of God, love of mankind, love of truth, and love of what we Europeans trace largely through St. Augustine as the classical Athenian definition of beauty. This same emotion is the quality of creative thinking, as typified by valid scientific discoveries, or the creative power of a great composition by Bach, Mozart, or Beethoven, for example.

It is the influence of this devotion to *agapē* which prompts us to so order the relations and law within society, that we value persons for the combination of a quality of *agapē* with development and use of potential creative powers. We prize the latter in many forms, including the generation and useful assimilation of scientific and technological progress, as well as great artistic works.

For this reason, Western European civilization has shown the greatest potential for rapid rates of scientific and technological progress in the history of mankind. This does not make us of European culture racially superior in the eyes of the Creator; rather, this precious gift of our culture is something which we hold in trust for all mankind, as the rightful possession of all mankind. It is therefore fitting in the eyes of the Creator, that to the degree we are true to this precious

gift, true to our obligation to share it with all mankind, that we are the favored instruments of the Creator on this planet, and enjoy through that gift the requisite sources of power by means of which to defend the Creator's gift of *agapē* to all mankind.

Here lies the premise upon which the proper strategic policy and practice of Western civilization must be constructed. This is the true potential source of our power. These are the terms in which that precious word "victory" must be defined and practiced.

The goal of victory is to protect and transmit this precious gift to the benefit of the future generations of our nations, and to all mankind. It is not a gift which can be taken with greed and lust, as any man's or nation's sole possession. It is a gift so precious that any of us would sacrifice ourselves to preserve this for future generations. In this view of the matter, the true statesman of today does not demand that he participate in the fruits of conquest; rather, he demands that victory be assured to those who come after him, long after he is deceased, and by aid of means he has employed during his mortal life.

Victory is a gift which wiser old men bestow upon their grandchildren. So, with that view, we must situate the strategic mission which the Creator has imposed upon us in these presently tragic circumstances.

In short, the potential power of our civilization is so vast, that if we but contain the Muscovite adversary for two generations or so, we shall conquer the souls of the grandchildren of today's Soviet society. We gain this if we nurture that precious cultural heritage in the OECD nations, and share it in the spirit of *agapē* with the developing ones.

Respecting the power we and our posterity require, to ensure safety today and victory during generations ahead, we must place the greatest emphasis upon the fostering and employment of the powers of creative reasoning of the individual, especially the power to generate and assimilate efficient-scientific and technological progress.

A strategic doctrine for an age of new physical principles

Presently, as Moscow's command proceeds as rapidly as it is able, toward deploying a global strategic ballistic missile defense, and early deployment of new generations of radio frequency assault weapons, Moscow is also revising radically its order of battle for the general assault upon Western Europe. What we see from that quarter is a new version of the Soviet military tradition of the Tukachevsky offensive, a military doctrine which has prevailed in the Soviet equivalent of the Prussian general military staff since the mid-1920s. The resemblances of the new Soviet order of battle the old Tukachevsky Plan for the strategic offensive in central Europe, are stunningly remarkable. The strategic mentality of Moscow is the same as under Stalin; the differences are in the adoption of that conception of the military offensive

to a war-fighting environment dominated by new technologies based on new physical principles.

For that reason, my success in winning support for what has been called the SDI has made me the single individual most hated in Moscow. Soviet military thinking and orders of battle have two potentially fatal weaknesses.

First, since Tukachevsky, Moscow has relied so much on the sheer momentum of its planned offensive, that its entire military plan is thrown into chaos by an effective defense against any crucial element of the Soviet offensive. The adoption of a modified Western strategy, based upon the SDI and integrated defense of U.S. allies threw Moscow into a panicked rage against me, for the simple reason that Moscow has committed itself absolutely to the policy of a strategic offensive for the intermediate-term period ahead.

If Moscow had been seeking war-avoidance over the medium term before us, Moscow would have accepted President Reagan's offer of March 23, 1983. The fact that Moscow rejected that offer proved conclusively, that with the transition from Brezhnev to Andropov, agreed upon during the spring of 1982, Moscow had entered a new period, in which it is committed to accomplishing its long-sought world-conquest by aid of means to win general war through a strategic offensive.

Since some of my activities of the 1981-84 period have been officially declassified recently, I am permitted now to be more explicit on this point than I was allowed to be earlier. During 1981 and 1982, I reported to relevant officials of the Reagan administration that not only was Moscow engaged in preparing to deploy a global strategic defense based on new physical principles, but that should the United States also state its commitment to a similar strategic defense, there were forces in Moscow who were disposed, at that time, to accept the kind of offer which President Reagan issued on March 23, 1983.

That became the subject of a private back-channel discussion which I conducted with Soviet officials, beginning January 1982, on behalf of the Reagan administration. I reasoned, that if Moscow were as committed to war-avoidance as it pretended to be, Moscow would accept such an offer more or less as soon as President Reagan made it public. If Moscow rejected such an offer, this were conclusive proof that Moscow were planning to launch a strategic offensive during the medium term ahead. Thus, when Moscow reacted to the President's address of March 23, 1983, and named me Soviet international public enemy number one, that was conclusive proof that Moscow was committed to the Soviet strategic offensive at some point during the medium-term ahead.

Since Moscow's military planning is based axiomatically on the doctrine of the offensive, whoever counters that planned offensive with an effective combination of strategic and tactical defense is striking at the heart of Soviet policy.

The second intrinsic weakness of Soviet strategic doctrine, is the intrinsic vulnerability of Soviet forces to an

effective sort of strategic offensive. This is exemplified by the initial crushing defeats of Red Army forces by Operation Barbarossa. Red Army forces then deployed for an offensive into central Europe, and beyond, were caught flat-footed by the Wehrmacht's preemptive offensive, with poor tactical defense, until the Nazi regime elected to force effective tactical defense upon Stalin's regime by the sieges of Moscow and Leningrad. Had the German regime been of a different moral character, a Wehrmacht liberation of the Ukraine as an independent sovereign state, and similar actions among the Slavic and other peoples of Eastern Europe, would have been the end of the Soviet empire.

From the battle of Kursk onward, Soviet offices resumed the strategic offensive more or less in the mode of the Tukhachevsky Plan.

Soviet military literature's content, especially the statements of Marshal Nikolai Ogarkov and the general staff based at the Voroshilov Academy, can be matched with observable changes in the Soviet order of battle and the Soviet economic planning. Although there is intense focus upon the lessons of the 1929-43 period in that literature, the literature and the deployments leave no doubt that the essentials of Soviet military doctrine have not changed since the work of the Frunze Academy during the late 1920s and 1930s. The characteristics of Soviet military doctrine remain the same, even

though details are altered, because the Bolshevik-raskolnik military mind has remained essentially the same. A beast can change its tactics, but not its species-nature.

We must resolve, that if we were ever obliged to fight a general war again, we shall proceed resolutely to early victory by the least possible expenditure of lives of both our own and our adversary's population. Yet, although we must develop and maintain the capabilities of combined defense and offense for such military victory, we must seek to win that victory without firing a single shot.

At the most, effective strategy can employ no more than twenty percent of the total effort of a victorious nation to lethal force. No less than eighty percent of the effort required for victory is expressed in the forms of cultural, economic, and political exertions of defense and offense. Indeed, the correct object of warfare itself, is to use military force to such effect that the adversary is forced to tolerate his defeat by means of our combined cultural, economic, and political offensive.


We should intend, that our combined defensive and offensive capabilities are such, that the adversary would precalculate his losses in military conflict as far exceeding his willingness to incur such losses, even at the price of military victory. In that case, our strategic offensive is concentrated entirely in the dimensions of culture, economics, and politics. Should the adversary move to launch military assault upon any among our allied nations, his offensive shall be blunted with hideous attrition and relative immobility imposed upon his forces by our defense, and he shall be flanked and enveloped by our strategic offensive.

The more clearly we are able and disposed to win war in the latter fashion, the more likely the desired conditions of war-avoidance; whereas, if we lack such capabilities and will, Moscow will surely risk launching a strategic offensive against those who refuse to submit to its pre-war demands. It is the appeasers, who would disarm us, who cause war.

When I reviewed my proposals for U.S. strategic and tactical ballistic missile defense with French military representatives, at the close of 1982, some military professionals challenged me with the observation: "You are basing your strategy on a policy of technological attrition." I replied that this observation was entirely correct. The highest form of military science and related strategy is military planning based on technological attrition in weapons and order of battle. Whichever force can gain the greater rate of progress in technological attrition, and apply that efficiently to changes in the order of battle and improvisations in strategy and tactics, must tend to become the victorious military party.

This is a matter of applying the notion of technological flanking and envelopment potentials to the principle of the flank as elaborated in von Schlieffen's famous *Cannae*. Instead of limiting ourselves to a fixed set of such technological potentials, we must place the greatest emphasis upon the application of technological attrition in certain specific direc-

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tions as an applied military force.

Coherent pulses, at high energy-flux density, of laser and particle beams, is a leading element of the proper direction of technological attrition today. Radio frequency weapons, based on similar new physical principles for production of nonlinear effects, are a second proper direction, closely related to, but somewhat distinct from use of coherent pulses for strategic and tactical defense. The notable distinction between two directions, is that nonlinear-effects electromagnetic radiation yields varieties of anti-personnel and other strategic and tactical assault weapons relevant to the strategic offense as well as tactical and strategic defense.

Technological strategy

To achieve the rates and directions of technological attrition which our strategic problem requires, demands an integrated development of productive technology in the civilian and military sectors. This requires an emphasis on what are called "crash programs."

Most physical scientists, especially those familiar with the best laboratory practice prior to about 1960, readily understand the importance of so-called "crash programs." There is no difference in principle, between the development of an apparatus to test a crucial hypothesis in physics, and the role of the same scientists guiding the machine-tool sector to transform the results of that experiment into a new productive technology.

If the time-lag in testing of crucial hypotheses can be greatly shortened, and if the machine-tool can be more closely integrated into this process, the highest possible rates of transmission of technological attrition to industry generally is achieved.

Under these circumstances, the cost of maintaining high rates of technological attrition in the military sector is at a minimum. The research and development sponsored by government in the military sector spills over rapidly through the machine-tool sector, into capital-intensive investments in the civilian sector. Of course, if this arrangement is not established, the spill-over into the civilian sector is slow. This presumes that private entrepreneurs are afforded incentives in preferentially large volumes and lower costs of credit and in preferentially gentler rates of taxation for high rates of capital-intensive, technologically progressive investments. Given such conditions, the gains in productivity in the civilian sector must tend to outweigh the costs in the military sector.

Because of the superiority of Western culture to that of the Muscovites, because of our culture's basis in the relationship between *agapē* and individual creativity, the labor-force of Western civilization is able to assimilate scientific and technological progress effectively into production at high rates, much higher than the Muscovites' labor-force can sustain.

This benefit of military technological attrition for the

civilian sector is not something external to the strategic equation, of course. Strategy is no less than eighty percent culture, economics, and politics. It is the strengthening of the civilian sector of the economy, by aid of such technological attrition, which is even more important in terms of impact upon the total strategic equation than its specifically military benefits. Indeed, it is technological attrition in the civilian sector which permits depth of technological attrition in the military sector.

For this reason, a military policy of technological attrition must be premised upon an included clear view of the direct benefits to the civilian sector. Just as military technology must focus upon targets of performance in warfare, we must also define rather clearly the desired targets of performance for applications of the same physical principles in the civilian domain. The importance of this twofold approach to technological attrition leads us to the view that a set of national technological attrition goals must guide the procurement, credit, and taxation policies of governments. We must list our targets in two columns, the one military applications, and the other classes of civilian applications. This combined view must shape the nation's approach to military development and the technological policies for national civilian economic development, the latter in the manner illustrated by President de Gaulle's mission-orientations for development of the economy of France.

Nonlinear electromagnetic pulses

"Radio frequency weapons" is a misleading name, carried over from a pragmatic understanding of earlier stages of electronic warfare. For example, it was thought, mistakenly, that the use of microwaves as anti-personnel weapons depended upon the heating effects of such waves upon targeted material. Today, it has been shown that properly tuned electromagnetic pulses have mortal effects at levels of energy-deposit as low as two or three orders of magnitude below those required to kill cell-tissue by means of induced thermal effects. This comparison illustrates the importance of the term "nonlinear effects."

The most important of the near-term applications of nonlinear electromagnetic effects are in the domain of optical biophysics, either as strategic or tactical anti-personnel weapons, or to produce global effects within the biosphere surrounding those personnel. However, there is also the prospect of disintegrating non-organic material, as well as the disruption of apparatus, through the same class of technologies. In applying the notion of technological attrition to all such electromagnetic-pulse weapons as a general class, it is the principles causing all of the indicated range of effects which must be considered as a unit for purposes of shaping strategic doctrine.

All of the weaponry based upon "new physical principles," including lasers, particle beams, and nonlinear electromagnetic-pulse effects, belong, together with the role of

high-temperature superconductivity, to the domain of subatomic physics. Modern high-energy physics, especially that focused upon so-called “force-free” states of plasmas, shows that subatomic phase-space has a distinct, Kepler-Gauss sort of inherent curvature. It is also shown, that nonlinear effects of coherent electromagnetic pulses, as phenomena of the macro-scale, are rooted in the nonlinear physics of the curvature of “force-free,” least-action states in the subatomic domain.

One of the most important lines of inquiry to this effect today, is modern optical biophysics’ attention to the decisive role of precisely tuned, inherently coherent electromagnetic pulses in living processes.

Conceptually, this new work belongs to the tradition of Pasteur’s work on optical biophysics and the definition of living processes presented by Luca Pacioli and Leonardo da Vinci nearly five hundred years ago. Essentially, modern instruments permit us to detect and measure localized coherent pulses in the range of quanta of emission, leading into what is called today “nonlinear spectroscopy” of living processes. The comparison of the results obtained in this way in biological research, with lessons learned from the high-energy physics of force-free plasma states, is the key to design of strategic and tactical anti-personnel assault weapons and related applications.

These new directions in electromagnetic biology have a seemingly limitless application to medicine and other civilian biological research, offering entire categories of benefits not otherwise accessible. For example, it is better than mere speculation to assume that this provides the best strategy for discovering a cure for the infection widely known as AIDS. New electromagnetic approaches to genetic engineering are already indicated.

Curiously, but not accidentally, this approach was introduced into Soviet Russia by a famous graduate of the Pasteur Institute, Academician V.I. Vernadsky as early as the 1920s. The work of Soviet optical biophysics specialist Gurvich, from that period into the 1950s is leading among the classic work in this field. Hence, since the 1920s, there has been increasing Soviet attention to the potential military importance of these classes of electromagnetic effects, and to the increasing significance of the view, among relevant Soviet specialists, that the power first to control willfully the full range of the electromagnetic spectrum may rule the world. I suggest, from my work among international specialists in this field over the years, that that Soviet slogan is essentially no exaggeration.

I propose that Western nations include crash programs for the mastery and application of these technologies as among the highest strategic priorities, both for military applications to problems of defense and offense, and for the fountain of great benefits in peaceful applications to medicine and other matters. Let us commit ourselves to the highest possible rates of technological attrition in these fields.

Radio frequency a strategic phase

by Michael Liebig

Michael Liebig, executive director of EIR News Service in Europe, gave this speech at an EIR seminar in Paris on Nov. 26, 1987.

The theme of today’s *EIR* seminar, “Radio Frequency Weapon Systems—Feasibility and Strategic Significance,” certainly lies somewhat outside the currently dominant strategic debate. The matter looks rather “exotic,” and many strategic experts will view it as “music of the future.” Before 1983, many of these same experts called SDI-related laser and other beam technologies “science fiction.” We of *EIR* in the United States and *EIR* News Service in Europe have always focused our attention on qualitatively new scientific-technological and strategic trends. Then, in the early 1980s, we focused on what later became known as SDI, and which still is one of the most fundamental strategic issues. Now, in the late 1980s, we focus—among many other important things—on the emerging RF weapons technology, which features the controlled and directed utilization of electromagnetic radiation, primarily against personnel and soft targets.

Our founder and contributing editor, Lyndon LaRouche, published in the early spring of 1987, a series of articles in *EIR* on the scientific-technological and strategic potential of RF technologies. Since then, more articles on that topic by physicists, biologists, and strategic analysts have appeared in *EIR* magazine. On Sept. 3, 1987, we held a first *EIR* seminar on RF weapon systems in Munich, West Germany.

It is obvious that the whole complex of RF technologies, precisely because of the vast potential for military application, is highly classified. Detailed information on RF systems is extremely scant in the public domain. Yet, we do know the scientific-technological *basics* of RF systems and their interaction with biological and other soft targets. While operational RF weapon systems may not yet exist as such, it can be stated affirmatively, that not just research, but development work toward operational RF weapons, is under way in East and West, especially in the East.

RF weapons on the battlefield

In March 1987, the Pentagon provided the following