CYBER WARFARE AND THE ENVIRONMENT

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A decade has passed since the Gulf War, a war that ended with environmental damage constituting the largest single man-made disaster in history. Oil well fires were greater in number than all of the well fires in previous history put together. Oil slicks were more than two to three times the size of the world's previously largest oil spill, the Exxon Valdez. Gushing oil wells, pipes, and storage tanks left rivers and lakes of spilled oil, more than ninety million barrels covering over fifty percent of Kuwait's land area. This huge amount of exposed oil released toxic substances, heavy metals, and unequaled emissions of hydrocarbons.

The magnitude is breathtaking: at the height of the fires in early 1991, the amount of soot emitted was estimated at five thousand tons per day. This is the equivalent to the output of forty-six million heavy-duty diesel trucks, roughly eight times the number in the United States, driving at thirty miles per hour.

In addition to the oil spills, there was environmental damage to the desert ecology of southern Iraq, Kuwait, and northern Saudi Arabia from Iraqi military fortifications, minefields, bombing, unexploded ordnance, and particularly from malfunctioning cluster bomb sub-munitions. Finally, there were the standard operations of two of the largest tank armies ever assembled.

But let's be honest: we haven't heard a lot about the environmental mess at this tenth anniversary of the Gulf War. There just does not seem to be any long-term environmental disaster. Health conditions in Saudi Arabia and Kuwait seem to be fairly normal, and there are no reports of increased mortality. Although Baghdad decries the state of public health in Iraq, other factors are as much, if not more, responsible for increased Iraqi mortality as is any specific source from Desert Storm. More than twenty years of warfare

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starting with the Iran-Iraq war in 1988, a decade of sanctions, and a generally degraded standard of living have all taken their toll on the average Iraqi's health and life-span.

Having said all of that, however, I do not want you to think that the lesson I draw from the Gulf War is that just because apocalyptic effects predicted by many scientists and environmentalists did not materialize, there are no problems.

What we indeed witnessed in 1991 was how rapidly modern militaries can inflict great damage. Environmental calamity on a global scale never occurred, but the destruction was unprecedented in its efficiency, especially for a conflict that only lasted forty-three days. Iraqi damage inflicted in Kuwait was efficient, wanton, and indiscriminate. Much of the coalition damage, on the other hand, occurred not because of indiscriminate attacks or an intent to inflict physical harm on the civilian population, but because of unanticipated effects due to the increased accuracy of weapons and the interconnectedness of society. The effects reverberated through a surprisingly modern Iraqi system. The objects that were and are traditionally military targets, such as electrical power, communications, transportation, or in the case of Iraq, oil, turned out also to be the essentials of modern life, particularly urban life. By taking away electricity, water distribution and purification, sewage treatment, air conditioning, and heating, you remove the essentials of modern life. It is all interconnected, which brings us to cyber warfare.

The Gulf War thus heralded a new kind of damage, and constraint, that we might see in future warfare. Mass destruction weapons did not kill masses. If anything did, precision weapons did. It was the successful and precise destruction of intended targets that had the more devastating effect on the civilian population. This was not city busting, firestorms, or carpet bombing, no matter how much such images continue to dominate our colloquial view of war. Instead, the damage was perplexing and surprising, validating new U.S. Air Force theories of what I call systemic attack, and what theorists then called "parallel" attack and now call "effects-based" attack.[1]

Take, for instance, the bombing of Iraqi electrical power. The United States defended the right to attack electrical power throughout the negotiation of the Geneva Protocols. U.S. negotiator Ambassador George Aldrich argued that attacks were allowed on power stations—including nuclear reactors—that service central grids because the grid itself is an example of "regular,

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1. George H. Aldrich, *New Life for the Laws of War*, 75 AM. J. INT'L L. 764, 779 (1981). "Proposals to add other items to the list [of prohibited objects of attack under Article 54 of Protocol I to the Geneva Convention Relative to the Protection of Civilian Persons in Time of War], such as communication systems or food distribution and fuel reservoirs were rejected by the conference, as such items are often, if not always, important military objectives." *Id.*

significant and direct support of military operations" as defined under Article 56, Protocol I.[2]

Less than two percent of air attacks on strategic targets in Iraq damaged or destroyed some eighty percent of electric generation capacity. The Iraqi national civil grid was blacked out in the first hours of bombing on January 17, 1991. The lights did not come on for three months. War planners and targeters completely failed to anticipate that such efficient attacks on electricity would not only affect command and control of air defenses and communications systems, but would also have reverberating effects on civilian water distribution, purification, and sewage. One officer wrote after the war that when CNN reported that water was off in the Rasheed Hotel in Baghdad, Air Force planners were surprised:

> Ironically, it seems like this had been overlooked by the air campaign planners. This author vividly recalls polling the 'Checkmate' staff the first night of war and discovering that no one had realized that with the loss of electricity the water supply would also fail. Later discussions with personnel who were in the 'Black Hole' in Riyadh at that moment indicated they were also caught by surprise.[3]

The lack of foresight led to a humanitarian disaster once the fighting was over: Iraq had no central electricity, little urban water supply, and no sewage treatment or public sanitation. Its medical infrastructure could barely function, and there was hardly any civilian telecommunications or transportation. A variety of international organizations and officials—representatives of the U.N. Secretary-General, World Health Organization, and the U.N. Children's Fund (UNICEF)—decried the conditions, predicting a health catastrophe. Iraq was labeled "pre-industrial . . . but with all the disabilities of post-industrial dependency on an intensive use of energy and technology."[4] The Desert Storm air war largely spared Iraqi civilians from the indiscriminate effects of urban bombing, yet the focus of attacks on electrical power efficiently disabled life support systems with unintended effects on the very non-combatants who were

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2. George H. Aldrich, *Progressive Development of the Laws of War: A Reply to Criticisms of the 1977 Geneva Protocol I*, 26 VA. J. INT'L L. 693, 716 (1986); *see also* DEPARTMENT OF THE AIR FORCE, INTERNATIONAL LAW—THE CONDUCT OF ARMED CONFLICT AND AIR OPERATIONS 5-16 (AFP 110-31) (Nov. 19, 1976).

3. Daniel T. Kuehl, *Airpower vs. Electricity: Electric Power as a Target For Strategic Air Operations*, 18 J. STRATEGIC STUD. 28 n.51 (1995).

4. *Report to the Secretary-General on humanitarian needs in Kuwait and Iraq in the immediate post-crisis environment by a mission to the area led by Mr. Martii Ahtisaari, Under-Secretary General for Administration and Management, dated 20 March 1991*, U.N. Doc. S/22366 (1991), *available at* http://www.un.org/Depts/oip/reports/S22366.html.

specifically not the object of attack. Harm was ironically compounded by the very fact that civilians were otherwise spared the direct effects of bombing in a highly discriminate campaign.

My view is that a general prohibition on attacking electrical power is unnecessary, redundant, and legally obsolete. Electrical power, like any target, must satisfy the basic legal obligation of being a "definite military advantage" as required by the customary law definition of Article 52 of Protocol I. It must be attacked in such a way, as it was in Yugoslavia in 1999 during Operation Allied Force, to minimize the civilian impact. Traditionally, minimizing civilian impact has meant avoiding the direct physical effects of ordnance; that is, people dying or being injured as a result of rubble falling on them or shrapnel hitting them. But, Desert Storm and Operation Allied Force provide a rich fabric of precedent that recognizes not just prompt effects, but also cascading effects.

We know what the potential effect on the civilian population is, but what of the assumption of "definite military advantage" from systemic attack? The Air Force Gulf War planner concluded that while the destruction of the Iraqi electric grid "almost certainly had a significant impact on several key Iraqi subsystems, the specifics are still unknown. Until we get much greater access to Iraqi officials and documents we will not know how badly the loss of the electric grid hurt the Iraqi C3 network, its NBC research and development complex, or air defense system."[5] Ten years later, the best that the Air Force and Pentagon can offer is the postulated effect from the bombing of electricity. The validated and unique effect of attacks on electricity is inseparable from the effects of broader bombing.

Fast forward to Yugoslavia, where electricity was not attacked for the Gulf War systemic purpose of having direct effect on air defenses, command and communications, or even the pre-Gulf War purpose of degrading military industrial capacity. Instead, electrical installations were attacked in the sixth week of the 1999 war specifically as an act of political escalation to cause inconveniences and suffering of the civilian population, to undermine their morale, and to have "psychological" impact on civilian non-combatants.

Is it a legitimate military objective to focus on the civilian population and not an adversary's military forces? One of the oldest documents of the Laws of War, the 1868 St. Petersburg Declaration, holds "that the only legitimate object which States should endeavor to accomplish during war is to weaken the military forces of the enemy."[6] To countenance any military force used to target civilians—whether themselves or their morale—would run counter to

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5. Kuehl, *supra* note 3, at 258.

6. Declaration Renouncing the Use, In Time of War, of Certain Explosive Projectiles, Nov. 29/Dec. 11, 1868, *available at* http://www/lib.byu.edu/~rdh/wwi/1914m/gene68.html.

this basic concept. Article 52 of Protocol I, which defines military objectives as objects that make an "effective contribution to military action" and whose destruction "offers a direct military advantage," further suggests a greater immediacy than the indirect effect of undermining civilian morale. Civilian morale has been targeted in numerous conflicts, but the traditional interpretation of the law, and its underlying objective, would seem to make it an illegitimate target.

Here is the conundrum: could the argument be made that today's precise attacks, even those attacks openly intended to influence "morale," are potentially more sparing of the civilian population than physically destructive attacks sanctioned by the conventional interpretation of the law?

You will notice that I have completely segued from the environment to human rights, which is intentional. The environment was hot in 1991, so to speak. But our societal concern about the environment has since been supplanted by a human rights aesthetic, which for now is paramount in the hierarchy of public and even foreign policy concerns. Perhaps the meaning is that an environmental stewardship ethic is so deeply ingrained in our thinking and our institutions that we have genuinely moved on to other problems.

In 1991, at least, all eyes seemed focused on the environment, with the suggestion and the hope that war, the most destructive human enterprise there is, could be fought while protecting physical space. Special environmental laws, even those embedded within the Geneva Protocols and arms control law, were looked at to answer the question of legality.

The U.S. government's response was paradoxical. A few days after Iraq began to use Kuwaiti oil facilities to cause intentional spills, the U.S. Navy received orders making oil slick reconnaissance its highest priority mission in the Persian Gulf. Helicopters were required to record on videotape damaged oil terminals and the extent of sea contamination. The mission was to document Iraq's war crimes, and by President Bush's and the government's rhetoric, one would have thought that the strongest possible action would be taken once the war was over.

Instead, the Bush Administration made no moves to push war crimes or legal action. They partially justified inaction by saying that since Saddam Hussein was not in custody, they could not try him. The reality was that Iraq's neighbors, and our partners in the Gulf War, particularly Saudi Arabia, did not desire a war crimes approach any more than they could countenance a total victory over Iraq. There were geopolitical reasons for retaining some balance of power between Iraq and Iran and desiring to not see Iraq split up into Shia, Sunni, and Kurdish enclaves.

Did the government have to go as far as they did in making legal arguments that the war crimes accusation would not matter anyway? First, in the Pentagon's post-war report to Congress, they said that the post-Vietnam

restrictions embodied in the new Protocols and the 1977 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (the ENMOD Convention) were "not legally applicable in the Persian Gulf War."[7] Second, they noted that specific Iraqi war crimes were violations of the Hague Conventions prohibiting destruction not "imperatively demanded by the necessities of war."[8] Thus, the Pentagon was happy to merely refer to Iraqi crimes as destruction of "property," not as destruction of the environment.[9]

Finally, Pentagon lawyers asserted that even had the modern environmental restrictions of the post-Vietnam Protocol I been in force, it would not have applied. Here is what the report said:

> During that treaty's negotiation, there was general agreement that one of its criteria for determining whether a violation had taken place ("long term") was measured in decades. It is not clear the damage Iraq caused, while severe in a layman's sense . . . would meet the technical-legal use of that term. . . . The prohibitions on damage to the environment . . . were not intended to prohibit battlefield damage caused by conventional operations and, in all likelihood, would not apply to Iraq's actions in the Persian Gulf War.[10]

So, what Iraq did to Kuwait and to the environment is dignified as battlefield damage caused by conventional operations.

One could be depressed at this point about the prospects of protecting the environment in warfare. That would be strictly a legal and policy lament about the U.S. government's propensity to protect its freedom of operations. In the real world, where wars are not fought in courtrooms or with legal handbooks, I see practices and changes that are more far reaching than the law. The Gulf War represented the maturation of so-called smart war, and was on the cusp of the Cold War and pre-Cold War aesthetic of total destruction. Smart weaponry and the use of overwhelming conventional force fed into a new aesthetic, the human rights aesthetic, where specific effect on the civilian population was for the first time measurable. This was for the simple reason that for the first time war could be fought amongst the civilian population while sparing them many of the effects. If bombing was not so accurate, there

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7. DEPARTMENT OF DEFENSE, REPORT TO CONGRESS ON THE CONDUCT OF THE PERSIAN GULF WAR, APPENDIX O, *available at* 31 I.L.M. 612, 616-17 (1992).

8. *Id.* at 622.

9. *Id.* at 635.

10. *Id.* at 636-37.

would be no argument about this or that target decision or weapons selection, for the overall damage would be so great as to obscure the details.

The Gulf War, I would argue, and other wars of the 1990s have spawned a significant increase in societal concern for the lives of civilians. In the Gulf War, the United States and the coalition of British, French, Italian, and Arab military partners bombed Iraq's nuclear reactors, chemical weapons bunkers and factories, biological warfare research laboratories, electrical power, oil refining and storage, and petrochemical industry. Though some might look at this strictly through an environmental lens and be depressed, I prefer to evaluate the bombing in terms of the universal obligation contained in Protocol I as to whether such actions were necessary in light of the objective. The question is balancing effects on the civilian population with the military benefit of the destruction of objects.

Now the legitimacy of any target in a war is largely subjective. Under the laws of war, within certain guidelines, attacks on even predominantly civilian objects can be undertaken so long as the target's destruction is proportionate to the military benefit. Additionally, civilian harm cannot exceed the expected gain. Excessive civilian harm, and by extension environmental destruction, is the overriding criteria that governs military decisions.

Last year, the United States fought another high intensity precision war. It was a war officially justified as humanitarian. By 1999, when Operation Allied Force was fought in Yugoslavia, an environmental movement had been supplanted in American, and European, society by a human rights movement. It was not that there were no major oil infrastructure or nuclear, biological, and chemical installations to fret about in Yugoslavia. What had occurred was a shift in societal thinking from a view of the apocalyptic image of global catastrophe played out in the nuclear arms race and the Cold War, still so fresh in 1990, to the more traditional human conflict characterized by hatred and bloodletting.

Why did politicians and others want to use force? The international community ignored the sovereignty of Yugoslavia on behalf of an ethnic minority being killed and driven from their homes. Equal fervor is not applied in East Timor or Sierra Leone or Lebanon, but, if one makes such an argument against the use of force on behalf of Kosovar Albanians, then remember this is just essentially making an argument for the use of force in other areas. You just want it to be politically correct and evenly applied. Civilian considerations were paramount in the bombing, even if avoidance of civilian collateral damage and disruption of Yugoslav society and recuperation also threatened military effectiveness.

So war was initiated on March 24, 1999, but it had a mechanical air to it, especially when NATO announced that it would not engage in ground combat. In other words, NATO would not risk its own soldier's lives. It could not

stomach bloodletting in pursuit of a humanitarian objective to stop bloodletting. The enemy in this case were paramilitary thugs in small groups largely immune to bombing and not above using human shields to do ethnic cleansing. They were really not threatened by air attacks directly, and somehow NATO and U.S. policy-makers conspired with them by using force to "force" them to do what NATO wanted even if it meant that until they complied, Kosovar Albanians would die and an entire people would be uprooted. It is a strange and new decision relating to how force is employed, and yet I would argue that many of the one million Kosovar Albanians are alive today because of air power.

There are two distinct wars now in our society, a "ground" war and an "air" war, traditional war and cyber war. Air wars can be fought and "victory" declared in virtual reality, while old hatreds, history, and destruction remain behind. I admit to having great affection for the Air Force, but pilots do not have to come face to face with their targets.

Dubbed the "television war," Desert Storm in 1991 never really produced very many gut wrenching scenes. On opening night, all CNN could deliver was audio coverage from Baghdad. Peter Arnett and company babbled, and the microphone was thrust out the window of the ninth floor of the Rasheed Hotel so that the world could eavesdrop on war. The impression was created that the public was *seeing* war, but of course, it saw nothing. After the Baghdad novelty of January 17, 1991, non-stop overkill television became so repetitive and unanimated that during the weekend of January 18-20, box office receipts at movie theaters across America jumped thirty-four percent from the previous year.

In the aftermath of Desert Storm, four days after the cease-fire in fact, no image of violence was as stark as that of the beating of Los Angeles motorist Rodney King. The videotape was plastered all over television, a kind of visual catharsis to censorship and seemingly inhuman firepower. The black and white video, shaky, grainy, and surreptitious, had instant credibility. It was amazingly similar to gun camera video clips that had become commonplace in the Pentagon's telling of the story of their air war.

Gun camera video tapes, of course, are carefully chosen for the audience's edification or entertainment during an otherwise difficult to imagine technological enterprise. Press briefings and video selections emphasize airpower's perfection and downplay its destructiveness.

Is it the case that the very nature of airpower, and of emerging cyber warfare, defies heroic description? There is, of course, real danger for the pilots. But bombing soon enough becomes a production process, in which the occasional pilot death is more akin to an industrial accident than the result of what we think of as military combat.

We found ourselves, at the end of the Gulf War, in the midst an of old-fashioned massacre that many labeled the Highway of Death. General Schwarzkopf, adamant that he would not be another commander disgraced for letting a beaten enemy get away, let fighter-bombers be his cavalry. Almost immediately, a panic set in amongst military and political leaders in Washington and London at the scale of killing on the ground. They had caused it, even willed it. But they had not imagined what it would be like. Somehow when the video screen turned buildings and bridges in the cross hairs to human beings, opinion immediately shifted. Despite all that Iraq had done to Kuwait, to its own people, and to its neighbors, death had strangely become awfully hard for the American government and military leaders to justify.

This is an uplifting anti-heroic approach to death, one that goes back to ancient times, and one that is the very basis for what we call the Laws of War. For a soldier it means that any death on the battlefield is potentially one's own death. The more anti-heroic we are, the more we come to grips with limitations on the use of force and our own ambivalence about casualties. The more we see this issue as not about the deficiencies of this or that administration or policy-maker, the more we recognize our developing aesthetic about war, the better we protect civilian lives and the environment, even in war.

The environmental damage and lack of formal legal action against Iraq after the Gulf War may seem an odd context in which to claim that environmental protection has advanced. Yet the true story of the Gulf War is one of a high degree of sensitivity to environmental destruction by the United States and the coalition, and even by Iraq. What Iraq did was not militarily necessary and was not in compliance with its Geneva and Hague obligations. Iraqi leaders knew quite clearly that they were destroying the environment. Iraq may cry big crocodile tears about depleted uranium and its own "Gulf War syndrome," trying to portray itself as victim of illegal bombing, but the truth is that Baghdad is totally cynical, and the destruction it caused was vindictive and a war crime.

Even in all this, there is an advance. Though Iraq's destruction went unpunished, there is a silver lining. All the environmentally destructive practices that government lawyers otherwise went through contortions to condone have essentially become "outlawed" in common practice.

One has to be on the ground to appreciate both the extraordinary precision of modern weapons and the emptiness of much of current law. When I was in Yugoslavia in August 1999 after the bombing, it was actually surprising that only on a few occasions did people voice the surreal observation that America first bombed them and then came back to receive testimony and take pictures. But that is the strange quality of today's post-

modern wars: every bomb and missile can be audited. Because of precision, evaluation can be fine art, specific intended targets are separable and obvious. Even individual injuries can be inspected, and something as minor as broken windows are noteworthy.

In some ways, it is a terrible burden for a mode of warfare that has now demonstrated the potential to be so much less destructive and deadly than its ground counterpart. And yet the legal, policy, and humanitarian demand on precision weaponry and virtual warfare is that every weapon counts, targets have to be meticulously chosen, and the choreography of a conflict is essential. In this modern style of cyber warfare the results are hardly ever firestorms and rubble. Most targets are seen as parts of networks, and meaningful effects are measured not in terms of physical destruction but in terms of systemic or functional impact. This is at least the theory. Where new cyber warriors fail is in their claim that they understand these strategic effects or can predict the impact systemic attacks will have on enemy militaries and decision-makers, and more importantly on civilians.

Having spent considerable time pondering post-war bomb damage in Iraq, nothing is particularly noteworthy about the physical destruction in Yugoslavia. Operation Allied Force is just another precision war: some 28,000 weapons were dropped, a third of which were "smart" weapons. There were just ninety incidents in ten thousand strikes where civilians were killed as a result of technical failures, because they were too close to military targets, or because of errors in judgement either by pilots or targeters. In all, there were some 500 Yugoslav civilian deaths and only another few hundred injuries from bombing.

In total, there were 900 targets of all types in Operation Allied Force (made up of some 9800 aim-points). About 400 of these were fixed targets spread out in Serbia, Kosovo, and Montenegro, the majority being in Serbia. Probably something on the order of just 3000-5000 weapons fell in all of Serbia; most of the rest were dropped in Kosovo. Of these weapons, the majority were dumped on large airfields, barracks, and factories. In other words, for 350 or so strategic targets, some ninety percent, precision weapons were almost exclusively used, delivered in small numbers.

In Yugoslavia, electricity was attacked, but it was attacked with new weapons, and with great care to avoid short and long-term effects on the civilian population. Many targets were not bombed because of potential civilian effects. Dams were avoided, and scrupulous attention was paid to minimizing any environmental impact. One could argue whether the use of depleted uranium or attacks on petrochemical facilities on the Danube River were wise. But we do not need the environment per se in the argument. Targets such as the Pancevo petrochemical plant, industry, and the Pancevo and Novi Sad refineries should not have been bombed, but not because of

environmental damage. They should not have been bombed because they made no contribution to the overall military effort. Paramilitaries in Kosovo, and even the Yugoslav military, were not dependent on oil for their operations, and the Yugoslav war industry was not producing replenishment materiel. These are boilerplate targets, declared "legitimate" in conflicts past. They are also thoughtless targets, a waste of bombs, and antithetical to the new mode of cyber warfare and precision attack.

It may be the case that we will never know what drove Slobodan Milosevic to finally accede to NATO's demands, but the details of what was bombed, why it was bombed, and when it was bombed are central to the development of our aesthetic about new warfare and any subsequent advances in the law and its interpretation. When the objective of the use of force is the exalted enforcement of human rights, there is even a greater obligation to use force in a way that not only preserves civilian life and the environment, but also achieves as rapid as possible a conclusion of armed conflict and a restoration of peace.

Though NATO went to great lengths in its safeguards, it made many wrong decisions in the conduct that it chose. Nowhere is this clearer than in the bombing of Yugoslav electrical power.

"Energy" installations are traditionally legitimate targets as long as, according to the 1956 guidelines of the International Committee for the Red Cross, individual plants are being used "mainly for military consumption." But, this is just not the way the world works anymore. Most modern countries have integrated national electrical grids, where individual installations cannot be separated out in terms of military production. To do harm, only small segments of networks need to be attacked. This stresses the system such that nodes in the network can not pick up the slack and a general black-out is induced. Electricity as a target is very "fragile." A grid can be disabled with only a few choice bombs. At the same time, electrical targets are very lucrative, given the potential for reverberations on air defenses, command and control, and communications (even if they have back-up generators).

The very fragility and efficiency of modern electrical networks, and the potential for civilian harm, has precipitated development of new weapons and tactics. During the planning for Operation Allied Force, Air Force targeters argued to no avail for electricity to be hit early on for military and not psychological effects. This was not possible for political reasons of alliance consensus.

When the decision was taken a month into the war to attack the grid as an escalation step, military effect was purely coincidental. "We regret the inconvenience [that power outages have] caused to the Serb people, . . ."

NATO spokesman Jamie Shea said on May 3, 1999.[11] What nonsense. The only point of turning off the lights on May 3rd was to bring the war home to the Yugoslav people. Attacks on electricity escalated on May 8th, and then later on May 22nd, eventually shutting down seventy percent of Serbia's electrical power.

New so-called carbon fiber weapons, weapons developed specifically for the purpose of reducing the impact of physical destruction on the civilian population worked. Unlike Iraq, there seems to be very little long-term reverberation from electrical attacks. Some are arguing that the loss of electrical power had such an impact on civilian morale in Belgrade and elsewhere that it was the "most" important target group to be attacked. It is merely an assertion, but one with far reaching implications.

I could go on much longer talking about targeting in Iraq and Yugoslavia, but here is the bottom line: Operation Allied Force was fought with the utmost concern for civilian casualties and damage. A greater percentage of smart weapons were used than in any other conflict in history. Targeting was more scrutinized and "micro-managed" at the civilian level than at any time since Vietnam. Enormous efforts were made, largely successful, to avoid short and long-term civilian effects. When mistakes did occur in the seventy-eight days of bombing, many changes were implemented, and many unpublicized restrictions were levied. Together, these constitute a rich fabric of operational history, one that cries out for greater airing and conversion to universal norms.

Contrary to the view of many political decision-makers, some warfighters, and most critics, taking greater risks in Yugoslavia—hitting harder—might not only have shortened the length of the war, but at the same time, it likely would have opened up the Yugoslav civilian population to no greater dangers. Yet, we are in such a new era of warfare, and have not adequately digested either the operational history or empirical evidence from the Gulf War, that it is not only difficult to test this proposition, but it seems impossible to build a consensus behind the best tactic or strategy to apply to achieve political objectives through the use of force.

This is where we are today in the most modern form of warfare. We have gotten to the point where civilian harm as we traditionally have come to know it is indeed minimized. Weapons which are deemed "legal" by governments, such as depleted uranium and cluster bombs, are stigmatized by the public and the news media. Targeting is subject to greater and greater scrutiny and criticism. We are faced with a new dilemma precipitated by greater and greater precision and our increasingly network-centric societies: Does the

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11. Ben Roony, *Conflict in the Balkans: Secret Missile Cuts off Power Supply*, DAILY TELEGRAPH (LONDON), May 4, 1999, *available at* 1999 WL 16622494.

focus more and more on societal and systemic nodes for attack potentially erode the Law of War principle of civilian "distinction?" I think the answer is yes, but I can hardly argue that some pre-precision, pre-cyber warfare mode better achieves the fundamental objectives set forth in the law.