THE NEW RULES OF WAR:

Fight Symmetrically, Stay Engaged, and Prioritize Timely Mission Success

WARFARE HAS CHANGED. No-one is denying that. There is, however, great reluctance in most defense forces to abandon the comfort which legacy structures and systems provide to the conventional warfighter. Moreover, the separation between strategic power projection forces — which generate the prestige and deterrence necessary to shape the larger environment — and the forces actually engaging in kinetic activity has rarely been greater.

The International Strategic Studies Association (ISSA) — the publisher of *Defense & Foreign Affairs* — has said, in a new study, that Western military forces must change their focus on asymmetric warfare because existing doctrine has failed them, and it was now necessary to look at a new form of symmetric warfare, which would largely be fought on geographic and climate terms not of their choosing.

The study advocated new approaches to fielding and sustaining forces in the field, noting that these approaches would also be beneficial to dealing with rear-area "denial-of-service" warfare, in which it could be expected that in major confrontations, Western "homeland" populations would be subjected to major disruptions to electricity, food, and water supplies which would have consequences far more severe than the Japanese *tsunami* of 2011.

One of the approaches to developing forces which could be sustained for extended durations of expeditionary or rear-area operations would be to create a new class of military vehicles which would be lighter and more flexible than anything yet fielded, but which would also provide maintenance-free, non-diesel sources of electrical power and purified water. The new vehicles should be called **High-Mobility Expeditionary Resource Vehicles (HMERV)**, stressing that the delivery of safe water and electrical power in remote or destroyed urban environments would be the key to the next phase of most conflict operations.

"What remains of significant concern," project leader and ISSA President Gregory Copley said, "is the fact that many in senior positions in Western ground forces continue to think as though they are going to re-fight yesterday's wars. Despite the massive casualties (deaths and seriousness of injury), strategic mission failure, and draining of national budgets which the application of old doctrine brought, we see great reluctance to think flexibly about the future. What is clear from all our studies is that the West should never have accepted to fight 'asymmetric wars' which were designed to bleed dry Western economies and the patience of their electorates; they should have thought how to re-define these wars along *symmetrical* lines."

The study results were as follows:

Background:

The International Strategic Studies Association (ISSA), based in Washington, DC, has for much of the past decade been working to develop approaches to enhance soldier survivability systems, and to concurrently enhance mission achievement. Some of these efforts can be seen on the ISSA website.[1] It was recognized that strategic outcomes were being determined by the failure of conventional military units to achieve mission success in the face of low-cost forces (supposedly inferior in the asymmetric framework).[2]

That concept was outlined in the *Defense & Foreign Affairs* report, "For Want of a Nail …", in February 2008, noting: "Just as the accretion of activities at squad level determines outcomes at a theater, and ultimately political level, so decisions taken at a strategic level determine outcomes at a tactical level. We persist in studying battlefield doctrine and strategic policy as separate entities, without sufficiently emphasizing the tactical-strategic interface." That thesis had been a consistent theme in *Defense & Foreign Affairs* reporting, echoing a report entitled "Grand Strategy in an Age of Tactics" in early 2008.[3]

In revisiting the global strategic framework and the likely shapes of conflicts in coming decades, ISSA has now begun to investigate requirements for next-generation combat and disaster relief systems, bearing in mind the dramatic changes in anticipated conflicts, as well as the likely rôle of military, paramilitary, and civilian units in disaster relief operations.

Within this framework, it is clear that several factors apply:

- The employment by major conventional powers, in so-called asymmetric warfare situations, of heavily-armored vehicles which are largely

1 www.strategicstudies.org.

2 See Copley, Gregory R.: "For Want of a Nail … Tactical successes or failures can often accumulate to determine strategic outcomes, but too often we ignore the linkages between tactics and strategy. A case study of US vehicles in Iraq", in *Defense & Foreign Affairs* ***Strategic Policy***, 2-2008.

3 See Copley, Gregory R.: "Grand Strategy in an Age of Tactics", in *Defense & Foreign Affairs* ***Strategic Policy***, 1-2008. See also, for example, "The Future of Warfare, For What it's Worth", in *Defense & Foreign Affairs* ***Strategic Policy***, 1-2/2011. Among other things, that report noted: "Conventional warfare — formal military conflict — ... is at a pivotal point of transformation as to its nature, reflecting the transformation of societies into urban-dominated groupings which are totally dependent on energy consumption for every facet of survival in the delivery of food, water, mobility, communications, and economic endeavor. The nature of warfare, then, will reflect the change of human social shaping."

restricted to prepared roadways adds substantially to casualty levels, minimizes the ability to successfully prosecute missions in a timely fashion, gives distinct tactical advantage to the unconventional forces, and demands a disproportionate level of manpower for support and operations. In all this, then, the initiative has moved to the unconventional forces, and conventional forces are moved to a defensive position with disproportionate resources thrown into non-aggressive activities such as counter-IED efforts, logistics, etc.;

- The heavy reliance by conventional powers on a heavy automotive capability which allows (or supports) only short engagement periods at remote locations limits mission success prospects, and adds a substantial logistical train, particularly for diesel fuel and water, which is expensive at a politically-punitive level to the employing force in both manpower and financial terms; and
- The preponderance of conventional force efforts and funds are thrown into logistics — *the process* — at the expense of a focus on the *strategic objectives* of the conflict. In this regard, the most significant diversion of strategic effort and funding, then, is on the movement of essential supplies of potable water and diesel fuel. A 2009 US Army study noted: "Resupply of fuel and drinking water for troops in-theater costs lives."[4] This was a major understatement. Even at this level of understanding, it is clear that approaches which could minimize the need for a logistical train for water and which could minimize the consumption of diesel fuel could transform the battlefield.

A recent study by ISSA noted: "The time has surely come in the US and the West to evaluate the military and strategic lessons of recent conflict in Iraq, Afghanistan, and Libya in light of the transformed global strategic realignments. The nature and shape of the world has changed, therefore the nature and shape of conflict has changed, and is changing. At some stage in all anticipated conflicts of the coming decade or two, forces will be reduced to fighting the war which the host geography and society imposes on it."[5]

The report continued:

The West has convinced itself that it must fight "asymmetric" wars, yet it was military thinking in the PRC and India, after the US military strikes against Serbia in the 1990s, which showed that technologically inferior forces could successfully wage "asymmetric warfare" against a technologically and more wealthy adversary.

The reality is that in the new wave of warfare, symmetry is *imposed* by terrain, context, and host societies. Thus, the US and Western powers must, in fact, fight *symmetrical* wars in which they abandon reliance on strategic weapons and many of the trappings of net-centric warfare, and face their adversaries without vast logistical trains.

This does not negate the critical aspect of strategic economic and geographic depth, or even technology, as keys to success in protracted war. But there is a need to move away from the concepts of "asymmetrical warfare" in which wealth and technology are expected to determine the outcome in such operating environments as the extremely varied terrains of Africa, or Afghanistan. Indeed, if anything, the lessons of recent conflicts should have been that by insisting on waging asymmetric warfare as the superior force, the West has consistently failed to win decisive and lasting military victories, and has certainly — because of the protracted nature of the conflicts waged on high-tech, high-budget terms — been forced into strategic defeat. The new warfare will, then, be symmetrical in that the host will determine how forces are arrayed. Net-centric warfare capabilities of the visiting forces must give way to something new and innovative: "net-*eccentric* warfare", in which technologies can be adapted to localized conditions to provide micro-technological advantage. This will force greater reliance on commanders in the field at very local, small unit levels, and must, perforce mean a more hands-off approach from national commanders. This worked well for Britain in its global campaigns of the 18th and 19th centuries, and these are lessons which need to be studied.

As a result, ISSA has been working with Strategic Asset Protection Systems, Inc. (StrAPS), a US corporation which specializes in innovative responses to changing threat environments, in developing lightweight, easily-deployable, self-contained systems for forward battlefield operations and extended disaster relief support. The systems — including a light, economical (and combat proven) rugged terrain vehicle system with integral capabilities to produce large quantities of potable water and sufficient electrical power to sustain unit Command, Control, and Communications — has been given the designation of High-Mobility Expedi-

Goodbye to Logistics Convoys: The *Argonaut* HMERV, the High-Mobility Expeditionary Resource Vehicle, or, in civilian guise, the High-Mobility Emergency Response Vehicle, in prototype form. The objective of the International Strategic Studies Association and Strategic Asset Protection Systems was to create a vehicle which could fit in or under major helicopters and fixed-wing aircraft, and operate without a logistical tail for protracted periods in hostile environments, providing potable water and electrical supplies for expeditionary or disaster relief operations in areas of devastation or mass population upheaval. Significantly, the R&D also threw out a range of manportable and light-payload water purification systems to give forward operations the independence they need.

4 See "Sustain the Mission Project: Casualty Factors for Fuel and Water Resupply Convoys; Final Technical Report", prepared for the US Army Environmental Policy Institute (AEPI), Arlington, Virginia, USA: September 2009.

5 See Copley, Gregory R.: "New World, New SpecOps", in *Defense & Foreign Affairs* ***Strategic Policy***, 3-2011.

tionary Resource Vehicle (HMERV), named *Argonaut*, and was to be in prototype form by mid-2011.

The Goal:

GROUND WARFARE is changing in nature, and while formal military conflict must be anticipated, so too must continued less-formal warfare — which Western and Asian analysts have labeled "asymmetric warfare" — which has delivered the benefit to defenders of being highly cost-effective.

At the same time, major disaster relief operations require systems similar to those required for some protracted counter-insurgency operations. The goal, therefore, is to create a military vehicle system facilitating high-mobility, rough-terrain, sustained-duration operations to meet and beat irregular opponents or to project relief operations into broadly devastated areas. The system must deliver:

- (a) Sufficient electrical power, water purification, and water desalination output to satisfy the needs of a company-level force while still producing surplus water to support host population or other needs;
- (b) A high-mobility (rugged-terrain), easily air-transportable, expeditionary, vehicle-based system, less than 3,000 lb. all-up weight, which could also be in a palletized, leave-behind mode;
- (c) Sustained endurance, totally independent, off-road operations in adverse conditions, while generating minimal signature;
- (d) The ability to enable the kind of flexible operations plus energy and water capabilities to deliver rapid mission success, and ensure the ability to carry the fight to the enemy and to avoid exposure on predictable paths of operations;
- (e) A dramatic reduction in dependence on logistics train for fuel, water, and engineering systems; and
- (f) True scope to deploy a range of battlefield management systems without a major baggage train.

Premise:

The post 9/11 conflicts in Afghanistan and Iraq, and the disaster relief operations in 2011 in post-earthquake/*tsunami* Japan, have demonstrated how legacy military ground force structures have been eclipsed by events and irregular opposing forces. The inability of legacy security architectures to meet and defeat the emerging threats (ie: to achieve victory) within acceptable timeframes and budgets can only be expected to become more pronounced in the coming decades.[6]

A 2010 ISSA report[7] noted: "[W]ithin the US, a major concern in disaster relief following such events as Hurricane *Katrina* (and many other events), has been the immediate supply of potable water. Clearly, given the reality that US deployed forces consume an average of 22 US gallons (83.279 liters) of petroleum products per man, per day, it is incentive enough to be able to deploy the capability to provide potable water without a heavy logistics tail. Moreover, as recent *Taliban* actions in north-western Pakistan have indicated, the major vulnerability of conventional forces — not to mention cost — has become their logistics tail. A recent well-documented report by Adam Cobb, entitled "IEDs, Casualties, Fuel, and War: a Report on the Marine Corps Energy Summit, 13 August 2009", in the [US] *Marine Corps Gazette*, noted: According to CMC [Commandant, US Marine Corps], a brigade-sized formation uses half a million gallons of fuel a day in combat. A single forward operating base uses an estimated 500-million gallons a year. Secretary of the Navy Ray Mabus noted, "The cost of fuel in a ground vehicle in theater starts at $15 a gallon and goes into the hundreds."[8]

Taking into account long supply lines and force protection measures, in January 2001 the US Defense Science Board estimated fuel could cost as much as $400 a gallon at the point of use. In reality it is now vastly higher.

Indeed, US Army and Marine Corps deployments to Iraq and Afghanistan during the first decade of the 21st Century, showed that the real cost was much higher than indicated by just the cost of diesel to deliver water in-theater. The requirement to support a *Stryker* Brigade Combat Team (SBCT), comprised of 3,972 soldiers in Iraq, consuming 31,776 liters a day of potable water (at eight liters per man per day), demanded:

- (a) Water re-supply every other day (182 trips per year);
- (b) Ground convoy consisting of 20 vehicles (16 supply trucks; four gun trucks with four soldiers per truck; one gunman *per* water truck);
- (c) Air support to convoy included two *Apaches* (AH-64D), two soldiers per *Apache*;
- (d) Average convoy speed: 35 mph.

On top of this, the Army funded a water purification and bottling plant, at a cost of many millions to procure and sustain, including the deployment of military personnel to protect the bottling facility.[9]

It was clear from the high cost of convoying and financing static water purification/bottling plants in a combat theater, the diversion of large numbers of personnel and vehicles to support operations with a high degree of vulnerability to hostile actions, the need for an existing (and therefore also predictable) logistical/roadway pattern, and the resultant exposure of convoy troops to repetitive strain injuries, that this entire process could be essentially replaced by small systems embedded with forward operating forces.

Existing/legacy structures have lacked true mobility, independent endurance, and the ability to achieve rapid and economical mission success against fluid opposition or chaotic disaster conditions. Furthermore, quite apart from the lessons of the Iraq and Afghan operations, emerging strategic doctrine for asymmetrically-challenged forces will be to engage a major power's conventional forces with highly-mobile irregular forces, while concurrently inducing rear-area (ie: homeland) chaos through denial-of-service attacks on power/food/water/communications.

This emerging trend will demand the creation of new, light forces which can match low-cost, in-place adversaries with systems which are:

- (i) More sustainable for independent ops in the field over long periods;
- (ii) Less reliant on long logistical trains of diesel and water, and which are therefore more nimble for operations in off-road/remote and adverse terrain situations; and
- (iii) Capable of maintaining full-spectrum comms and access to healthy water supplies for own-force plus civilian components.

System Framework Objective:

The objective was to create a highly-mobile capability for each company — or even platoon — of troops aboard a single, light, off-road vehicle, to deliver electrical power and clean water to forces and/or target civil groups in re-

6 See Copley, Gregory R.: "Lessons of the *Tsunami*", in *Defense & Foreign Affairs* ***Strategic Policy***, 3, 2011.
7 Copley, Gregory R.: "Strategic Disaster Responses" in *Defense & Foreign Affairs* ***Strategic Policy***, 9/2010.
8 Cobb, Adam: "IEDs, Casualties, Fuel, and War: a Report on the Marine Corps Energy Summit, 13 August 2009", *Marine Corps Gazette*. Online at: http://www.mca-marines.org/gazette/article/ieds-casualties-fuel-and-war.
9 *Ibid.* "Sustain the Mission Project: Casualty Factors for Fuel and Water Resupply Convoys; Final Technical Report", prepared for the US Army Environmental Policy Institute (AEPI), Arlington, Virginia, USA: September 2009.

mote/forward operational military or disaster relief areas, enabling sustained independent operations under adverse conditions.

Multiple vehicles can support the needs of company, battalion, and division level operations, being daisy-chained as necessary, or tasked to prioritize different missions as needs demand (all/most power generation, or water purification, or water desalination). The capability should enhance the ability of forward, remote, and independent units to sustain links into strategic and tactical communications.

- Capability should substantially reduce the diesel fuel logistical chain required by each military formation, with the objective of moving eventually toward the use of a hybrid engine, and ultimately an electrical motor, sustained by the system's solar power array;
- Capability should enable military/disaster relief units to operate detached from support, in forward areas, for protracted periods;
- Capability should deliver — from its solar power array — sufficient electrical power to sustain all unit communications and computer capabilities required by the mission; to drive water purification/desalination for the entire unit for protracted periods; and to generate sufficient additional potable water to support additional population groups;
- Capability should ensure operation without ongoing supply of replacement parts and filters, and minimal technical skills and manpower levels for operation; and
- Capability should be lightweight (less than 2,500 lb. (1,133.98 kg) all-up weight), easily air-transportable by medium-lift helicopters (sling load or internal: CH-46/47, etc.), and medium-level transport aircraft (V- 22, C-27, C-130, etc.).

What was already being achieved by May 2011 was a vehicle prototype which has combined a range of new, but proven, technologies, and which is expected to be ready for series production and service within the second half of 2011, delivering:

- A system which combines (and replaces) the functions now being provided by a range of considerably heavier, mainly diesel-reliant, separate units, which require expensive and ongoing support with filter changes and the like;
- Lightweight water delivery (lift from a range of raw ground water, river, or sea-water sources), via new-generation, self-contained purification and desalination systems, mounted on a militarized John Deere *M-Gator A2* four-wheeled vehicle (see photo, page 11), already in US Army service. The water purification is solar powered, with the back-up of electricity generation through the vehicle's engine. The system provides at least sufficient water handling (assuming raw water sources) to meet the needs of a company-sized force, plus surplus for civil dependents. Units can be daisy-chained for greater output;
- Electrical power system includes the capability to generate some power into batteries, while the vehicle is underway, using the vehicle engine. When stationary, the system's solar panels are deployed to generate surplus power to support platoon, company — and, daisy-chained, even to division-level — communications, lighting, and computing. The system can, if required, utilize higher-capacity power cells which are significantly more capable than the current battery systems being used by most militaries;
- A system which is coming in well under the weight targets initially envisaged, enabling larger battery storage, using new-technology Lithium Ion technology, which has high storage capacity and is rapid-charge capable;
- The system vehicle, ideally, should mature in its second generation to employ hybrid diesel and electric power to further minimize diesel consumption, in order to sustain longer-duration, support-free deployment.

One of the developments of the R&D program which was begun by ISSA with StrAPS was the creation not only of the *Argonaut* HMERV, but also a range of *Argonaut* manpack and light-palletable systems for water purification, electric power generation, and (palletable) water desalination.

Conclusions: Game Change Begins

Expeditionary forces — generally those employed by major powers, peacekeepers, and rapidly-deployed disaster relief responders — now have demonstrably new equipment options which can dramatically impact how they re-think deployment and operating doctrine. If the lessons of the expeditionary operations undertaken by the Coalition forces in Iraq and International Security Assistance Force (ISAF) in Afghanistan are not heeded, then the major industrial powers will find themselves unable to sustain their commitment to achieving strategic objectives.

What the evolution of "asymmetric warfare" doctrine achieved, following the US-led intervention against Serbia in 1999, was a clear methodology for the *strategic* defeat of conventional forces by unconventional forces. This was even evident in the Soviet occupation of Afghanistan in the 1980s. In the case of Western forces, the Iraq and Afghanistan wars of the 21st Century showed that the wealthier conventional forces could be defeated because their operating doctrine: (a) did not focus on full mobility of ground force operations, ensuring predictably vulnerable paths of operation; (b) did not focus on mission success; (c) was preoccupied with casualty reduction from initial, direct engagement (but from not indirect or secondary consequences); and (d) was committed to massive logistical functions with consequently predictable and vulnerable patterns, and with consequently overwhelming costs.

The result was that major conventional powers which willingly adopt the rôle of the "major power" in asymmetrical situations expose themselves to self-inflicted strategic defeat, even though they may be successful in individual engagements. They can be outwaited, because their methods cannot lead to enduring success, and protracted conflict leads to unacceptable political and economic costs, and more often than not results in a failure to achieve durable results.

Four of the maxims of ISSA President Gregory Copley apply in these circumstances:

1. Nothing reduces the financial, casualty, and political costs of war as much as rapid mission success.

2. At some stage in all anticipated conflicts of the coming decade or two, forces will be reduced to fighting the war which the host geography and society imposes on it.

3. All steps forward are based on vision; all steps backward are based on budget.

4. Preoccupation with process and means is tactical; preoccupation with outcomes and future context is strategic.

Old soldiers prepare to fight yesterday's wars. Those who embrace ingenuity are those who still wince from the ignominy of defeat. The new HMERV is a tool for expeditionary forces to regain the initiative and reduce the cost of engagement, in human, financial, and time terms. It is also the tool for humanitarian engagement on those many occasions when relief is needed from disasters, from the societal impact of war, and from the effects of drought, flooding, or mass population events. ★